

THE EFFECT OF PACKAGING COLOR ON PRODUCT SALES

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Abstract: *Packaging is an effective sales tool that directly affects the marketing of a product and allows the product to be transported, stored and used. A successful packaging, which ensures that the physical properties of the product are preserved until it reaches the consumer, acts as a silent seller by attracting attention in the retail environment in line with contemporary shopping habits. In addition, the form, the material, the way of use and the graphic elements on it and the packaging are a promotional item that reflects the product identity. Packaging shows structural and visual changes depending on the product type and marketing conditions. The images on the packaging create logical and emotional associations about the product, encouraging consumers to buy. Packaging directly affects purchasing behaviors. Different colors used in the packaging create different purchasing situations for people depending on the age, gender, mood and race of the person. In this study, different packaging and designs in different colors were shown to a sample group of 100 people and the psychology of purchasing behavior (bitter, spicy, chocolate, death, clean, dirty, etc.) created in the group was examined. As a result, it was determined that the effect of color on purchasing varies between 80-100% for different products.*

Keywords: *packaging, color, purchase, printing*

INTRODUCTION

Packaging with a general definition; it is the whole of the methods and measures that will increase the sale of the product, which is used for the purpose of protecting the product from the producer to the consumer, and after reaching the consumer, for the purpose of promoting the product it contains [1]. The task of the packaging is to reduce the transportation cost of the product, to extend its life, and to attract attention by competing with its counterparts in the sales channels where it will be presented to the consumer, thanks to its graphic and structural design qualities, and as a result, to sell the product [2-3]. In other words, the packaging not only protects the product and facilitates its distribution, but also fulfills very critical functions regarding the marketing of the product [4-5]. Consumers react to the form of packaging, the brand of the product, the colors and forms used in the packaging, and they instinctively imagine a shape in their minds. Therefore, the packaging element encourages the product to stand out from its competitors, to be recognized by the consumer, and accordingly, to try and re-purchase [6]. Packaging has basic and side functions. Basic functions are functions that must be performed unconditionally. Side functions are optional functions that do not have to be included in the package that can be dispensed with if desired. While carrier, protection and narrator are the basic functions of packaging, storage, advertising and marketing are secondary functions. The goals of a successful packaging;

- It should protect the product and keep contaminants away from the product.
- It should provide benefits during the transportation, distribution and marketing of the product.
- It should prevent the possibility of loss of the product.
- Packaging format, weight and dimensions should provide comfort to the consumer.
- Product packaging such as food should be protected from physical and chemical damages.
- It should be able to introduce the product, attract attention and present the necessary information for the correct use of the product.

Functions of Packaging

- **Carrier Function**

The intended carrier function in packaging is the function of transporting a product safely and easily from the place of production to the area of use with low transportation costs at the same time.

- **Protective function**

While the packaging protects the product from physical damage such as falling, impact, vibration, wetting, and injury, it should also protect the product quality.

a. Storage Function: The packaging must be systematically stacked on top of each other and designed to occupy a minimum of storage space.

b. Quantity function: Packaging depending on the condition of the product on a weight basis. It directly affects its size. The larger the packaging package, the lower the packaging cost per unit, but the larger the package, the more difficult it is for the consumer to transport and finish before the expiration date, which is not preferred.

- **Narrative Function**

This function provides a link between the consumer and the product. If the product of the packaging communicates correctly and quickly, the faster the product will be sold. While packaging gives introductory and instructive messages to the consumer, it should also appeal to the emotions thanks to its design.

a. Advertising function: With this function, the target is to attract the attention of the consumer to the product. Each of the graphic, image, text and color elements on the product can be presented as an advertisement. It is a silent salesperson who sells the packaging product to the consumer. The consumer first encounters the packaging and the purchasing movement is directed according to the packaging. While very good packaging may sell the bad product, bad packaging may cause not very good packaging to be sold. Nowadays, the advertising function of packaging is gaining more and more importance due to the requirements of fast consumption culture.

b. Marketing Function: It is the function of the packaging, which contains the advertising elements correctly, to present the product for sale correctly and on the spot. Today's marketers are aware that packaging plays a huge role in differentiation and marketing strategies and they try to use this function effectively [7].

Packaging design studies are usually carried out in line with certain marketing-oriented functions such as increasing sales, market enlargement, cost reduction, getting a quick reaction from the target audience and the market, or introducing new products. Among the packaging design elements, the color, the shape of the packaging, typography symbols and numbers that attract the attention of the consumer the most. Packages that use these four design elements effectively are successful. The necessary features to make the packaging design successful can be summarized as follows.

The packaging should catch the consumer's eyes directly, without searching, while walking between the shelves.

- Packaging should be constantly renewed and compatible with all times by tending to trends and fashion trends.
- Packaging should affect the consumer emotionally.

- It should have its own characteristics and be distinguishable from its competitors.
- The selected printing and production technique should be compatible with the packaging material. The print must be of good quality.

It is unlikely that a package will be adopted and liked by all target audiences at the same time. Target audiences often have different demographic and psychological characteristics. Categorizing target audiences is a logical approach for designers and manufacturers. Before the packaging design is made, the profile of the consumers in the market where the product will be presented, their expectations from the packaging and the sales environments should be thoroughly researched and analyzed. While determining the target audience in packaging design, groups can be made according to age, including young consumers, children and consumers over the age of fifty, while designs can be made according to gender (female/male) and geographical conditions.

The elements that make up the packaging design can be listed as structural design, graphic design and color. Within the scope of this study, the subject of color in packaging design has been emphasized. Colors that we can notice thanks to our sense of sight are formed by the perception of reflected light or direct light. Color is a visual language that we feel through our eyes and has the ability to create perception in our minds [8-9]. Color is a basic design element that emerges as a result of the impact of light on objects and surfaces. Colors make everything around us visible thanks to light. Light, surface, eye and brain provide this process of appearance. It is physiological for the light to reach our brain by hitting various places and refraction in the eye, but the perception of our brain is a psychological event. Colors with proven effects on people are used to evoke many emotions. Warm colors are often stimulating, while cool colors are relaxing and restful. Red has been used for centuries as a sign of nobility and wealth, while generally describing passion and danger. Color, which affects traditions and customs, has always included a meaning from the past to the present, even in ancient times. The Greeks have always cared and studied colors in the past and observed and researched what happens in the mixing of colors. Aristotle revealed that all colors between black and white are composed of the combination of light and black. In later times, Hippocrates said that there are 4 colors and they occur as white, red, black and yellow. Even religions had colors during the Middle Ages and the renaissance. Every color is a symbol. The 4 elements found in nature used to represent the 4 primary colors. These are listed as follows; Fire-Red, Earth-Black, Air-Blue, Water-Violet. When things were like this, colors had many meanings for people. Many of these meanings were mysterious. Blue represented heaven, red showed hell, purple meant cruelty, and white represented clarity. In the 15th century, purple was the color worn by the rich of the time in Europe, and these clothes were complemented by red caps. In Rome, people called senators usually wore red. Newton, on the other hand, came out in those years and said the 7 color theory.

There are general opinions and perceptions about colors in the minds of consumers and designers. For example, when it is said red, passion, blue sadness, yellow luxury feelings have been created by many people [10]. However, due to the complex structures of colors, they should not be contented with general judgment and should be examined in detail in terms of their use in the market and psychologically. While colors can have meanings individually, they can gain new meanings by interacting when used together.

Black color; it is the color of power, majesty, passion, solemnity and formality. It also means mourning in many western cultures. Being the darkest color, it is known to evoke pessimism, bad faith and melancholy, which are negative effects and feelings. The use of black color in packaging adds a serious image to the product and is a color that can attract the attention of the consumer. It shows the product quality and expensive by using it in the packaging.



Figure 1: Example of packaging in black color

Brown is the color of the earth, represents abundance, and is known to evoke feelings of hesitation and doubt. It has been determined that people move faster in brown-walled environments and start moving faster. The color of fast food restaurants is usually brown, as it is more unbearable to sit in brown environments compared to other colors. Brown is the color of mourning in India. It can be preferred because of the color of the brown product, which is preferred in chocolate packaging.



Figure 2: Example of packaging in brown color
 (<https://en.99designs.es/profiles/FredrickBalois/designs/1857638>)

White is the color of cleanliness, innocence and purity. In many cultures, the fact that wedding dresses are white is due to the feeling of purity. In some Asian societies, white is the color of mourning. It uses the word white in its advertising discourses for almost all detergent brands, as it creates a feeling of cleanliness. It is frequently preferred in milk, detergent, medicine and medical equipment packaging.



Figure 3: Example of packaging in white color (<https://www.apple.com/tr/shop/bag>)

Red is an extremely dynamic and powerful color. While it can motivate and encourage people, it also gives energy. It evokes warmth, enthusiasm, extroversion. It accelerates blood circulation and pulse, has the effect of increasing adrenaline. Red is the color of danger and caution by many cultures. This is why red is used on the safety buttons of weapons. Traffic signs are also used because of the attractiveness of red. In India, the color of the wedding dress is red, which means luck. Since the red flag evokes rebellion and revolution, many countries prefer this color in their flags. Since the red color is formed just behind the retina, we feel closer to ourselves. It is known that since the visibility of red on the shelves is higher than other colors, it attracts more attention and is frequently used in packaging. Red evokes an irresistible sense of reception in packaging design. Like strawberry, it is the color of the blackberry family and can be used in packaging to express them and spices. It is preferred by many food companies because it is known for its appetite.



Figure 4: Example of packaging in white color (<https://www.johnsbyrne.com/blog/packaging-colors-say-brand/>)

Yellow; The brightest color. Screams for attention; that's why yellow is preferred for warning lights. Also, taxis in the world are yellow because of their attractiveness. The dominant colors of autumn, yellow and yellow-orange, have a strong appeal that captures our emotions. It tells of happiness and joy. Yellow is also associated with wit, refinement, and practicality. There is a sense of social life and reflect work together. It is a symbol of impermanence. In all the sad beauty of autumn, it is possible to watch it in its dark tones. It is used in the meaning of reign and palace in Chinese culture. It is used in packaging to emphasize sourness, lemon and freshness. It is generally used in oil and tea packaging to create a sense of wellness. Golden yellow adds expensiveness and prestige to the packaging.



Figure 5: Examples of packaging in yellow and golden yellow color
 (<https://percept.com.au/work/packaging/lipton-yellow/> and
<https://www.designerpeople.com/blog/packaging-design-trends-2021/>)

The dominant color of the world, blue is a timid color; describes relaxation and passivity. When used in dark tones or intensely, it creates a depressing and gloomy effect, when used in light tones or mixed with white, it creates a soothing and reassuring effect. It is a color that reflects the throat area in our body. Blue color is the symbol of sea, sky and wide horizons. It symbolizes limitlessness and farsightedness. It represents peace and calms. Arabs believe that blue slows down the blood flow, that's why the evil eye bead is blue. In the West, they paint the bridge piers blue to reduce suicides. It has been determined that children misbehave less in schools with blue walls. It is the color of immortality in Chinese culture. Blue colors evoke the feeling of moving away from us. It is generally used in blue color water packages, which creates an image of cleanliness, and in yoghurt packages because it creates a feeling of freshness.



Figure 6: Example of packaging in blue color (<https://www.designerpeople.com/>)

Green describes silence. It is thought that the heart organ, an organ that affects us the most emotionally, is in the energy field emitted by this color. It is the color of nature and spring. It is the color that gives confidence. Therefore, it is the dominant color in the logos of banks. Green stimulates creativity. That is why green is chosen on the kitchens of big restaurants. Green is also used in hospitals because of its relaxing properties. The green area is determined to take people less stomach discomfort. It is a color used in food packaging, in the packaging of mint-apple or sour products, and in places where it is desired to give the impression of being beneficial to health because it evokes ideas such as recycling and renewal. It is used in the packaging of yoghurt and fresh plant flavored products due to the impression of health and naturalness.



Figure 7: Example of packaging in green color (<https://www.dairyfoods.com/articles/91687-dairy-packaging-gets-a-makeover>)

Orange is a color that makes us feel the comfort and brightness of the sun, has exciting, encouraging, cheerful and happy effects. It reinforces enthusiasm, cheerfulness and friendliness. It is used in spicy or fruity foods in food packaging. It is also frequently preferred in sun oil and creams.



Figure 8: Example of packaging in orange color (<https://99designs.com/product-packaging-design/contests/create-packaging-design-fun-squeeze-jelly-treat-886656>)

Pink is the color of togetherness, happiness and trust. It usually attracts the attention of girls. It is used in the cosmetics industry and in confectionery packaging.



Figure 9: Example of packaging in pink color (<https://www.ateriet.com/pink-food-packaging-design/>)

Purple is the color of wealth, luxury, royalty, nobility, self-confidence and headstrongness, intelligence and power. However, it also appears as a neurotic color. Intense use reveals feelings of fear and regret. Purple and blue tones can be used in detergent packaging as they create a feeling of microorganism killing. In food packaging, purple color is used to indicate the flavors of grapes and blueberries.



Figure 10: Example of packaging in purple color
(<https://www.pinterest.com/packagingexpert/purples-in-packaging/>)

EXPERIMENTAL

In this section, various tests were carried out in order to understand the effects of colors on human psychology. In the literature researches, it has been determined that the green color evokes a sour feeling in people. In order to compare this result with the experimental group, three chips packages were designed. The designed chips packages are given in figure 11. As the experimental group, 100 students from Marmara University were used as a sample group.



Figure 11: Chips packaging designs shown to the sample group

In this experiment, people were shown these 3 pictures and asked which ones were seasonal greens, which were spicy, which were salty, and which were cheese.

Studies have shown that yellow/brown color evokes a sense of naturalness in people. In order to compare this result with the experimental group, 2 cracker packages were designed. The cracker packages designed are given below. In this experiment, these two pictures were shown and it was asked which one was natural and which one was synthetic.



Figure 12: The designed cracker packages in the study

In this research, a test was conducted to find out which color is the official color in people's eyes. In order to compare this result with the experimental group, three different colored cars are shown.



Figure 13: Figure 13: The three different colored cars shown to the experimental group

The pictures given above were shown to people and asked to rank these cars from civilian to official.

Studies have shown that red color is associated with chocolate. In order to compare this result with the experimental group, three different colored chocolate packages were designed. The chocolate packages designed are given below.



Figure 14: The three different colored chocolate packages shown to the experimental group

The pictures given above were shown to people and asked which one was a real chocolate package. In the researches, it has been revealed that the color of death is different in European countries compared to Asian countries. It has been revealed that the color of death in European countries is black. In order to compare this result with the experimental group, black and white colors, which are the colors of death in two different cultures, were shown to the sample group and they were asked which one evoked death.

RESULTS

Within the scope of the experiment, chips packages were shown to the sample group. As a result, when the answers given by the experimental group students were examined, the green one of the chips packages in the pictures was associated with seasonal greens with a rate of 85%. The red one of the chips packets was associated with spicy with 80% rate. In the blue one of the chips packages, 50% associated with salty, but 50% associated with cheese. As we can see from here, people think of sour and fresh flavors when they see the color green. That's why people associated the green color with seasonal greens with a sour taste. As the red color evokes things that are spicy in people's minds, people considered the red color appropriate for the spicy chips. In the blue color, unexpectedly, the blue color was associated with a low amount of salt.

In another example, cracker packs were shown to the sample group. As a result, when the answers given by the experimental group students were examined, the purple cracker packages in the pictures were associated with synthetic content with a rate of 80%. The yellow/brown cracker package was associated with 80% of the natural ingredients. As we can see from here, when people see earth tones, they think of naturalness. When people see the color purple, they think of synthetic content, that is, artificial content, compared to earth tones.

In another example, cars of different colors were shown to the sample group. As a result, when the answers given by the experimental group students were examined, the black car in the pictures was associated with the official car with a ratio of 95%. The gray one of the cars was associated with a medium official car with a rate of 85%. The white one is associated with the civilian car with a rate of 90%.

In another example, chocolate packages in different colors were shown to the sample group. As a result, when the answers given by the students in the experimental group were examined, the red packaged chocolate among

the pictures was associated with the red packaged chocolate at a rate of 100%. The red color, which we know has a great effect on people, has also shown itself here. In another example, black and white colors were shown to the sample group. As a result, when the answers given by the experimental group students were examined, the color black from the colors in the pictures was 90% people associated death with black. In 10%, people associated the color white with death.

CONCLUSIONS

In this study, the purchasing effect of colors was investigated. When the results are examined, it is seen that red color evokes a desire to buy and is associated with chocolate, green/brown colors make people feel that the product is natural, black color evokes death in the majority, also people associate black color with official institutions in the examination where cars are used, and finally, red reminds spicy tastes. It was concluded that green evokes fresh tastes. In the results obtained, the response distributions of the individuals are generally in a narrow area, that is, they are consistent. As a result, colors create certain emotions in people, which directly affects people's purchasing behavior.

REFERENCES

- [1] Ozcan, A.: New approaches in smart packaging technologies, *Proceedings of the 10th International Symposium on Graphic Engineering and Design, GRID2020*, (Ed: Sandra Dedijer), (pp 21-37). Novi Sad, Serbia, (2020) <https://doi.org/10.24867/grid-2020-p1>
- [2] Jobber, D.; Ellis-Chadwick, F.: *Principles and Practice of Marketing*, 9.E. Mcgraw-Hill. ISBN: 152684723x, e-book, (2019)
- [3] Zelzele, Ö. B. et al: Ambalaj sektöründe kullanılan saf selüloz kağıtların baskısında optimum flekso baskı parametrelerinin belirlenmesi. *Proceedings of the International Congress on New Trends in Science, Engineering and Technology*, (pp. 54-60). Barcelona, Spain (2017).
- [4] Meyers, H. M.; Lubliner, M. J.: *Başarılı ambalaj Başarılı pazarlama*, (Çev: Zehra Üsdiken), Rota Yayınları, ISBN:9789758296644, İstanbul, Turkey, (2003).
- [5] Majid, I. et al: Novel food packaging technologies: innovations and future prospective. *Journal of the Saudi Society of Agricultural Sciences*, Vol. 17 No. 4, pp. 454-462. (2018) <https://doi.org/10.1016/j.jssas.2016.11.003>
- [6] Martinez, L. M. et al: True colors: consumers' packaging choices depend on the color of retail environment. *Journal of Retailing and Consumer Services*, Vol. 59, 102372, (2021), <https://doi.org/10.1016/j.jretconser.2020.102372>
- [7] Ampuero, O.; Vila, N.: Consumer perceptions of product packaging, *Journal of Consumer Marketing*, Vol. 23 No. 2, pp. 100-112. (2006), <https://doi.org/10.1108/07363760610655032>
- [8] Sara, R: Packaging as a retail marketing tool, *International Journal of Physical Distribution & Logistics Management*, Vol. 20 No. 8, pp. 29-30. (1990), <https://doi.org/10.1108/eum00000000000372>
- [9] Baptista, I. et al: Effects of packaging color on expected flavor, texture, and liking of chocolate in Brazil and France. *International Journal of Gastronomy and Food Science*, 24, 100340. (2021), <https://doi.org/10.1016/j.ijgfs.2021.100340>
- [10] Holtzschue, L.: (Çev: Akdenizli, F.) *Rengi anlamak: tasarımcılar için kılavuz kitap*. Duvar Yayınları. İstanbul, Turkey, (2009).

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