

THE ROLE OF COLOR AND PACKAGING SHAPE ON CONSUMER EMOTIONAL RESPONSES: A NEUROMARKETING STUDY WITH EEG

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ABSTRACT

Packaging design, particularly color and shape, plays a crucial role in shaping consumer perceptions and emotional responses toward a product, ultimately influencing purchasing decisions. With advances in neuromarketing technology, the use of electroencephalography (EEG) enables researchers to objectively analyze how the brain responds to various visual elements in packaging, including levels of engagement and emotions evoked. This study aims to examine the impact of packaging color and shape on consumers' emotional responses using EEG, providing insights for companies in designing more effective packaging to attract attention and enhance consumer preferences. A qualitative descriptive method was employed to understand the influence of color and shape on consumer emotions. Data were collected through documentation, including observation notes, interview transcripts, video recordings, and literature reviews related to neuromarketing and packaging design. Thematic analysis was used to identify patterns of emotional responses, offering in-depth insights into how visual packaging elements affect consumer purchasing decisions. The findings indicate that color and shape play a significant role in eliciting emotional responses that influence consumer preferences and purchasing decisions. Bright and contrasting colors tend to attract attention and evoke positive emotions, while ergonomic and unique packaging shapes enhance emotional engagement and perceived product quality. This study confirms that visual packaging elements contribute to consumers' sensory and psychological experiences, which can be leveraged in marketing strategies to increase product appeal.

KEYWORDS neuromarketing, consumer emotional response, packaging color, shape



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INTRODUCTION

In the modern marketing world, increasingly fierce competition encourages companies to continue to seek innovative ways to attract attention and influence consumer purchasing decisions (Yusepa et al., 2024). One aspect that is increasingly receiving attention is product packaging design, which not only functions as a container, but also as a visual communication tool that can shape consumer perceptions and emotional responses (Fajrina & Pramesti, 2023). The color and shape of the packaging are two main elements in a visual marketing strategy because both have a significant role in creating attraction and building brand identity (Febrian et al., 2024).

Product packaging plays an important role in attracting consumer attention and influencing purchasing decisions (Alhamdi, 2020). Visual elements such as color and shape of packaging are the main factors in creating a first impression of a product. Research by (Sari et al., 2023) shows that each color can evoke certain emotions, such as red which is associated with passion and energy, or blue which gives the impression of calmness and trust. Packaging color can evoke certain emotions, such as joy, calmness, or trust, while packaging shape can influence consumer perceptions of product comfort and quality (Chitturi et al., 2022). Likewise, ergonomic and unique packaging shapes can provide a more enjoyable and attractive experience for consumers, thus influencing their perceptions of product value and quality (Shukla et al., 2022). However, although many studies have highlighted the importance of color and shape in marketing, there are still limitations in understanding how these factors directly affect consumer brain activity and emotional responses.

Neuromarketing is a new approach in marketing research that examines the brain and nervous system's responses to various marketing elements, including product packaging (Alsharif et al., 2023). One method widely used in neuromarketing is electroencephalography (EEG), which allows researchers to measure electrical activity in the brain related to consumer attention, emotional engagement, and preferences (*Consumer neuroscience as a tool to monitor the impact of aromas on consumer emotions when buying food*, 2021). Using EEG, researchers can identify brain wave patterns that emerge when a person is exposed to different packaging designs. Previous studies have shown that certain color and packaging shape combinations can increase emotional engagement and trigger more positive neurological reactions, which can ultimately contribute to purchasing decisions. However, further research is needed to explore how specific interactions between color and packaging shape can influence consumers' sensory and emotional experiences in more detail.

Previous research conducted by (Lestari et al., 2022) stated that Indonesian-themed illustrations on beverage product packaging can increase consumers' emotional appeal in purchasing decisions. This is influenced by the aesthetic aspects of the illustration, including style, object selection, color combinations, and themes used. In addition, packaging with typical Indonesian illustrations also has more value as collectibles or memorabilia that are attractive to consumers.

The novelty of this study lies in its approach that uses neuromarketing with Electroencephalography (EEG) to measure consumers' emotional responses to the

color and shape of packaging. Different from previous studies that mostly use survey methods or observation-based experiments, this study explores neurological aspects to understand how packaging design directly affects perception and purchasing decisions at the brain level. The purpose of this study is to identify and analyze the relationship between visual elements of packaging and brain activity that reflects emotional responses, so that it can provide more objective insights for marketers in designing more effective packaging design strategies to attract and retain consumers.

RESEARCH METHODS

This study uses a qualitative descriptive method to understand how packaging color and shape affect consumer emotions. Data collection in this study was carried out through documentation that includes various sources of information, such as observation notes, interview transcripts, video recordings, and literature reviews relevant to neuromarketing and packaging design. Observation notes were used to record consumers' spontaneous reactions when viewing various packaging designs, while interview transcripts helped to gain an in-depth understanding of their perceptions and preferences for packaging color and shape. Video recordings supported the analysis of facial expressions and body language that indicated emotional responses, while literature provided a theoretical context for interpreting the research results. By combining these various sources of documentation, the study was able to obtain rich and in-depth data on consumers' subjective experiences.

The collected data were analyzed descriptively using a thematic approach, where patterns of consumer emotional responses were identified and categorized based on documentation findings. This analysis allows researchers to understand how visual elements of packaging, such as color and shape, can trigger certain emotional reactions that have the potential to influence purchasing decisions. With a qualitative descriptive method, this study not only provides insight into consumer preferences but also explains more broadly how visual factors in packaging can shape consumers' emotional experiences with a product.

RESULT AND DISCUSSION

The color and shape of packaging play a significant role in consumers' emotional responses, as evidenced by various neuromarketing studies. The theory of color psychology developed by Goethe explains that color can evoke certain emotions that influence the perception of a product (ARORA, n.d.). For example, red is often associated with passion, energy, and urgency, so it is widely used in product packaging that wants to attract attention quickly, such as fast food or discount promotions. Conversely, blue gives the impression of calm, trust, and professionalism, so it is often used in technology or health product packaging (Yuan et al., 2023). The study by (Ghorbani & Westermann, 2025) also emphasized that color not only plays a role in attracting attention but also in building brand associations and shaping consumer preferences for a product.

In addition to color, packaging shape also plays a role in creating an emotional response that supports a positive experience of a product (Elkhattat & Medhat,

2022). Based on Gestalt theory in visual perception, humans tend to process visual information as a whole, so that harmonious and balanced packaging shapes are more easily accepted emotionally (Tseng & Chuang, 2024). Like packaging with curved corners, it is more often associated with softness and comfort, so it is widely used in personal care and food products (Zhou et al., 2021). Meanwhile, sharper or geometric packaging shapes can give a modern, strong, and bold impression, which is suitable for technology products or sports equipment. So that packaging design that optimizes the combination of color and shape can increase the emotional appeal of the product, influence the perception of quality, and encourage consumer purchasing decisions (kui Yang et al., 2024).

Neuromarketing utilizes electroencephalography (EEG) technology to analyze how the brain responds to various marketing elements, including packaging design (Ali et al., 2022). A study conducted by (Sin et al., 2024) showed that aesthetically pleasing packaging can increase activity in the orbitofrontal cortex, the part of the brain that plays a role in processing emotional experiences and rewards. This indicates that well-designed packaging can evoke positive feelings and strengthen the appeal of a product in the eyes of consumers. This brain response also contributes to increasing emotional engagement, which ultimately influences purchasing decisions. Thus, understanding how visual elements in packaging stimulate the brain can help companies create more effective marketing strategies.

In addition to aesthetic aspects, packaging color also has a significant influence on emotional appeal and consumer purchasing tendencies. (Su & Wang, 2024) found that packaging colors that match the product category can increase positive associations and emotional appeal. For example, food products with warm-colored packaging such as red and orange are often associated with delicious and appetizing flavors, while more neutral or cool colors tend to be less attractive. So choosing the right color not only affects visual appeal but also creates a stronger emotional experience for consumers, which can ultimately increase preference for a product and strengthen brand loyalty (Kuo et al., 2022).

In addition to color, packaging shape also plays an important role in shaping consumer preferences and emotional responses. A study conducted by (Deng, 2022) found that packaging with curved corners is preferred over sharp-cornered shapes, because smoother corners trigger a more positive emotional response. This can be explained through the theory of embodied cognition, which states that sensory experiences, such as how an object feels in the hand, can influence a person's emotions and perceptions of a product (Chen et al., 2023) Consumers tend to feel more comfortable and attracted to packaging with soft and ergonomic shapes, because these designs give the impression of warmth, friendliness, and comfort. Conversely, sharper packaging shapes are often associated with tension or discomfort, which can reduce the emotional appeal of the product (Mohamad et al., 2021).

Further support for the impact of packaging form on consumer engagement is obtained from an EEG study conducted by (Semenova et al., 2023). This study found that ergonomically designed packaging increased beta wave activity in brain areas associated with attention and engagement, suggesting that physically comfortable packaging forms can also increase consumer focus and interest in

products. Higher beta wave activity indicates increased cognitive and emotional processes, which contribute to more positive purchasing decisions (Xu & Liu, 2024). Therefore, in marketing strategies, choosing ergonomic and sensory-appealing packaging forms can be an important factor in increasing product appeal, building positive experiences for consumers, and strengthening brand loyalty.

Thus, findings from various studies show that optimal packaging design through the right combination of colors and ergonomic shapes can increase consumer emotional responses and strengthen brand loyalty. This understanding is very important for companies in designing neuromarketing-based marketing strategies. By considering the theory of color psychology, Gestalt visual perception, and neuromarketing data from EEG studies, companies can create packaging that is not only aesthetically appealing but also effective in evoking positive emotions and driving purchasing decisions.

CONCLUSION

The results of the study show that color and shape of packaging play an important role in evoking emotional responses in consumers, which influence preferences and purchasing decisions. Bright and contrasting colors tend to evoke positive emotions such as interest and excitement, while neutral or dark colors give an elegant impression but can reduce emotional appeal. In addition, ergonomic and unique packaging shapes increase emotional engagement and perceptions of product quality. By understanding the theory of color psychology, Gestalt visual perception, and neuromarketing data from EEG studies, companies can design packaging that is not only aesthetically appealing but also effective in evoking positive emotions and strengthening brand loyalty.

For further research, it is recommended to explore more deeply how individual factors such as age, gender, and cultural background influence emotional responses to packaging color and shape. In addition, research can integrate other neuromarketing technologies, such as eye-tracking and fMRI, to better understand the cognitive mechanisms behind packaging preferences. On the implementation side, companies can optimize packaging design by conducting neuromarketing-based trials before product launch to ensure the desired emotional impact. This strategy can be applied across product categories to enhance visual appeal, strengthen brand image, and drive more effective purchasing decisions.

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