

RESEARCH ON THE INFLUENCE OF PACKAGING DESIGN AND MATERIALS ON CONSUMER CHOICE IN CHOCOLATE PURCHASES

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Abstract:

This study focuses on the design of cardboard chocolate packaging that combines functionality with aesthetic appeal. Emphasis is placed on the use of environmentally friendly materials and current trends in packaging design. Three distinct designs on three different materials were developed, each representing a unique approach – minimalist, eco-friendly, and playful – to explore how varying styles and materials influence consumer perception. Using an online survey and a focus group, consumer opinions regarding various packaging concepts were gathered. Prior to conducting the study, three hypotheses were proposed regarding the impact of packaging on consumer purchasing decisions. Hypothesis 1 stated: Packaging design significantly affects purchasing choices, with consumers showing greater preference for chocolate with distinctive and eye-catching packaging. Hypothesis 2 posited: Consumers favor packaging made from environmentally friendly materials. Hypothesis 3 suggested: Hidden messages within packaging enhance customer loyalty and encourage repeat purchases. Based on the results of the online survey and the focus group, the findings confirmed that consumers value eco-friendly materials and standout designs, while also responding positively to the idea of hidden messages as a strategy to foster repeat purchases. The study concludes that packaging strongly affects product perception, underscoring the importance of thoughtful, user-oriented, and environmentally conscious design.

Keywords: Packaging design, Visual appearance, Cardboard, Survey, Consumer opinion

1. INTRODUCTION

In today's highly competitive marketplace, packaging plays a far more complex role than merely protecting a product during transport and storage. It functions as a key visual and communicative element that influences consumer decision-making at the point of sale [1]. Beyond its protective role, packaging serves as a recognizable identity and a symbol of reliability and quality, both of which are essential for building consumer trust [1]. Consequently, packaging has evolved into a strategic marketing tool and one of the primary factors that capture consumers' attention and influence purchasing decisions [2].

Packaging often represents the first physical and visual point of contact between a product and a potential buyer, acting as a silent communicator that conveys information about product attributes and brand promises before direct interaction occurs [1]. This initial visual impression plays a crucial role in consumer psychology, as the external appearance of packaging strongly shapes expectations about the product inside [2]. Visual elements such as colour, imagery, texture, and typography are therefore deliberately selected to evoke specific emotional responses and associations in consumers' minds [2].

Among visual elements, colour is one of the most influential factors in how consumers perceive and react to products [3]. Different colour trigger distinct emotions, associations, and expectations, making colour a powerful tool in packaging communication [3], [4]. In the context of packaging design, colour is often the first element noticed by consumers, as it is more visible from a distance than text or detailed graphics [5]. When applied strategically, colour can create positive associations, enhance brand recognition, and stimulate desired emotional responses, provided it aligns with the target audience, product category, and intended message [3], [4].

In addition to color, form and shape play a significant role in shaping consumer perception. Different shapes communicate different values and emotional qualities, such as softness, friendliness, stability, or strength [3]. Although many packaging forms are standardized, unique and unconventional shapes tend to attract more attention and remain longer in consumers' memory, thereby contributing to stronger product differentiation on crowded shelves [6]. Establishing a coherent and recognizable design language is therefore essential for building product identity and memorability [3].

Typography represents another crucial design element in packaging, functioning as both a carrier of information and a visual expression of brand personality [6], [7], [8]. Similar to colour and form, typography conveys emotional and symbolic meaning and must be selected carefully to reflect the tone, values, and positioning of the brand [3], [9]. Serif typefaces are often associated with tradition, elegance, and authority, whereas sans-serif typefaces tend to communicate modernity, simplicity, and clarity [3], [7]. Clear and legible typography is particularly important for informative purposes, as it ensures effective communication and enhances readability [7], [8].

Material selection further extends the communicative and functional role of packaging. From a logistical perspective, packaging materials protect products throughout the supply chain, preserve freshness, and ensure safety and usability for consumers [1]. At the same time, materials contribute to the tactile experience of packaging, influencing perceived quality through texture, weight, and rigidity [6]. A pleasant tactile experience can encourage prolonged interaction with a product, increasing the likelihood of purchase, whereas poorly chosen materials may negatively affect perceived quality and usability [1], [6].

In recent years, material choice has become increasingly linked to sustainability, as rising environmental awareness has led consumers to favour eco-friendly and recyclable packaging solutions [2]. Research shows that consumer understanding and perception of sustainable packaging vary considerably, and that clear environmental communication and labelling can positively influence consumer attitudes and purchase intentions [10], [11]. Several studies indicate that sustainable packaging attributes – such as recyclability, renewable materials, and reduced environmental impact – are associated with higher consumer acceptance and more favourable brand evaluations, even though environmental concern does not always directly translate into purchasing behaviour [12], [13].

Packaging design also plays a crucial role in shaping consumers' perceptions of product quality. Well-designed and high-quality packaging can enhance perceived value and create expectations of superior product performance, even prior to consumption [14]. Conversely, weak or poorly designed packaging may undermine consumer confidence and reduce perceived product quality, regardless of the actual quality of the product inside [14]. Emotional responses triggered by packaging design – such as excitement, anticipation, or a sense of luxury – can further strengthen brand attachment and encourage repeat purchases [14].

Despite the increasing digitalization of marketing and retail environments, packaging remains one of the few tangible brand touchpoints available to consumers. Empirical research indicates that packaging can stimulate impulse buying, even when consumers did not initially intend to make a purchase, highlighting its strong influence on consumer behaviour at the point of sale [6].

The present research project focused on the design of chocolate packaging as a case study. The aim was to develop three distinct packaging concepts with diverse graphic identities that reflect contemporary market trends and consumer expectations [15], [16]. Each concept was paired with a different material choice and design approach – minimalist, eco-friendly, and playful – allowing for a comparative analysis of how visual style and material selection influence consumer perception.

The purpose of the research was to investigate how different design and material choices affect consumers' purchasing decisions. Consumer responses were collected and analysed through an online survey and a focus group, enabling the examination of both perceptual and emotional reactions to the proposed packaging designs.

The study was guided by three hypotheses. Hypothesis 1 proposed that packaging design significantly affects purchasing decisions, with consumers showing a stronger preference for chocolate products featuring distinctive and visually engaging packaging. Hypothesis 2 suggested that consumers favour

packaging made from environmentally friendly materials. Hypothesis 3 assumed that the inclusion of hidden messages within packaging enhances customer loyalty and encourages repeat purchases.

2. EXPERIMENTAL

The research project aimed to examine how packaging design and material selection influence consumer perception and purchasing decisions for chocolate products. Three packaging concepts were developed to reflect distinct stylistic and communicative approaches commonly identified in contemporary packaging design literature: an ecological (Figure 1), a minimalist (Figure 2), and a playful (Figure 3) concept [15].



Figure 1: Chocolate packaging with an ecological concept emphasizing natural appearance and sustainability cues



Figure 2: Chocolate packaging with a minimalist concept with restrained typography and high-contrast layout



Figure 3: Chocolate packaging with a playful concept characterized by vivid colors and informal graphic elements

Each prototype was produced using different paperboard materials suitable for professional folding carton production. The ecological concept was made from handmade paper derived from Japanese knotweed (*Reynoutria japonica*), produced at the Institute of Pulp and Paper (ICP Ljubljana), with a grammage of 230 g/m². Alternative fiber-based materials and invasive plant fibers have been identified in previous studies as promising sustainable resources for packaging applications due to their renewable origin and reduced environmental impact [17], [18]. The paper was naturally beige, with visible fibers and slight surface irregularities, which visually reinforced its ecological narrative. The minimalist concept was printed on black-through solid board (270 g/m²) with a smooth, non-reflective surface. The deep black background emphasized typographic contrast and created associations with elegance, exclusivity, and premium product positioning, characteristics commonly attributed to minimalist packaging aesthetics [19], [20]. The playful concept was produced using white GC1 food-grade cardboard (300 g/m²) with a coated front surface, offering high color saturation and durability, suitable for vibrant graphics and frequent handling.

All prototypes were digitally printed in CMYK and finished by manual folding and gluing to maintain dimensional consistency. The dieline was identical for all versions, ensuring that differences in evaluation could be attributed exclusively to graphic design and substrate properties, a standard control approach in packaging perception studies [19].

A quantitative online survey was completed by 57 respondents, of whom 73.2% were female and 26.8% male, with the majority belonging to Generation Z (91.2%). In addition, a moderated focus group consisting of 10 participants (90% female, 10% male, all Generation Z) provided qualitative feedback. The focus on younger consumers aligns with previous research indicating that this demographic is particularly responsive to visual design and sustainability cues in packaging [21].

Participants evaluated each packaging type for visual appeal, perceived quality, environmental friendliness, purchase intention, and emotional impression. Responses were collected using five-point Likert scales, a widely accepted method for measuring attitudes and perceptual responses in consumer research [22]. Open-ended questions were included to capture qualitative insights. Quantitative data were analyzed using descriptive statistics, while qualitative responses were thematically categorized to identify recurring patterns in emotional and symbolic interpretation.

3. RESULTS WITH DISCUSSION

The results revealed clear differences in how participants perceived the three packaging concepts and materials (Figure 4, Figure 5). According to the online survey (Figure 5), the minimalist design was chosen as the most appealing by 40% of respondents, followed by the playful design, while the ecological concept received the fewest votes, with 20% of participants selecting it as their preferred option. In contrast, within the focus group, the playful concept stood out markedly – it was favored by 70% of participants, mainly due to its vibrant colors, playful typography, and positive emotional tone.

The ecological concept, printed on handmade paper from Japanese knotweed, was appreciated mainly for its natural appearance and tactile quality, but it was perceived as less durable and somewhat less refined. This finding is consistent with previous research indicating that although consumers value sustainable packaging attributes, these do not necessarily translate into the highest aesthetic preference or purchase intention [23].

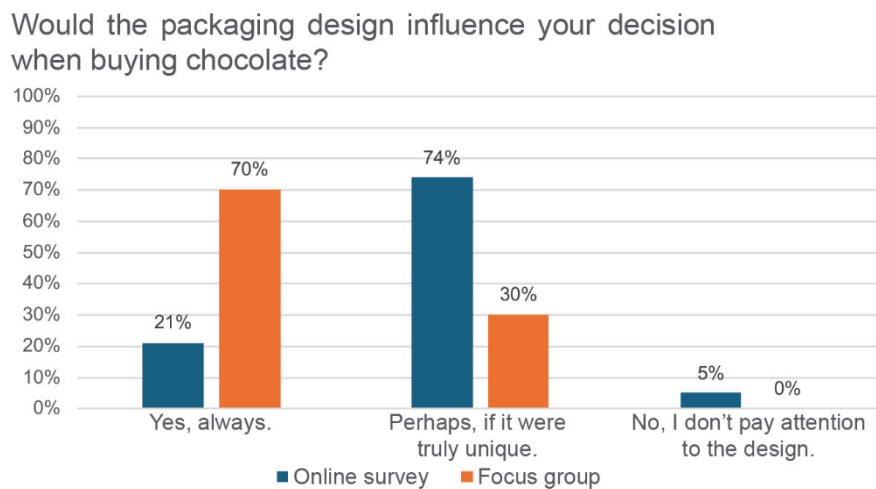


Figure 4: Impact of packaging design on chocolate purchase intentions

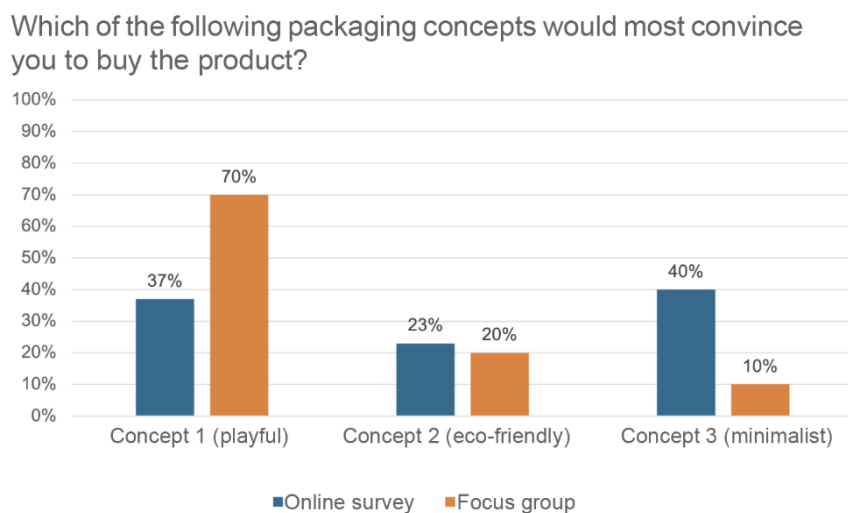


Figure 5: Preferred packaging concept influencing chocolate purchase decisions

Participants consistently rated the ecological packaging highest for environmental friendliness, with an average score of 4.8 out of 5, confirming that sustainability remains a key consumer value. The minimalist packaging achieved strong scores for premium perception, with an average score of 4.2 out of 5, associated with elegance and modern aesthetics. The playful design achieved the highest overall rating for visual appeal, with an average score of 4.6 out of 5, reflecting its vivid colors and emotionally engaging presentation.

The material evaluation added valuable context to these findings. The black solid board used in the minimalist concept was described as elegant, modern, and high-quality, although some respondents noted it felt “cold” or “too formal.” The Japanese knotweed paper was praised for its unique texture and visible natural fibers, which conveyed ecological authenticity; however, a number of participants mentioned that it appeared less resistant to handling and moisture. The white GC1 cardboard used for the playful version was viewed as visually bright, structurally solid, and suitable for vivid colors, making it the most universally accepted substrate in terms of usability and perceived quality.

Responses concerning the hidden message – a subtle graphical element symbolizing natural origin and emotional warmth – were particularly significant. In the online survey, 65% of respondents stated that discovering such a hidden detail would delight them, while 32% reported that it would motivate them to repurchase the product (Figure 6). Within the focus group, these effects were even more pronounced: 80% of participants reported positive emotional responses to the hidden message, and 70% stated that it would encourage brand loyalty and repeat purchase. These results demonstrate that even minimal symbolic cues can enhance consumer engagement and strengthen brand perception. Similar effects of subtle symbolic and sensory cues on emotional engagement, brand recall, and product appreciation have been reported in previous consumer and packaging studies [24].

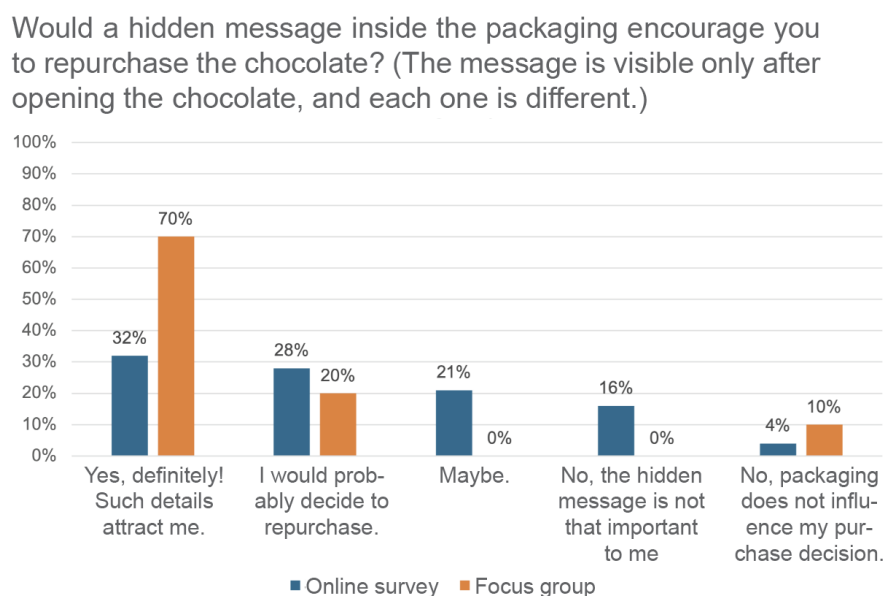


Figure 6: Effect of a hidden message on consumers' willingness to repurchase chocolate

Qualitative feedback from the focus group further supported these results. Participants described the playful design as friendly, fun, and emotionally engaging; the minimalist design as sophisticated and luxurious; and the ecological design as authentic and artisanal. Those who consciously noticed the hidden message reported stronger emotional connection and recall, confirming that subtle symbolic elements can successfully reinforce brand storytelling.

Overall, both visual design and material selection substantially affected consumer evaluation. Packaging that combined coherent graphic expression, tactile quality, and symbolic communication achieved the highest overall effectiveness and credibility in representing a brand's identity.

4. CONCLUSIONS

The research confirmed that packaging design plays a crucial role in consumer decision-making. The results demonstrated that consumers preferred packaging that was visually distinctive, emotionally engaging, and conveyed a sense of quality. Sustainability also proved to be an important factor, as environmentally friendly materials enhanced the perceived responsibility and trustworthiness of the brand.

The findings supported the first hypothesis, which stated that packaging design influences consumer purchasing decisions. The playful design received the highest ratings for attractiveness and purchase intention, confirming that visually appealing packaging can significantly increase consumer interest.

The second hypothesis – that consumers prefer packaging made from environmentally friendly materials – was also confirmed. The ecological packaging, made from Japanese knotweed paper, was rated highest for environmental awareness and brand responsibility, even though it scored slightly lower in visual appeal.

The third hypothesis proposed that a subtle or hidden message embedded in packaging design contributes to greater customer loyalty and repeat purchases. This was partially confirmed, as participants expressed stronger emotional connection and brand recall when the design included implicit symbolic elements, such as natural motifs or personal storytelling. However, long-term loyalty could not be fully assessed within the scope of this study.

In summary, the study demonstrated that the combination of aesthetically distinctive, sustainable, and emotionally meaningful packaging creates the most positive consumer response. These results emphasize the importance of aligning visual communication, material selection, and brand values to achieve both functional efficiency and ethical resonance with consumers.

Future research could extend this study by involving a broader demographic sample, additional product types, and an exploration of interactive or digital packaging solutions.

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