

A 10 Years Systematic Review on Corporate Visual Identity Element Color Impact on Purchase Intention

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Abstract

Purpose – This study examines the impact of color on purchase intention, reviewing research from the past decade. The aim is to identify mediating variables between color and purchase intention and develop a theoretical model linking color to consumer responses.

Design/methodology/approach – A systematic literature review was conducted, analyzing 228 articles from the Web of Science and Scopus databases, covering 2014–2024. Stringent inclusion and exclusion criteria were applied, selecting 37 key articles. These articles underwent a thematic review and synthesis to ensure depth and comprehensiveness.

Findings – The study identifies five key mediating factors through which color influences purchase intention: brand image, brand attitude, consumer perception, color preference, and the combination of elements, including traffic light labels. These findings establish a strong empirical link from color to mediating factors and purchase intention.

Research limitations – The review, covering only 37 articles from the Web of Science and Scopus, is not exhaustive. Time and resource constraints limited the search scope, excluding relevant studies from other databases. Additionally, subjective preferences, aesthetics, environmental factors, cultural background, and demographics, which affect perceptions of color and purchase intention, were not fully explored.

Practical implications – The review provides theoretical insights for brand managers and designers, guiding the effective use of color in visual identity, packaging, and advertising. It offers design strategies to better achieve marketing goals.

Originality/value – This study offers a recent, focused review on the impact of color on purchase intention, linking it to brand image, attitude, and consumer perception, and contributing to the development of a theoretical model connecting color with purchase intention.

Keywords: Color, Corporate Visual Identity, Brand Image, Brand Attitude, Consumer Perception, Color Preference, Element Combination, Traffic Light Labels, Purchase Intension.

Introduction

The impact of color on consumer response is indisputable, and its significance is particularly crucial for brand managers, advertisers, and designers (Paul & Okan, 2011). Before making consumption decisions, consumers not only consider the functional aspects of a product but also respond to the brand's visual stimuli (Brakus et al., 2009). Grimes and Doolen have identified symbols, colors, shapes, and fonts as the key elements of visual stimuli (Bottomley & Doyle, 2006). Among these, color stands as a central element of brand experience, intricately linked to cognition, psychology, and culture (Guerreiro & Lessa, 2022). Research in psychology and marketing has delved into the attributes of color—hue, lightness, saturation, and color temperature—and the distinct impacts of these four attributes (Guerreiro & Lessa, 2022).

Color plays a pivotal role in brand building, encompassing the establishment of brand uniqueness and the evocation of emotional responses in consumers, thus significantly influencing the process of branding (Moser, 2003). The role of color in branding can be categorized into four functions: product category identification (consumers use color to make an initial judgment about the type of product), brand recognition (associating a specific color with a brand), enhancing meaning and associations (using color to evoke associations with a product and brand within a specific category), and differentiation from competitors (Garber et al., 2000).

Research Problem

In the fields of design and marketing, there is a lack of theoretical models to guide the impact of color on marketing, particularly regarding the influence of color on consumer purchase intention. Despite the growing recognition of color's significance, current literature on color research fails to provide adequate guidelines for marketing applications (Labrecque et al., 2013). This shortcoming is largely due to the complex and multifaceted nature of color studies, particularly concerning the intricate effects of color on consumer decision-making. To address this complexity, many scholars have proposed comprehensive color models. For instance, Labrecque et al (2013), introduced an integrated conceptual framework that encompasses the effects of color on consumer perception, cognition, emotion, and behavior. Their aim was to decipher the process through which consumers' brains encode and decode color, thus shedding light on the mechanisms underlying consumer decision-making.

Based on this understanding, it becomes clear that the influence of color on consumer motivation must undergo a cognitive processing phase. Only by comprehending this entire process can we accurately grasp how color affects purchasing motivation. However, while there is a wealth of empirical research in the literature on memory, perception, and cognition, there is a lack of empirical evidence tracing the entire chain from color processing to purchase motivation. Extending prior research on color processing to include marketing outcomes is crucial for developing interdisciplinary guidelines that bridge design and marketing. Therefore, this study aims to establish a theoretical color model that can offer guidance for both marketing and design professionals. Based on the problems of the past literature, proposed 3 research questions. Firstly, in the past 10 years, what research has been conducted on the color impact on purchase intention? Secondly, what are the mediating variables of color affecting purchase intention? Thirdly, what developments and additions on the impact of color in the past 10 years?

Necessity of the Study

The necessity of this study lies in the lack of empirical evidence connecting color, cognitive processing, and purchase intention. Without this evidence chain, the impact of color in the marketing domain would lack solid support and fail to offer actionable guidance for marketing practice. Although color is widely recognized as a crucial factor influencing consumer behavior, the specific mechanisms by which it exerts this influence remain underexplored. Existing research primarily focuses on the effects of color on consumer perception and emotion, but falls short of thoroughly examining how these perceptions and emotions translate into actual purchase intention. Therefore, only through empirical research that clarifies the entire pathway of color's influence on consumers—including the role of cognitive processing—can we provide the theoretical foundation needed for effective marketing strategies. Furthermore, in marketing decision-making, color often interacts with other factors, making it challenging to precisely quantify its standalone effects. Without theoretical models supported by empirical data, marketers will struggle to accurately predict the marketing outcomes of specific colors in different contexts, potentially leading to wasted resources and suboptimal results. Consequently, establishing an empirical evidence chain that links color, processing, and purchase intention not only fills a gap in academic research but also offers practical, actionable guidance that can enhance the precision and effectiveness of marketing activities.

Previous Literature Review and Research Gap

Over the past decade, there has been a lack of literature reviews focusing on the impact of color on purchase intention. This paper compiles a review of studies on the influence of color on consumers (see Table 1). For example, Dzulkipli & Mustafar (2013), summarized research from 1963 to 2013 on the effects of color on memory, as well as the relationships between attention, arousal, and memory. Their work covers a long time span and focuses specifically on memory. Elliot & Maier (2014), reviewed studies from 2003 to 2013 on the effects of color on cognition, perception, and behavior, with particular attention to color's influence on consumer behavior in the food and beverage sector. Arabi (2017), examined research from 1964 to 2013 on the impact of color on information processing, consumer preferences, and product attitudes. Due to a lack of studies on purchase intention, the author suggested future research should explore how color influences purchase intention through psychological processes. Labrecque et al (2013), reviewed 30 years of research, from 1983 to 2013, on the impact of color in the marketing domain. Their review included variables such as consumer perception, cognition, emotion, and purchase intention, and they developed a comprehensive conceptual framework. However, since 2013, there has been no follow-up literature review, leaving a gap in research from the past decade. The aforementioned reviews all focus on studies conducted before 2013. However, Vermeir & Roose (2020) used a desk research method to comprehensively review studies from 2010 to 2020 on the impact of visual design cues—including color, shape, aesthetics, typography, logos, regionality, dynamics, and spatial relationships—on consumer psychological processes (e.g., attention, cognition, emotion, motivation, perception, and attitudes) and behavioral outcomes. Although their review covers the entire process from psychological reactions to purchasing behavior, it lacks a detailed and thorough examination of color's specific impact on motivational responses. Their analysis of color's three elements—hue, lightness, and saturation—addresses their effects on perception, attitudes, attention, cognition, emotion, and motivation. However, only a limited amount of research focused on the influence of hue on purchase motivation, and there were no studies related to the effects of lightness and saturation on purchase intention. Additionally, the

research on color's impact on psychological processes does not provide direct evidence of its influence on purchase intention.

Therefore, based on previous literature reviews, there is a notable gap in studies since 2014 that specifically focus on the influence of color on consumer responses, particularly on purchase intention. Furthermore, there is a lack of research connecting the chain of effects between color, consumer reactions, and purchase intention. This paper aims to address this gap by reviewing the impact of color on purchase intention from 2014 to 2024, thereby contributing to a deeper understanding of the relationship between this independent variable and its dependent outcomes. The paper will focus on consumer impact and attempt to establish a theoretical framework for understanding the influence of color on purchase intention.

Table1

A Comparative Analysis of Related Reviews

Title	Author	Research Topics and Findings	Year/ Covered Year
Colour as a brand-related stimulus in the scope of destination brand experience design: an overview	Manuela Guerreiro & Joana Lessa	The role of color in tourism experience in a brand, and the impact of consumer behaviour. Color is influenced by color perception, emotional associations, semantic dependence, and context.	2022
Visual Design Cues Impacting Food Choice: A Review and Future Research Agenda	Iris Vermeir & Gudrun Roose	Visual cues impact consumers' purchasing behavior when selecting food, influencing their psychological processes, product perceptions, attitudes, and ultimately, their behavior.	2020; 2010- 2020
Influence of colors on consumer behavior conceptual and theoretical approaches	Amel Arabi	Color influences consumer attention, perception, emotional responses, and learning enhancement, while also differentiating products from competitors. It affects appetite, mood, and the formation of attitudes toward products and brands. However, consumer perception of color is not static; it is shaped by factors such as color preferences, nationality, culture, gender, age, and psychological state. In packaging design, color impacts consumer perception, evaluation, and purchasing decisions. It influences perceptions of taste, quality, and price, as well as the assessment of product suitability and purchase motivation. The consistency between a product's color, its intrinsic characteristics, and previous	2017, 1964- 2013

		consumer experiences plays a crucial role in shaping purchasing decisions.	
The Influence of Colour on Memory Performance: A Review	Mariam Adawiah Dzulkifli & Muhammad Faiz Mustafar	Cognitive processes encompass perception, attention, memory, and thinking. This paper reviews the research on the impact of color on memory performance.	2013, 1963-2013
The Marketers' Prismatic Palette: A Review of Color Research and Future Directions	Lauren.Labrecque; Vanessa M. Patrick; George R. Milne	The literature review proposed a comprehensive conceptual framework to study color impact on consumers' perception, cognition, emotion, and purchase intention. The embodied meaning taking biological responses, and the referential meaning taking learned associations, this two meaning influence including psychological outcomes and marketing outcomes.	2013; 1983-2013
Color Psychology: Effects of Perceiving Color on Psychological Functioning in Humans	Andrew J. Elliot and Markus A. Maier	The meanings embedded in color influence consumer emotions, cognition, and behavior. This paper explores a decade of advancements in color theory and methodology, along with the latest empirical findings. It reviews the rich meanings associated with colors such as red, green, blue, white, and black, and how the same color can convey different meanings in varying contexts.	2013; 2003-2013
Are you selling the right colour? A cross-cultural review of colour as a marketing cue	Mubeen M. Aslam	Color triggers responses through instinct and association, altering the meanings of products, brands, and situations linked to it. Understanding consumer color preferences can help predict consumer behavior. A cross-cultural marketing review of the psychological and cultural associations with color suggests that cultural values, marketing objectives, and desired customer relationships influence a company's color choices. This emphasizes the importance of cross-cultural color studies in global marketing.	2006

In the past, literature on the influence of color has been categorized initially within the marketing field. Crowley (1993), classified the effects of color on consumers into two dimensions: arousal and evaluation. Arousal refers to the physiological responses triggered by color, which can increase heart rate and brain activity (Crowley, 1993), while evaluation is not related to physiological responses but rather affects changes in attitudes (Crowley, 1993; Middlestadt, 1990). Subsequently, scholars differentiated the influence of color into symbolic and referential meanings. Symbolic meaning (Zhu & Meyers-Levy, 2005) is an innate response to color stimuli (Meyers-Levy & Zhu, 2010), which elicits feelings such as pleasure or sadness independent of contextual influences. On the other hand, referential meaning involves

semantic associations triggered by color stimuli (Meyers-Levy & Zhu, 2010), which are learned and context-dependent. For example, seeing red might be associated with Coca-Cola, while blue might be linked to Pepsi when purchasing beverages. Labrecque et al. (2013) proposed a conceptual model indicating that symbolic meaning arises from biological responses, whereas referential meaning is a result of learned associations and cultural influences. Both forms of meaning jointly affect psychological and market behavior domains. However, research on the interactions between these factors is limited, and the effects are generally described in broad terms. Future research needs to explore the specific relationships between these factors. A review of color literature reveals that past studies have predominantly focused on its effects on attention, cognition, memory, perception, attitude, and purchasing decisions.

Color and Attention

One of the primary functions of color is to capture consumer attention, as consumers often notice color before recognizing shapes and text. The influence of color hue on attention has been widely studied, with some research suggesting that red is more attention-grabbing than green (Gauthier et al., 2013). As a result, many managers and designers prioritize red when selecting brand colors, only considering other colors afterward. Examples include Coca-Cola in the beverage industry, KFC in fast food, Haidilao in Chinese hot pot, and Uniqlo in Japanese fashion. The use of red in online advertisement frames has been shown to increase click-through rates (Sokolik et al., 2014). It is well known that the primary purpose of warning signs is to capture attention to effectively alert individuals. Therefore, the color used in warning signs best demonstrates the impact of color on attention. For instance, red is commonly used in traffic signals and warning signs because it has the longest wavelength, allowing it to be seen from a greater distance. However, some studies argue that black is more attention-grabbing (Cabrera et al., 2017), as seen in chemical warning signs that use black symbols on a yellow background.

Moreover, the degree of visual appeal of a color depends on the contrast between the color used and the surrounding environment—the greater the contrast, the more prominent the effect (Krishna, 2017). Thus, discussing the attractiveness of a single color in isolation can be somewhat limited, highlighting the need to consider contrast. For instance, the red in traffic signs stands out because it is set against a white background, while black warning signs are more prominent against a yellow background. Additionally, complementary colors, which are the most contrasting color combinations, can be used to attract attention. Red and green, as complementary colors, have higher color salience than blue and yellow (Frey et al., 2011).

There is also evidence that brightness impacts attention. Colors lighter than their surroundings are more likely to be noticed and appear more prominent (Milosavljevic et al., 2012), potentially increasing the likelihood that a product will be noticed and considered. However, while color can attract attention, it can also detract from the focus on other critical information (Lee et al., 2016). Therefore, when using highly attention-grabbing colors, it is essential to balance this with the importance of key information. In summary, attention can be drawn using either absolute colors, which involve a single color, or contrastive colors, such as complementary colors. Both methods can effectively capture attention.

Color and Cognition

The impact of color on consumer cognition involves the establishment of special associations between color, meaning, and emotion (Krishna, 2017). Once consumers have established a connection between a brand and a color, they can quickly identify the brand, product, or service upon seeing the color (Singh, 2006). According to Guerreiro and Lessa (2022), beyond eliciting instinctive reactions, color can also create associations between people, products, and brands through learned connections, which are influenced by context and background. Based on the connectionist memory model, these associations are constructed through the linkage of color with specific messages, concepts, objects, and experiences. Individuals store semantic information in networks composed of conceptual nodes and links, which are activated by external stimuli through these connections (Labrecque et al., 2013). The connectionist model has been applied to understand brand associations (Janiszewski & Van Osselaer, 2000) and advertising memory (Forehand & Keller, 1996).

Typically, color associations occur unconsciously, producing automatic effects (Elliot et al., 2007), activating motivations (Mehta & Zhu, 2009) and concepts (Rubin, 2010). Managers can leverage these associations to achieve marketing objectives, such as enhancing brand awareness (Skorinko et al., 2006) and brand preference (Labrecque & Milne, 2012). Historically, black was a rare and expensive pigment (Guerreiro & Lessa, 2022), often associated with nobility and high cost (Bottomley & Doyle, 2006; Chang & Lin, 2010), which extended to associations with credibility, high quality (Chang & Lin, 2010), and luxury (Bottomley & Doyle, 2006).

Color can be associated not only with specific concepts, preferences, and values but also with product categories and national symbolism (Pastoureau, 2020; Garaus & Halkias, 2019). Bottomley and Doyle (2006), argue that color is related to brand meaning, differentiation, and sensory-social functions. For instance, blue is better suited for promoting functional brands (focused on utilitarian products, such as cars and televisions), while red is more appropriate for sensory-social brands (focused on products that provide sensory enjoyment, such as perfumes). Blue fosters creativity (Lehrer, 2012), whereas red enhances analytical skills (Cabrera, 2017). Using color combinations found in national flags in products can evoke associations with a country, aiding in the communication of the country-of-origin concept (Labrecque et al., 2013). For example, red and yellow represent China, while red, white, and blue signify the United States. Blue is the most frequently used color in the logos of globally renowned companies (Labrecque & Milne, 2012), as it is associated with perceptions of high competitiveness (Labrecque & Milne, 2012). This is evident in the branding of high-tech companies like Microsoft, IBM, Meta, and Twitter, as well as in supermarkets like Walmart and Carrefour and automotive companies like Volkswagen and Ford, all of which use blue as a company color.

In addition to perceptions of competitiveness, color influences health perceptions in the food industry through associations. For instance, black is perceived as less healthy than red, although the opposite may be true in warning contexts (Cabrera et al., 2017). Both red and black often evoke cautionary associations, leading to negative perceptions. Consumers typically associate warm colors with unhealthy foods, such as fast food (Singh, 2006). The world's top three fast food giants—McDonald's, KFC, and Burger King—all prominently use red, yellow, and orange in their branding, reinforcing the association between warm colors

and fast food. Conversely, cool colors are perceived as healthier than warm colors (Rompay et al., 2016; Fenko et al., 2016; Tijssen et al., 2017). However, Marques da Rosa et al. (2019) argue that warm colors are perceived as healthier than cool colors, indicating a conflict that requires further research.

Additionally, green calorie labels on candy (as opposed to white) make consumers perceive the product as healthier (Schuldt, 2013), as green is associated with health. Research also suggests that the dishware color affects the perception of greasiness in food, with darker snacks on light plates perceived as greasier. The stronger the contrast between the color brightness of the dishware and the food, the more intense the greasiness perception (Kapossa & Lick, 2020). Whether color in restaurant visual identity affects consumer health perceptions (e.g., energy or greasiness perceptions) and the comparison of dishware and food color brightness needs further investigation in the foodservice industry, drawing attention to the importance of dishware color selection.

Color and Memory

According to Arabi (2017), color is a crucial factor in memory retention. When applied appropriately, color can enhance our understanding and recall of information, improving the ability to remember both text and images. Dzulkifli and Mustafar (2013), in their review of the literature on the effects of color on memory, concluded that color positively influences memory performance. Consistency between color encoding and retrieval can enhance memory recall, while color contrast, such as between background and foreground, hue, brightness, and saturation, significantly boosts attention and memory retention.

In addition to color consistency and contrast, the emotional response elicited by color can further enhance memory formation (Dzulkifli & Mustafar, 2013). Moreover, consumers often associate colors with brands, using them as cues for brand memory (Tavassoli & Han, 2002). Strong brands embed their colors into consumers' consciousness, creating a strong association between color and brand. For instance, in the cola industry, red is associated with Coca-Cola, and blue with Pepsi. Similarly, in the fast-food industry, red is linked to KFC, and yellow to McDonald's.

Color and Consumer Perception

Color evokes instinctual perceptions in humans. Labrecque et al (2013), suggest that the biological responses to color are innate and not learned. These instinctive reactions are a result of biological evolution and are crucial for survival (Mollon, 1989). In nature, color serves protective functions for both plants and animals, signaling toxicity or aiding in camouflage (Labrecque et al., 2013). This instinctual perception influences humans by regulating the endocrine system. Color stimulates the optic nerve, which transmits signals to the hypothalamus and subsequently to the pineal and pituitary glands, thereby influencing the endocrine system (Mahnke, 1996). This process manifests externally by affecting heart rate, respiration, blood pressure, muscle activation, blinking, palmar conductance, and brainwaves (Labrecque et al., 2013), which, in turn, affect the physiology of both animals and humans (Bellizzi et al., 1983). In the field of neurology, the relationship between color and human perception can also be referred to as synesthesia, where one stimulus triggers an automatic perception (Labrecque et al., 2013), a normal sensory experience at the subconscious level (Cytowic, 1989). Human perception of color elicits emotional responses, resulting in a

synesthetic experience between color and emotion (Ward, 2004). Additionally, color stimulates physiological responses; for instance, warm colors affect the sympathetic nervous system, while cool colors influence the parasympathetic nervous system, with both impacting blood pressure, pulse rate, and breathing frequency (Arabi, 2017). However, the extent of color's physiological impact depends on the area of application, as human perception of color is immediate and rapid, contingent on the quantity of color displayed (Guerreiro & Lessa, 2022). Only when a large area of space is filled with a single color will significant physiological responses be elicited.

The hue, brightness, temperature, and saturation of color collectively influence emotional perception. For instance, red is known to evoke strong emotions, with the emotional impact determined by the association between specific colors and emotions (Dzulkifli & Mustafar, 2013). A survey by Kaya and Epps (2004), found that most college students associated green with peace and tranquility, and black with fear and sadness. Red is often seen as a passionate, energetic color (Adams & Osgood, 1973; Lewinski, 1938) and is considered warm, evoking a sense of warmth (Carvalho & Spence, 2018; Elliot & Maier, 2014) and excitement (Singh, 2006; Rompay et al., 2016). In contrast, cool colors like blue and green are perceived as calming (Madden et al., 2000), invoking feelings of peace and relaxation, and promoting sensations of tranquility and freshness (Richardson et al., 1994). Furthermore, light colors bring about feelings of peace (Gorn, Chattopadhyay, Yi, & Dahl, 1997) and are associated with positive emotions such as happiness and relaxation (Jonaskaite et al., 2019). High saturation colors tend to increase excitement and likability (Gorn et al., 1997), and are linked to feelings of pleasure (Jonaskaite et al., 2019).

Color also influences consumers' perceptions of quality (Hoegg & Alba, 2007; Singh, 2006; Scott & Vargas, 2007). For example, products featuring contrasting colors, such as red and green or blue and orange, are often perceived as offering good value but lower quality (Orth & Malkewitz, 2008). Conversely, high-quality, expensive products typically use dark and cool tones, while lighter colors are associated with lower-priced items (Ampuero & Vila, 2006). Dark beer, for instance, is perceived as having a higher value than light beer (Carvalho, 2017). Another study found that adding green labels to beer packaging can enhance perceptions of quality (Barnett & Spence, 2016).

Color influences taste perception, with the relationship between color and taste affecting both gustatory and olfactory sensations, a phenomenon known in medicine as synesthesia. However, this relationship can also be shaped through learned associations (Guerreiro & Lessa, 2022). For example, red and pink are commonly associated with sweetness, white and blue with saltiness, green and yellow with sourness, and black and green with bitterness (Woods et al., 2016). Consumers may perceive products with red packaging as sweeter than those packaged in green, blue, or white containers (Huang & Lu, 2016; Harrar, 2011), and blue-green packaging as more likely to evoke associations with sourness (Marques da Rosa et al., 2019). Increasing the proportion of orange on orange juice packaging can raise expectations of sweetness (Rebollar et al., 2012; Marques da Rosa et al., 2019), and warm colors can enhance perceptions of sweetness. The color of coffee cups, the type of coffee, and their alignment also affect flavor expectations (Carvalho et al., 2019), with dark beer perceived as more bitter than light beer (Carvalho, 2017). However, when color and taste are mismatched, taste perception can be impaired (Spence et al., 2010). Additionally, research on color brightness

indicates that lighter colors, including artificial ones, can lead to perceptions of lower quality (Creusen & Schoormans, 2005) and a sense of unhealthiness (Mai et al., 2016). The influence of color saturation on consumer perception is also notable; Gorn et al. (1997) found that consumers generally prefer high-saturation colors, which also enhance flavor perception (Tijssen et al., 2017). However, high-saturation colors are often associated with lower quality, while low-saturation colors are linked to luxury (Scott & Vargas, 2007).

Color also affects perceptions of container size, spatial atmosphere, and speed. The saturation of packaging color can influence consumers' perceptions of container size, increasing the perceived volume (Hagtvedt & Brasel, 2017). Consumers may view high-saturation packaging as less healthy than low-saturation packaging for the same product (Mead & Richerson, 2018). Color not only affects taste perception but is also linked to functional perceptions. In a study on dishwashing liquids, yellow was associated with a lemon scent, green with mildness and no fragrance, orange with antibacterial properties, and blue with grease removal (Garber & Hyatt, 2003). Color also impacts overall perceptions of spatial atmosphere. For instance, blue is associated with relaxation, a sense of spaciousness, and increased trust (Alberts & van der Geest, 2011; Gorn et al., 2004; Lee & Rao, 2010). Ranaweera and Wasala (2020) found that when consumers encounter green, which evokes environmental associations, they perceive the business as more eco-friendly, whereas red does not convey the same impression. Color influences the perception of speed, which is crucial for media that need to be recognized from a distance (Sohier, 2004). Consumers perceive red more quickly than blue (Deriner, 2000), making red a suitable choice for restaurant signage that needs to catch the attention of customers from afar, thereby drawing them in to learn more about the establishment.

Color and Brand Attitude

Color preferences can evoke positive or negative reactions, which in turn influence attitudes. A person's preference for a particular color can reflect in their attitude towards a brand. In other words, a brand's use of colors that align with consumer preferences can enhance brand likability. However, this effect is limited, as color preferences vary among consumers. For instance, cultural differences do not significantly affect people's preference for prominent blue tones (Chattopadhyay et al., 2005). Some studies suggest that consumers generally prefer lighter colors over darker ones (Kareklas et al., 2014), while others indicate a preference for monochromatic black or white (Greenleaf, 2010). When the product category is unknown, people tend to favor a spectrum from red to yellow and blue to green (Rosa et al., 2019). Warm-toned packaging is also generally preferred (Mai et al., 2016), with red and orange, being more stimulating colors, increasing likability and attractiveness (Peng & Jemmott, 2018).

Color preference is not static; it is influenced by factors such as nationality, ethnicity, gender, and age, which in turn shape consumer attitudes and behaviors (Aslam, 2006; Chebat & Morrin, 2007; Funk & Ndubisi, 2006). Moreover, different consumers have varying preferences for how they receive information. Some consumers prefer to process information verbally, while others are more inclined towards visual information (Richardson, 1977). Therefore, the choice of communication method should be carefully considered. Consistency can also foster a positive brand attitude. When the visual elements of packaging align with the texture, taste, and caloric content of food, it creates a positive brand experience (Rebollar et al., 2017). This enhances processing fluency, leading to a more favorable attitude. Conversely, inconsistency can result in uncertainty regarding the product's identity (Vermeir & Roose, 2020). Abstract

visual elements can reduce consumer uncertainty when selecting products (Velasco et al., 2016). Additionally, the brightness of colors can impact consumer attitudes; studies have found that higher brightness levels are associated with more positive attitudes (Gorn et al., 1997; Hemphill, 1996).

Color and Purchase Intention

By attracting attention, shaping brand personality, and evoking emotional perceptions, color can further enhance purchase motivation. The impact of color on purchase motivation has been a central topic in visual communication design for decades, rooted in color theory and professional expertise, yet it remains an emerging area of study (Guerreiro & Lessa, 2022). In recent years, many studies have continued to focus on this domain, recognizing color as one of the most influential elements that can affect purchase intent (Huang & Lu, 2016), and sometimes even as a critical factor in determining consumer willingness (Arabi, 2017). For larger products, high-saturation colors can lead to more positive consumer attitudes and a greater willingness to pay higher prices (Hagtvedt & Brase, 2017; Peng, 2017). In well-known brands, consumers often associate specific colors with brand identity (e.g., Coca-Cola red, McDonald's yellow), and these colors help shape brand personality, leading to reflexive purchasing behavior (Hynes, 2009). Research has also shown that the color of price fonts can influence price perception, with male customers perceiving red fonts as indicating more favorable pricing compared to black fonts (Puccinelli et al., 2013), thereby enhancing purchase intent.

Furthermore, when product color aligns with its purpose or intended use, it can bolster purchase intent. In the luxury automobile sector, for example, blue symbolizes functionality, while red represents luxury (Bottomley & Doyle, 2006; Hanss et al., 2012; Ngo et al., 2012). This consistency aids in processing fluency, leading to more favorable brand attitudes. The combination of visual elements can also drive product preference and purchase intent (De Sousa et al., 2020; Karnal et al., 2016). For instance, a coffee design featuring an angular shape with green or a round shape with pink is more likely to enhance consumer preference and purchase intent compared to other color-shape combinations (Marques da Rosa et al., 2019).

Color influences purchase intent by eliciting emotional responses from consumers. Emotions can affect how consumers evaluate store ambiance, advertising, and product purchase intentions, as well as their willingness to pay (Labrecque & Milne, 2012). Studies have shown that due to the emotional effects of blue, a blue background can reduce purchase delay and strengthen purchase inclination, ultimately leading to increased purchases (Bellizzi & Hite, 1992). Moreover, Bellizzi et al. (1983) found that cool tones help relax consumers and promote purchasing. Color can trigger automatic emotional cues, initiating an approach or avoidance psychological process (Elliot & Maier, 2012). For instance, red can trigger avoidance motivation (Mehta & Zhu, 2009; Elliot, 2009), directly reducing purchase intent, possibly due to its common association with prohibitive signals. Conversely, blue backgrounds tend to trigger approach motivation, thereby increasing purchase intent (Bellizzi & Hite, 1992). However, red can also sometimes evoke approach motivation, stimulating competitiveness and leading to a stronger desire to purchase (Babin et al., 2003) as it elicits intense emotions that activate an approach response.

The research in this paper is conducted in two primary steps. First, by reviewing past literature on color, the study assesses the current progress in understanding how color influences decision-making processes, focusing on its effects on attention, cognition, perception, memory, attitude, and purchase intention. This foundation enables an understanding of recent research trends in the field, especially concerning the impact of color on purchase motivation. Second, a comprehensive analysis and summary of the articles selected based on inclusion and exclusion criteria are conducted. The ultimate impact of color is reflected in its influence on purchase intention, which necessitates a dynamic and results-oriented examination of research findings in this field. Thus, synthesizing the literature on color and purchase intention is crucial for gaining a holistic understanding of current research dynamics. The guiding principle and purpose of this study are to empirically demonstrate the relationship between color and purchase motivation, beyond merely examining its effects on memory, cognition, perception, and attitude.

Methodology

This study employs a systematic literature review (SLR) as its research methodology. In recent years, SLR has gained popularity among scholars and has been increasingly applied across various disciplines due to its comprehensive and systematic approach to organizing and synthesizing literature, transparent procedures, and replicable research process. Often referred to as the "gold standard" in literature review methodology (Davis et al., 2014), SLR was initially developed in the field of medicine. However, its scientific rigor and advanced techniques have led to its adoption in the social sciences, where it has become a preferred method for critically assessing research in specific areas by establishing rigorous inclusion and exclusion criteria tailored to the research questions (Snyder, 2019). This systematic approach enables the exhaustive collection of all relevant literature that meets the inclusion criteria, minimizing omissions and biases to ensure the reliability of the research findings (Moher et al., 2009). The process of conducting an SLR is typically divided into three stages: planning, conducting, and reporting the review (Tranfield et al., 2003). The structural, representative, and critical nature of SLR provides a scientifically sound and innovative perspective on the research field under investigation (Gregersen & Johansen, 2021).

Data Collection and Processing

The search strings were derived from an initial literature review and were constructed based on keywords relevant to the research field and research questions. These keywords included full terms, acronyms, synonyms, and different expressions of the key terms. Boolean logic was applied using the search string: (Color OR Colour) AND ("likelihood to purchase" OR "willingness to pay" OR "willingness to buy" OR "Purchase intention" OR "Purchase intent"). To ensure both precision and comprehensiveness in the search process, no wildcards were used, and relevant strings were listed as thoroughly as possible (as shown in Table 2).

Table 2

Database and Search String

Source	Search string
Web of science	(Color OR Colour) AND (“likelihood to purchase” OR “willingness to pay” OR “willingness to buy” OR “Purchase intention” OR “Purchase intent”)
Scopus	(Color OR Colour) AND (“likelihood to purchase” OR “willingness to pay” OR “willingness to buy” OR “Purchase intention” OR “Purchase intent”)

The search was conducted by the first author in May 2024 and subsequently reviewed by the co-authors. The study follows the PRISMA guidelines (Figure 1) with steps including identification, screening, eligibility assessment, and analysis. After multiple filtering stages, 37 articles were selected (Appendix), which are labeled sequentially as ID1-ID37.

The first search was conducted in the Web of Science database, initially yielding 690 results. After limiting the publication years to 2014-2024, 563 results remained. Further narrowing by language to English-only publications resulted in 549 entries. To ensure the quality of the literature and focus solely on research articles, we excluded “early access” articles, conference papers, literature reviews, book chapters, “editorial material,” and letters, leaving 515 results. Given the interdisciplinary nature of this study, involving business management, design, and marketing, we restricted the “Web of Science categories” to food science and technology, business, economics, hospitality, management, and communication, reducing the count to 329. Further refinement using “Citation Topics Meso” narrowed the focus to food science, management, economic theory, hospitality, leisure, sports, and tourism, resulting in 97 articles from the Web of Science database.

The second search was conducted in the Scopus database, initially yielding 761 results. After limiting the publication years to 2014-2024, 612 results remained. We then restricted the subject areas to business, management, accounting, social sciences, decision sciences, arts and humanities, and interdisciplinary studies, resulting in 203 articles. Limiting the document type to journal articles reduced the count to 176, and further narrowing by language to English resulted in 174 entries. Keyword restrictions were applied to terms such as purchase intention, purchase motivation, color, consumer behavior, perception, human, article, sales, female, consumer, choice experiment, adult, marketing, perceptual analysis, male, decision making, consumer preference, brand image, purchase intent, sensory evaluation, buying, product design, human, consumer behavior, advertising, product packaging, packaging design, information, functional food, consumer preference, color saturation, attitude, attention, visual elements, visual cues, visual complexity, visual world, survey, sensory marketing, sensory contribution, saturation, retail, questionnaire, purchase decision, product, preference behavior, liking, packaging color, motivation, marketing, logo design, food marketing, typography, emotion, consumer choice, consumer acceptance, color brightness, awareness, arousal, aesthetics, ad, aesthetic measurement, aesthetic experience, ad consistency, ad trust, ad image, ad elements, and actual purchase. After these keyword restrictions, 131 articles remained from the Scopus database.

The inclusion and exclusion criteria were developed based on the study's focus, further refining the preliminary results to align with the research topic. The study concentrates on the impact of color on consumer purchase motivation over the past decade. The inclusion criteria encompass literature on the influence of color on purchase motivation, excluding psychological processes unrelated to purchase motivation. The selected articles cover disciplines such as marketing, management, design, branding, psychology, and neuroscience, while excluding food science. The review includes visual elements of color in corporate visual identity, packaging, and advertising, but excludes the impact of the product's color itself on purchase motivation. Only English-language publications were included, with non-English articles excluded. The selected articles are empirical studies, while literature reviews and commentary articles were excluded. Articles published between 2014 and 2024 were included, with those published before 2014 excluded (as shown in Table 3).

Table 3

Inclusion and Exclusion Criteria

	Inclusion	Exclusion
Focus	1.Color impact on purchase intention; 2.Disciplines focus on marketing, management, design, branding, psychology, and neuroscience; 3.The color contained in corporate visual identity, package, image, advertisement impact on purchase intention;	1.Color impact on psychological process not contact to purchase intention; 2.The disciplines beside marketing, management and design, such as food science; 3.The color contained in the product itself impact on purchase intention
Publication language	English	Other language, e.g, Chinese, Spanish
Type of publication	Empirical studies	Literature reviews, commentaries
Date	2014-2024	Before 2014

In a refined literature screening process, the initial search across two databases yielded a total of 228 potentially relevant articles. After removing duplicates, 205 articles remained. Of these, 138 articles were excluded for being irrelevant to the topic, leaving 67 articles. Further, 21 articles were excluded due to insufficient relevance to the relationship between color and purchase motivation, and 4 additional duplicates were removed. Out of the remaining articles, 5 were specifically focused on the impact of product color on purchase motivation. Consequently, 37 articles were identified as core articles closely related to the theme.

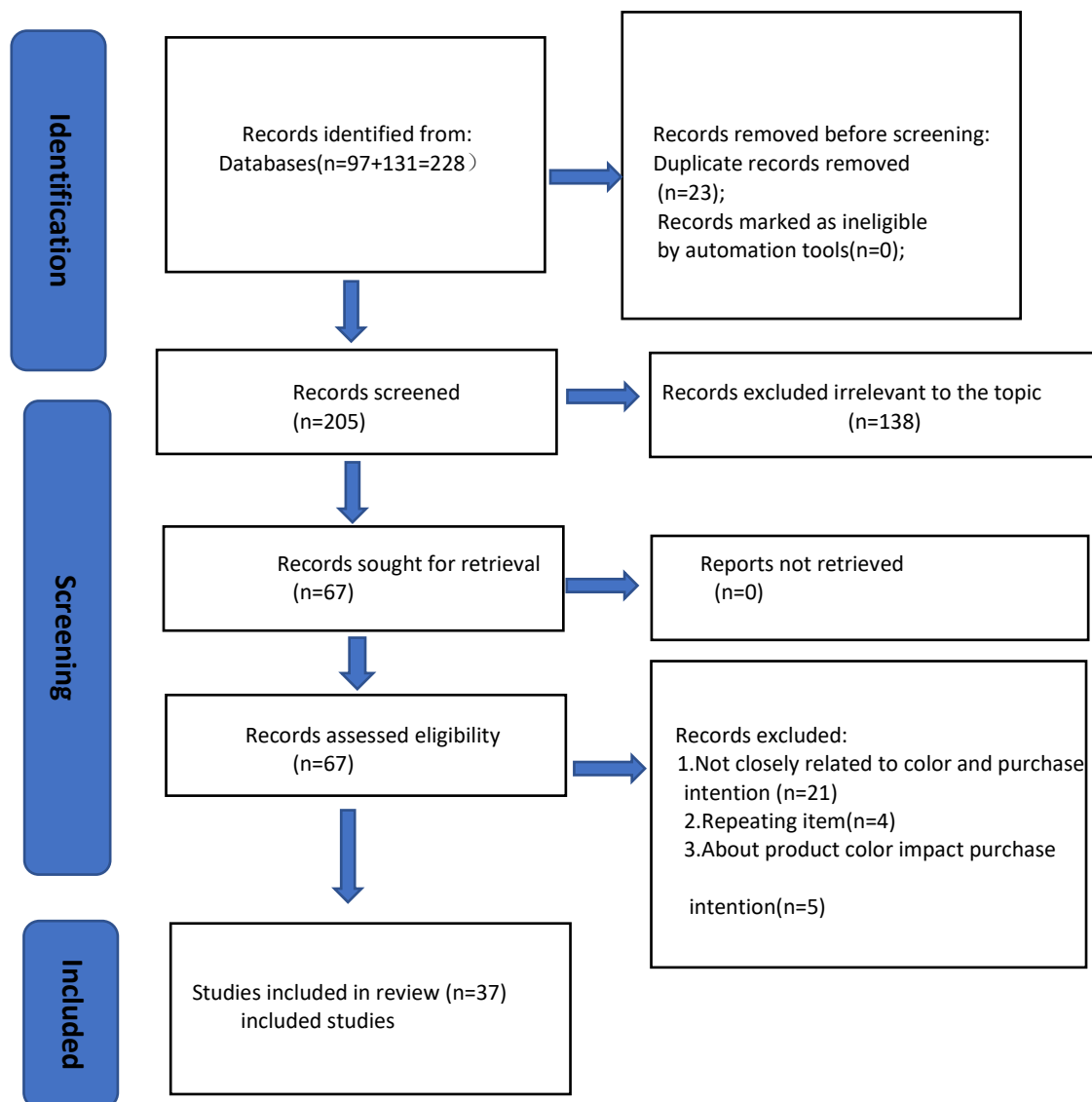


Figure 1. Exclusion process

Finding

Based on the synthesis and analysis of the 37 selected articles, five categories of mediating factors influencing the relationship between color and purchase motivation have been identified: brand image, brand attitude, consumer perception, color preference, and element combinations including traffic light labels. Firstly, brand image encompasses consumers' overall perception and evaluation of a brand, which includes aspects such as brand culture, brand personality, and brand reputation, as well as visual touchpoints like corporate visual identity, packaging, and advertising. Brand image is closely related to purchase motivation, as consumers' purchase motivations often stem from their perceptions of the brand image. Secondly, brand attitude—whether positive or negative—can directly impact purchase motivation, with color influencing brand attitude and subsequently affecting purchase motivation. Thirdly, color affects various specific consumer perceptions, with positive perceptions having a direct impact on purchase motivation. Fourthly, in corporate visual identity design, color as a distinctive element can influence consumer preferences, which in turn affects purchase intention. Fifthly, the combination of color with other elements, such as environmental color, names, logos, and shapes, affects purchase motivation. Sixthly, in the

food industry, traffic light labels—providing indications of nutrient encouragement (green) or restriction (red)—offer clear guidance for consumers with specific nutritional needs, thereby influencing their purchase motivation.

Brand Image and Purchase Intention

Color influences consumers' purchase intentions through brand image. The color elements in advertisements, including those in short videos and the combination of colors, fonts, and layout design in Instagram ads, play a significant role. Chen et al. (2022) utilized the Stimulus-Organism-Response (S-O-R) theory in a survey of consumers purchasing cleaning products in supermarkets in East China to explore the moderating effect of short video platforms on the relationship between advertising photography color and brand image. They found that the color in advertising photography can enhance consumers' purchase intentions through its mediating role in brand image. Ioannis et al. (2021) noted the lack of research on the effective combination of key design elements in Instagram ads on consumer responses. Through an experiment involving 320 participants, they investigated the effects of color, font, and layout—three primary advertising elements—on brand image and purchase intention, discovering that these design elements significantly impact brand image and consumer purchase intentions. Yee et al. (2020) examined the impact of packaging on purchase intentions among Malaysian consumers, finding that packaging plays a crucial role in influencing purchase intention. Specifically, packaging color, material, and graphics significantly affect purchase motivation, while packaging size and shape did not show a significant impact. Brand image, as a mediating factor between color and purchase motivation, effectively facilitates their relationship.

Brand Attitude and Purchase Intention

Color influences consumers' purchase intentions through brand attitude. Variations in color within logos can affect consumers' attitudes towards the brand. Antonio and Sungwook (2022) investigated the impact of redesigning sports brand logos on brand attitude and purchase intention through an experimental study. They found that changes in logo color and revolutionary redesigns led to negative attitudes among fans, particularly those with high brand identification. This negative attitude resulted in lower purchase intentions among highly identified fans, while the impact on low-identification fans was not significant. Thus, caution is advised when altering logo colors and implementing revolutionary changes, as these can significantly affect the purchase motivation of highly identified fans.

The typical color of packaging influences purchase motivation through product attitude. Marion and Georgios (2020), noted a lack of evidence on the impact of packaging color perception on consumer preferences. Based on categorical theory, they classified typical colors as those matching product categories. Through two experimental studies, they found that atypical colors increased consumer skepticism and reduced interest, leading to negative product attitudes and, consequently, lower purchase intentions.

Red and green brightness in food images affect consumer attitudes and purchase motivation. Cai and Christina (2020), utilizing trichromatic vision theory, dual-process theory, and halo effect, studied the impact of red and green brightness in restaurant food images on consumer evaluations and purchase motivation through an experiment with 575 participants. They discovered that brightness in red and green significantly influenced emotional and cognitive

evaluations as well as purchase intentions, creating a halo effect on consumers' positive intentions and purchase motivation for restaurant selection.

In the realm of online advertising, color combinations affect ad attitudes and purchase motivation. Allison et al. (2021) explored the impact of complementary and analogous colors in online banner ads on consumer attitudes and purchase intentions, noting a gap in research on color contrasts. Through two experimental studies (on wireless internet services and wireless headphones), they found that blue-green color combinations resulted in higher ad attitude scores compared to red-orange, red-green, and purple-yellow combinations, with blue-green also achieving higher purchase motivation scores. Thus, similar color combinations like blue and green can enhance positive attitudes and purchase intentions. However, this effect is specific to online advertising, and further evidence is needed in other contexts.

Moreover, the association between color and the environment can alter attitudes, with green representing environmental friendliness leading to positive attitudes and purchase intentions. Dongjae et al (2020), addressed the lack of evidence linking green with sustainability by conducting two experiments. Their findings indicated that consumers associate green with environmental friendliness and gray with environmental unfriendliness, resulting in positive ad attitudes and purchase intentions. Consumer perception of color appropriateness moderates this effect, although the impact diminishes if consumers perceive the brand as exploiting their green biases.

Contrarily, some studies argue that color does not influence attitudes. Abdilah and Fajarindra (2023) investigated the effects of color, design, typography, and product image in Instagram ads on purchase behavior and evaluations through a survey of 496 consumers. Their research confirmed that color and other visual elements affect consumer attitudes, and these attitudes significantly influence purchase behavior.

Additionally, research on the impact of color temperature in advertising on consumer attitudes and purchase motivation is limited. Lina and Viktorija (2017) explored this relationship due to increased competition and a lack of research on advertising color temperature effects. Their study found that color temperature significantly affects consumer attitudes and purchase motivation, with specific temperatures, such as 3000K, inducing positive attitudes, while 6000K resulted in negative attitudes. Positive attitudes subsequently enhance purchase motivation, suggesting that managing color temperature can improve marketing communication effectiveness. In summary, the influence of color on attitudes and purchase motivation spans various disciplines, contexts, and applications, demonstrating the cross-disciplinary impact of color on consumer attitudes and purchase motivations.

Consumer Perception and Purchase Intention

Color affects purchase motivation by influencing consumer perception. In the realms of restaurant and food packaging, the color of food images impacts perceptions of freshness, taste, healthiness, and authenticity. Previous research has confirmed a positive correlation between food perception and restaurant selection. However, there is a lack of evidence regarding the impact of outdoor signage on consumer perception and purchase intention. Thus, Song and Yang (2023), employed experimental methods to investigate the effects of color and naming in corporate visual identity on consumer attitudes and purchase motivation.

Their study found that logo color influences health perception and purchase intention, while restaurant names have a significant impact on purchase intention. Additionally, color and naming interact to affect health perception and purchase intention, with perceptions of food tastiness and healthiness influencing purchase motivation.

Pitchayapat et al (2020), explored the impact of green shades, salad shape/size, multi-color schemes, product names, and packaging on perception and purchase intention for ready-to-eat salad packaging. Their survey of 150 respondents found that multi-color packaging elicits positive emotions and significantly influences hedonic perception and purchase intention. Liu et al (2022), studied the effects of color saturation in food images on online restaurant ordering platforms. Their experiments revealed that high color saturation in food images significantly affects purchase intention, with perceived freshness and tastiness serving as mediating variables. This effect is influenced by visual distance, where high saturation enhances purchase intention at a distance but not up close. Additionally, purchase motivation is affected by the consumption environment (solo or group), with high saturation images enhancing purchase intention when consumed alone but reducing it in group settings.

Veronica et al (2020), introduced the concept of natural color and examined its use in packaging and its relationship with willingness to pay for healthy foods. They found that natural colors significantly impact perceptions of healthiness and purchase intention, independent of packaging consistency, color brightness, and saturation. Huang and Lu (2016), investigated the effects of food packaging color and nutritional claims on health perception and purchase intention. Their repeated measures mixed-model study involving 120 non-colorblind, non-obese university students revealed that blue packaging is perceived as healthier than red packaging, and nutritional claims on blue packaging are associated with more positive health perceptions, which in turn influence purchase intention.

Color in packaging affects perceptions of authenticity. Jean-Éric et al (2020), examined the relationship between wine label colors and perceptions of authenticity, finding that emblematic colors and low visual complexity on wine labels significantly affect authenticity perceptions, which positively impact enjoyment and purchase intention.

Color influences purchase motivation through its effects on fluency, perceived enjoyment, perceived emotional quality, and familiarity. Zhang et al (2023), explored the effects of style and color tone in tourism creative products on purchase intention through two experiments. They found that typical styles and cool tones significantly impact purchase intention through the mediation of fluency and perceived enjoyment, while creative styles and warm tones enhance purchase intention. Saïd et al. (2017), applied the Stimulus-Organism-Response model and Flow Theory to study the impact of website color on consumer behavior. Their online experiment found that blue is more likely than yellow to induce flow, with perceived enjoyment and concentration mediating the effects on purchase intention and revisit intention. Chang (2017), addressed the gap in research on perceived emotional quality (PAQ) and perceived website quality (PWQ) on purchase intention, using affective engineering methods to examine the moderating effects of perceived affective trust (PAT) and cognitive trust (PCT) on the PAQ-PWQ-PI relationship. The study revealed that elements such as content uniqueness, content credibility, prominent graphics, affordable graphic pricing, and layout comprehensiveness positively impact perceived website quality. Additionally,

relaxation from color, prominent graphics, thematic consistency, and layout significantly influence purchase intention.

Afred and Wang (2023), investigated the impact of cute product features on young people's willingness to purchase unfamiliar products. Their experimental study manipulating characters, fonts, colors, and storytelling styles found that anthropomorphized product characters, elegant handwritten fonts, mixed colors, and superhero narratives—elements considered cute—enhance perceived familiarity and promote purchase intention.

Color affects product experience perceptions (e.g., softness and comfort) and related personality traits, influencing purchase motivation. Atefeh and Seth (2023), studied the relationship between product color and perceived softness. Their research found that higher color brightness correlates with stronger perceptions of product softness, with softer products increasing purchase intention. Expectations of comfort moderate this effect, particularly for textile products like clothing, towels, and bedding. Xiao et al (2021), examined the impact of high-saturation colors on customer intimacy, brand image, and sensitivity, finding that high-saturation colors affect perceived comfort in shoes, with color saturation influencing customer sensitivity only in round logos. The combination of brand origin and color saturation significantly affects purchase intention. Henrik and Adam (2017), explored the relationship between product color saturation and perceived size, finding that increased color saturation enhances size perception, with alignment between saturation and size leading to increased willingness to pay. Additionally, colors associated with masculinity in packaging affect perceptions of product effectiveness. Reto et al (2022), explored the relationship between packaging color and green products, revealing that masculinity perceptions induced by color impact product effectiveness perception and purchase intention. Lastly, Marco and Giovanni (2023) investigated the relationship between color saturation and purchase intention in the context of green marketing. Their five experimental studies found that consumers associate low saturation with environmental friendliness, thereby enhancing ecological perceptions and positively influencing purchase intention and willingness to pay a premium.

Color Preference and Purchase Motivation

Consumer preference for specific colors can significantly influence product preference and, consequently, purchasing motivation. Yu et al (2021), conducted an experimental study that found a stronger preference for a particular color enhances purchasing motivation. They highlighted that color associations play a critical role in shaping purchasing decisions when there is no specific color preference.

Bogicevic et al (2018), explored design preferences and purchase intentions among hotel consumers, revealing that men are more inclined toward masculine colors, while women exhibit satisfaction with both masculine and feminine color schemes. This study provides unique evidence on how color influences different demographic groups. Amalia et al. (2015) examined yogurt packaging development in Indonesia using eye-tracking and "think-aloud" (RTA) methods to evaluate multiple color and font combinations. Their conjoint analysis identified "Fineliner" and "Bodoni" font types, along with "Analogue" and "Tetradic" color schemes, as optimal. Indonesian consumers preferred "Fineline" font, "Analogue" color

schemes, and round yogurt packaging, presenting a method for understanding consumer preferences in packaging design.

Justin et al (2015), investigated the impact of bottled water packaging colors on purchase intentions in South Africa. They found that consumers showed little concern for the color of bottled water, preferring neutral colors over both warm and cool tones. Additionally, low-income consumers preferred warm and cool colors, while high-income consumers favored neutral tones. This underscores the importance of understanding color preferences and their impact on purchase motivation.

Color and other Factors Combined with Consumer Purchase Intentions

The interaction between product color and environmental colors affects purchasing motivation. Luisa et al (2021), noted that previous research often focused on single colors rather than color combinations with other elements, emphasizing the need for context-specific studies. Their research found that matching or complementary colors between products and stores affect consumer attraction and purchase intentions, with product category moderating the effects of complementary colors. This implies that color should not be considered an independent variable in consumer decision-making but rather in conjunction with other factors.

Vicente et al (2024), surveyed consumers in Spain and Mexico about their perceptions of packaging, finding that the special meanings assigned to colors depend on the context. Their study revealed that rectangular, square, and triangular shapes combined with yellow, orange, and red colors enhance consumer emotions such as admiration, satisfaction, surprise, attraction, affection, and joy. Manoshi et al (2020), conducted two experiments on the impact of green labels on payment willingness, finding that white labels were preferred over green ones. They discovered that positive environmental evaluations of products mediated the effects of white labels on purchase intentions, suggesting that green's association with environmental friendliness may not always enhance purchase intentions as expected.

The interplay between color and other visual identification elements (e.g., names, shapes, fonts, and layouts) also affects consumer purchase intentions. Song & Yang (2023), investigated the impact of color and names in corporate visual identities on consumer attitudes and purchase motivations, finding that logo color influenced health perceptions and purchase intentions, while restaurant names had a significant impact on purchase intentions. The interaction between color and name affected health perceptions and purchase intentions, with food taste and health perceptions influencing purchase motivation. Natanael et al. (2023), using interpretive hierarchy theory and behavioral and neuroscience data, studied the effect of logo design (shape and color combinations) in online travel agencies on purchase intentions. They found that logo design, based on psychological distance and consumer interpretation levels, is closely related to travel package purchase intentions. This study provided evidence of the consistency effect and consumer response to logos through EEG data. Ioannis et al (2021), explored the influence of color, font, and layout combinations in Instagram ads on brand image and purchase intentions. Their experiment with 320 participants revealed that effective combinations of these design elements significantly affect brand image and consumer purchase intentions.

Impact of Traffic Light Labels on Consumer Purchasing Motivation in Food Products

Traffic light labels are used to indicate nutritional information on food packaging through color coding. This special form of nutritional labeling can influence consumer attitudes, perceptions, and cognition, thereby affecting purchasing motivation. Among the red, yellow, and green colors used in traffic light labeling, red is often utilized as a warning color to indicate high levels of certain nutrients, and it is the most commonly used color. Marette and Stéphan (2022), conducted an online survey in France to explore how traffic light labels impact purchasing motivation for pizzas, considering nutritional and ecological scores associated with the colors. The study found that the appearance scores and colors of pizzas significantly influenced purchasing motivation. When nutritional and ecological scores were associated with the color red, the purchasing intention significantly decreased, whereas yellow and green had a less pronounced effect on altering purchasing intentions.

Oscar et al (2023), investigated traffic light labels on food products in Ecuador to address obesity concerns. Through a survey involving 1,152 participants on yogurt products, they discovered that consumers exhibited a stronger preference and purchasing intention for yellow and green labels compared to red. The study also found high consumer acceptance of traffic light labels, with a greater preference for labels indicating healthier food options. Sonja et al (2020), examined the impact of traffic light labels on health perceptions, taste expectations, and purchasing intentions for food products. The research, based on random sampling of supermarket desserts, revealed that while traffic light labels did not reduce the purchasing intention for high-sugar foods, they did increase the purchasing intention for low-sugar products. Carlsson et al (2022), employed a preference statement approach to investigate how graphical design of labels affects consumer behavior, including willingness to pay a premium. The comparison among traffic light labels, grayscale labels, and plain text labels showed that red in traffic light labels triggered a preference for avoiding adverse outcomes (e.g., climate impact or antibiotic use), while green reinforced preferences for health, with varying levels of acceptance for premiums associated with these labels.

Conclusion

Based on previous research, studies on consumer responses to color have predominantly focused on dimensions such as attention, cognition, memory, perception, attitudes, and purchasing decisions, with a primarily one-dimensional approach from color to variables. According to the review criteria established in this study, the influence of color must be linked to purchasing motivation. Consequently, 37 relevant studies were selected after screening. Analysis and organization of these studies revealed that color is closely related to purchasing motivation through five main mediating factors: brand image, brand attitude, consumer perception, color preference, and the combination of elements including traffic light labels. While extensive research has concentrated on the effects of color on attention, cognition, and memory, there has been a lack of evidence connecting these effects to purchasing motivation. Each mediating factor summarized in this paper has empirical evidence supporting its relationship with purchasing motivation. This shift from a one-dimensional approach to a two-dimensional one, linking color through mediating variables to purchasing motivation, represents a significant innovation of this study. Additionally, beyond the traditionally explored mediating factors such as brand image, brand attitude, and consumer perception, this study introduces new factors such as color preference, element combinations, and traffic light labels. This novel perspective provides an emerging dimension of color and purchasing

motivation, further contributing to the development of a comprehensive theoretical model. Based on the review findings, a theoretical model linking color and purchasing motivation has been constructed (see Figure 2).

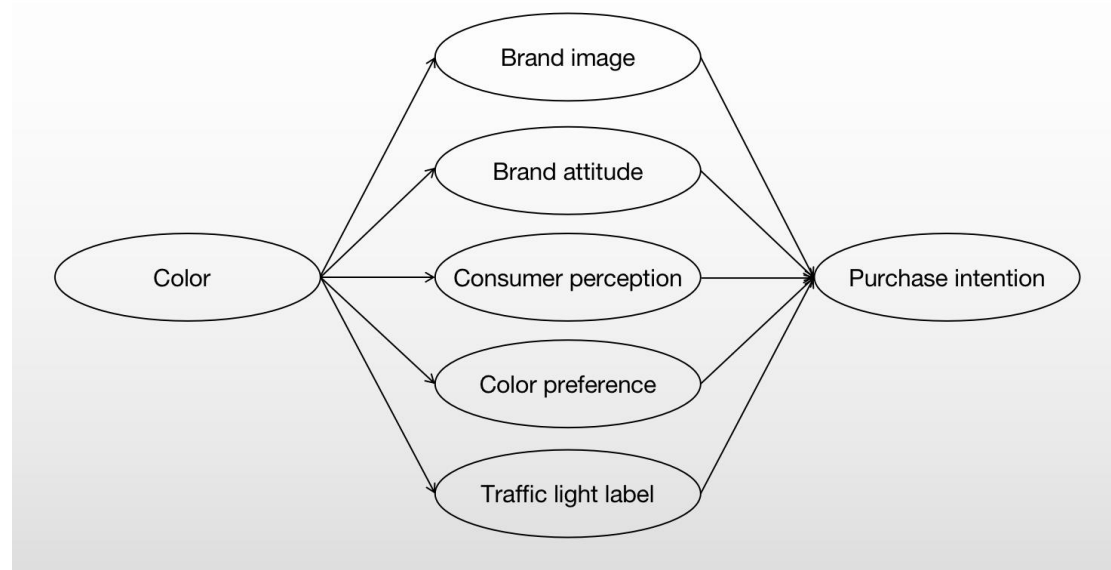


Figure 2. Color and purchase intention concepture framework

The research methods predominantly utilized in the studies are experimental, with 22 out of the 37 reviewed articles employing experimental approaches, while the remaining 17 articles use a combination of experimental and survey methods or surveys alone. In the experimental studies, various independent variables related to color are manipulated, such as lighting and color in advertising photography (Chen et al., 2022), retail environment colors (Luisa et al., 2021), restaurant signage colors and names (Song et al., 2023), packaging colors (Reto et al., 2022), label colors on food products (Fredrik et al., 2022), color saturation in food images (Liu et al., 2022), color norms for product categories and typicality of packaging colors (Marion & Georgios, 2020), and similar versus complementary colors in online banner ads (Allison et al., 2021). The dependent variable of purchasing intention is observed to establish causal relationships. Some studies combine experimental methods with surveys. For example, Abdilah & Fajarindra (2023), manipulated color, font, and imagery in advertising scenes to test the effects of design elements on consumer purchasing motivation, and also collected consumer attitudes and feedback through questionnaires. This combined approach not only provides evidence of the causal relationship between design elements and purchasing motivation but also offers deeper insights into consumers' subjective attitudes. Similarly, Ioannis et al (2021), used a combination of experimental design and surveys to analyze the impact of Instagram ad design features on purchase intention, first testing the effects of visual elements like color and fonts through experiments and then gathering data on other influencing factors through online surveys. Fredrik et al (2022), conducted an experimental design and collected data through surveys to examine the impact of different food label types on consumer choice and understand how consumers make food choices based on label information. The remaining studies primarily employed survey methods, such as Yee et al. (2020), who investigated the effects of color, material, graphics, size, and shape in packaging on purchasing motivation, and Stéphan (2022), and Oscar et al (2023), who studied the effects of traffic light labels on purchasing intention and preferences. In summary, the advantage of experimental research lies in its ability to control variables to establish causal relationships,

whereas survey research can cover larger samples to gain insights from a broader population. The combined approach of experimental and survey methods leverages the strengths of both, confirming causal relationships while obtaining extensive data, thereby mitigating the limitations inherent in each individual method.

The research in this field is characterized by its interdisciplinary nature, spanning multiple disciplines including marketing, branding, design, psychology, and neuroscience. Purchasing intention is a marketing concept, and this study explores the relationship between color and purchasing motivation, bridging the disciplines of branding, design, and marketing. The research process begins with branding as the foundation, applies design knowledge in practice, and ultimately evaluates the results of branding and design in terms of their impact on purchasing motivation. Additionally, researchers apply methods from neuroscience and psychology to investigate the underlying mechanisms of color's effect on consumer behavior. For instance, Natanael et al (2023), used neuroscience data to examine how logo design influences purchase intention. Consumer psychology studies consumer perceptions, emotions, and cognitive processes, and their impact on purchasing behavior. Garcia & Fernandez (2021), combined experimental research with emotional analysis to explore how sustainable emotional design affects consumer perceptions and purchase intentions for product packaging in the context of Industry 4.0. Chang (2017), utilized Kansei engineering to understand consumer purchase intentions on websites. Furthermore, Sonja et al (2020), integrated health psychology, behavioral economics, and marketing to study the impact of traffic light labels on consumer expectations and purchase intentions. Scholarly exploration across these disciplines continuously injects vitality into the field, continually discovering new perspectives and angles to understand the mechanisms through which color influences purchasing motivation, and providing additional empirical evidence.

Contributes

The contribution of this study lies in the development of a conceptual model elucidating the impact of color on purchasing motivation. This research focuses on the influence of color on consumer responses and advances a conceptually driven framework oriented towards purchasing motivation outcomes. Regardless of the mediating factors involved, empirical research is required to validate their effects on purchasing motivation. All mediating variables must provide empirical evidence regarding their influence on purchasing motivation. The impact of color on brand image, brand attitude, consumer perception, color preference, factor combinations, and traffic light labels all subsequently affect purchasing motivation, culminating in an innovative conceptual framework for color and purchasing motivation proposed by this study. Previous research has typically focused on isolated effects of color on memory, cognition, perception, and attitude, without integrating these aspects into a cohesive review. For example, Vermeir & Roose (2020) provided a comprehensive review of visual cues, psychological processes, and behavioral outcomes, detailing how color attributes such as brightness, hue, and saturation impact attention, cognition, emotion, motivation, perception, attitude, and behavior. However, earlier studies often segmented these effects—e.g., examining the impact of color brightness on attention and separately assessing attention's effect on consumer behavior—without integrating these segments into a complete evidence chain. If the relationship between color and psychological processes and purchasing motivation were linear, such segmented relationships might be valid. However, if the relationship is not linear, a complete evidence chain is necessary. Thus, presenting a

complete evidence chain from color to purchasing motivation is a significant research contribution of this study.

Practically, this research provides valuable insights for corporate marketing practices and visual identity design. In marketing, companies must use visual identity design, product packaging, advertising, and websites to convey their culture, values, and marketing points. Color is an essential visual element across all visual touchpoints, embedding substantial perceptual and cognitive information. By examining the impact of color on consumer purchasing intentions, this study offers theoretical support for marketing strategy development and practical guidance for corporate visual identity design.

Limitation, Future Study

Due to constraints in research time and resources, the database search for this study was limited, resulting in a non-comprehensive overview of color and purchasing motivation. The current review covers 37 studies published between 2014 and 2024 on the topic of color and purchasing motivation, sourced from the Web of Science and Scopus databases. Additional relevant literature from other databases is needed to further enhance the comprehensiveness of this field. Furthermore, the perception and cognition of color are influenced by subjective consumer preferences, aesthetics, environment, cultural background, and demographics. As such, empirical evidence on cross-cultural comparisons, subjective preferences, and demographic impacts on purchasing motivation is lacking. The effect of color on consumer behavior may vary across different cultural contexts, making cross-cultural research an important avenue for future study. Vicente et al (2024), has already demonstrated the differences in color perception across cultures, including countries such as China, Malaysia, Spain, and Mexico, revealing how cultural context influences consumer responses to color. Aslam (2006), proposed a model hypothesis on the influence of color in marketing through a literature review, highlighting the impact of consumers' subjective patterns—including values, aesthetics, and lifestyle—on color perception. Therefore, future research should incorporate cultural background, environmental factors, demographics, and subjective patterns as moderating variables when examining the relationship between color and purchasing motivation.

Future research should first address the limitations in literature collection identified in this study by sourcing additional data on the effects of color on consumer responses and purchasing motivation from more databases and older studies prior to 2014. This will provide a more robust foundation for research in this field. Second, incorporating moderating variables such as cultural background, environment, demographics, and subjective patterns into the study of color and purchasing motivation will address current gaps. Third, constructing a more comprehensive and integrative model of color and purchasing motivation is essential. Future studies should aim to develop a holistic model that explains the multi-layered impacts of color on consumer behavior, including mediating variables such as perception, emotion, and behavioral intentions. This model should ensure that all mediating variables are closely linked to purchasing motivation, and include the effects of moderating variables to form a more thorough and multi-dimensional theoretical framework.

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Appendices

ID	Author(s) and Year	Title	Research Objectives	Data (Source, Sample, Size)	Methods	Country / Industry	Findings
ID 1	Chen, Fenglei; Sukpasjaroen, Khunanan; Chankoson, Thitinan, (2022)	Influence of light and color of advertising photography on consumers' purchase intention	Explored the moderating role of short video platforms on the relationship between light and color of advertising photography and brand image and the mediating role of brand image between light and color and consumers' purchase intention.	200 respondents in East China.	Survey	China	It was found that the light and color of advertising photography have a facilitating effect on consumers' purchase intention. Furthermore, brand image mediates the relationship between light and color and consumers' purchase intention.
ID 2	Martinez, Luisa M.; Rando, Belen; Agante, Luisa; Abreu, Ana Maria, (2021)	True colors: Consumers' packaging choices depend on the color of retail environment	Aim to study the putative effect that dominant retail environment colors might produce on attractiveness and product purchase intention, when products	653 participants were recruited to participate in two experimental studies disseminated through online platforms	Experiment		Together these studies unveil a complex relation between product type, context and color that possibly subtend different cognitive decision-making mechanisms. As such, colors cannot be

			use similar store colors, and when products use complementary colors to those of the store.				considered as standalone variables in consumer decision making strategies.
ID 3	Yee, Sook-Fern; Tan, Cheng-Ling; Lim, Kah-Boon; Khoo, Yong-Hwi; (2020)	Product packaging: impact on customers' purchase intention	This research looked into the extent of how packaging has influenced the purchase intention of customers.	250 respondents in Melaka and Johor Bahru, Malaysia	Survey	Malaysia	Findings from the study show that three hypotheses out of four were supported which lend support to the vital role that packaging plays in creating appeal and influencing customers' purchase intention.
ID 4	Song, Hanqun; Yang, Huijun; (2023)	Ethnic restaurants' outdoor signage: the effect of colour and name on consumers' food perceptions and dining intentions	The study aims to investigate the effect of signage colour and restaurant name on consumers' attitudes and purchase intentions.	Total of 213 valid respondents	Experiment	UK	There is a main effect of signage colour on consumers' perceptions of food healthiness and purchase intentions, and restaurant name significantly affects consumers' purchase intentions. In addition, there is an interaction effect of signage colour and restaurant name on food healthiness and purchase intentions, and

ID 5	Zhang, Shu-Ning; Zhang, Wan-Ya; Li, Yong-Quan; Ruan, Wen-Qi; Zhou, Yan;(2023)	Will visual peripheral cues motivate you to purchase tourism cultural and creative products? Evidence from China	Filling a research gap in the matching effects of the peripheral design elements around tourism cultural and creative products (CCPs)	Experi ment	China	food tastiness and healthiness are associated with purchase intentions. The results highlight that matching the styles and hues of tourism CCPs could positively affect tourists' willingness to buy.
ID 6	Chang, Kuo-Chien (2017)	Feeling leads to believing: a Kansei-based approach to explore website users' purchase intention in the travel agency sector	Particularly, the moderating roles of website users' perceived affective trust (PAT) and perceived cognition trust (PCT) on the PAQ-PWQ-PI interrelationships were explored.	Survey		Multiple regression analysis of the interrelationships among PAQ, PWQ, and PI showed that certain PAQs (including content feeling unique, content feeling trustworthy, graphic feeling eye-catching, graphic feeling favorable price, and layout feeling comprehensive) had positive effects on PWQ. However, only certain PAQs (including color feeling relaxing, graphic feeling eye-catching, graphic feeling topical, and

ID 7	Bogicevic, Vanja; Bujisic, Milos; Cobanoglu, Cihan; Feinstein, Andrew Hale; (2018)	Gender and age preference s of hotel room design	The purpose of this study is to investigate what people with different demographic characteristics such as age and gender expect from hotel room design and examine how design preferences affect purchase intent and desire to stay and word-of-mouth behavior.	Experi ment	layout feeling humanistic) engendered positive effects on PI. The results indicated that age and gender moderate the relationship between hotel guest satisfaction and room design style. Younger guests prefer contemporary design style, while older guests show equal satisfaction with traditional and contemporary styles. Male guests prefer rooms decorated in masculine colors, while women are equally satisfied with masculine or feminine color schemes.
ID 8	Felix, Reto; Gonzalez, Eva M.; Castano, Raquel; Carrete, Lorena; Gretz, Richard T. (2022)	When the green in green packaging backfires: Gender effects and perceived masculinity of environmentally friendly products	Previous research has emphasized the importance of product packaging to consumers' attitudes and purchase intentions,	Experi ment	In two studies, the current research shows (1) how color-induced perceptions of masculinity can trigger perceived product effectiveness and purchase intentions, (2) how competing

			but empirical studies that explore the specific mechanisms by which packaging color influences marketing -relevant downstream variables in relation to environmentally friendly products is scarce.		mediation through masculinity and perceived fit with the product category influences perceived product effectiveness and purchase intentions for green products, and (3) that the positive influence of masculinity on perceived product effectiveness holds for male but not female consumers.
ID 9	Carlsson, Fredrik; Kataria, Mitesh; Lampi, Elina; Nyberg, Erik; Sterner, Thomas; (2022)	Red, yellow, or green? Do consumers' choices of food products depend on the label design?	Using a stated preference survey, we investigate to what extent consumers are willing to make costlier food consumption choices to decrease damages to health, the environment, and animal well-being.	Experiment	We found that the red colour in traffic lights seems to strengthen respondents' preferences for avoiding the worst level of a collective attribute such as climate impact or antibiotics use, while the green colour strengthened preferences for the more private attribute, namely healthiness.
ID 10	Liu, Stephanie; Wu, Laurie; Luorong; Yu,	Marketing online food images via color	From a sensory imagery perspective,	Experiment	Findings from two experimental studies

	Xi; Huang, Huiling;(2022)	saturation: A sensory imagery perspective	this research examines color saturation as a marketing strategy that shapes consumers' responses to online food images.				demonstrate that food images presented with high (vs. low) color saturation can effectively boost consumers' purchase intention. Furthermore, the effects of color saturation are influenced by visual distance (distal vs. proximal) and consumption context (solitary vs. social).
ID 11	Casales-Garcia, Vicente; de las Heras, Ana; Luque, Amalia; Gonzalez-Abril, Luis;(2024)	Sustainable Emotional Design Based on Industry 4.0 for Industrial Nougat Packaging	Packaging is one of the elements for which it is positive to include techniques and methods based on Industry 4.0 to obtain results from users and bring them closer to the process.	A total of 122 participants took part in this study online: 99 participants from Spain and 23 participants from Mexico	A survey based on Survio Forms	Spanish	The main conclusion is that packaging with a combination of three shapes (rectangle, square and triangle) and colours (yellow, orange and red) enhances consumers' emotions of Admiration, Satisfaction, Pleasant Surprise, Attraction, Fascination and Joy.
ID 12	Gunawan, Cecelia Natanael; Chen, Yen-Jung; Hsu, Liwei;(2023)	How online travel agencies' logo design promotes purchase intention: a	Using construal level theory as a theoretical framework, this study	183 participants for Study 1a and 228 participants for	Experiment	China, Taiwan	The results of these three studies show that the relationship between logo design and the

		behavioral and neuroscientific interpretation of consumers' construal level	aims to understand how online travel agencies' logo design, a combination of shapes and colors, influences consumers', purchasing intentions using behavioral and neuroscientific data.	Study 1b. However, Study 2 with 60 participants			destination product can be managed by framing consumers' construal level. Further, evidence of the natural mindset congruency effect and consumers' brainwave activities while reflecting on the logo design is provided.
ID 13	Chonpracha, Pitchayapat; Ardoin, Ryan; Gao, Yupeng; Waimaleong oraek, Pamarin; Tuuri, Georgianna; Prinyawiwat kul, Witoon;(2020)	Effects of intrinsic and extrinsic visual cues on consumer emotion and purchase intent: A case of ready-to-eat salad	With increasing demand for ready-to-eat (RTE) fresh vegetables, it is important to understand how visual information cues, both intrinsic and extrinsic, affect consumer perception of these products.	150 participants	Survey	Switzerland	This study demonstrated that intrinsic and extrinsic visual cues significantly influenced consumer emotions, hedonic perception and purchase intent of RTE salads, but the effects of extrinsic cues were generally less prominent.
ID 14	Rizomyliotis, Ioannis; Zafeiriadis, Dimitrios; Konstantoulaki, Kleopatra; Giovanis, Apostolos;(2021)	Optimal Instagram advertising design features. A study on brand image and millennials'	The investigation of the most effective mix of key design elements in Instagram ads in	320 participants	Survey		The findings provided insights into the way the design elements alter the intention of the consumers to buy and their perceptions of the brand

		purchase intention	relation to consumer purchase intention and brand image is still underexplored.			image respectively.
ID 15	Garaus,Mari on; Halkias, Georgios; (2020)	One color fits all: product category color norms and (a)typical package colors	Based on categorization theory, the present paper explores responses to package colors that conform or do not conform to product category color norms.		Experiment	Findings indicate that perceived package color atypicality increases consumers' skepticism and, contrary to expectations, decreases interest. These affective reactions negatively influence consumers' product attitude which subsequently translates into lower purchase intention.
ID 16	White, Allison R.; Martinez, Luisa M.; Martinez, Luis F.; Rando, Belén; (2021)	Color in web banner advertising : influence of analogous and complementary colors on attitude and purchase intention	The purpose of this paper is to study how color contrast (complementary vs. analogous colors) affect individuals' attitude and purchase intention in the context of web banner advertising.	174	A participatory survey-based experiment	Findings revealed that the blue-green analogous color set tend to elicit higher levels of both attitude towards the ad and purchase intention. The results were partially confirmed for Study 1 and (totally) confirmed for Study 2.

ID 17	Kunz, Sonja; Haasova, Simona; Rieß, Jannik; Florack, Arnd; (2020)	Beyond healthiness : The impact of traffic light labels on taste expectatio ns and purchase intentions	The aim of traffic light labels on food products is to help consumers assess their healthiness. However, it is not clear whether traffic light labels do not have undesired side effects by signaling lower tastiness of healthy product alternatives and reducing purchase intentions.	173 survey participa nts	Austria	The traffic light labels helped participants differentiate between the healthiness of products with different sugar levels. They did not affect the expected tastiness of the healthier alternatives. Moreover, participants did not report lower purchase intentions for products high in sugar, but a higher purchase intention for products low in sugar when traffic light colors were used compared to when they were not used. Study 1 showed that shoes with the high saturated logo were evaluated more comfortable than those with low saturated logo. Study 2 repeated this effect and found that perceived closeness mediated this effect. Study 3 revealed that logo shapes moderated this	
ID 18	Xiao, Chunqu; Zhu, Hong; Wang, Xin; Wu, Liang; (2021)	Vividly warm: The color saturation of logos on brands' customer sensitivity judgment	The current research has provided a new insight that logos with high saturated colors could help brands to increase intimacy with customers and further benefit the brand image.	113 student participa nts	experi ment	China	Study 1 showed that shoes with the high saturated logo were evaluated more comfortable than those with low saturated logo. Study 2 repeated this effect and found that perceived closeness mediated this effect. Study 3 revealed that logo shapes moderated this

							effect. Specifically, the effect of color saturation on the brand's customer sensitivity judgment only existed in circular logos. Study 4 showed that brand origins moderated this effect. The color saturation effect on purchase intentions reversed for non-local brands.
ID 19	Marette, Stéphan (2022)	Ecological and/or nutritional scores for food traffic-lights: Results of an online survey conducted on pizza in France	A web survey was conducted in France to examine how providing different scores about the environment and/or nutrition could influence purchase intents for one pizza.	1200 participants	On-line survey	France	The results show that the appearance of scores and colors significantly affect the purchase intents for this pizza.
ID 20	Samaraweera, Manoshi; Sims, Jeanetta D.; Homsey, Dini M. (2020)	Will a green color and nature images make consumers pay more for a green product?	This paper aims to examine the role of these labeling strategies in influencing consumer willing to pay.	160 students (Study 1) and in a field-setting with 268 consumers shopping at a	2 × 3 experiment		Results are consistent across both studies. Surprisingly, participants are willing to pay more for the product when it has a white-toned label

				grocery store (Study 2)			rather than a green-toned one.
ID 21	Sarasty, Oscar; Carpio, Carlos; Cabrera, Tania; (2023)	Effect of the traffic-light system on nutrition labeling in processed food products in the Ecuadorian population	We aimed to evaluate Ecuadorian consumers' preferences for the nutritional attributes represented in the TL nutritional labels.	1,152 Ecuadorian consumers	Survey	Ecuadorian	Results of a choice experiment with yogurt products revealed strong preferences and willingness to pay for yellow and green labels reaching price premiums of \$1.15 for fat and \$1.34 for sugar relative to red labels.
ID 22	Yazdanparast, Atefeh; Ketron, Seth; (2023)	The effect of color lightness on anticipated product comfort: The role of the lightness-softness correspondence on a cross-modal correspondence	The goal of this work is to investigate the influence of the color lightness-softness correspondence on a key product attribute: anticipated comfort.		6 experiment		Across six studies, our results confirm that color lightness and product softness share a correspondence that is experienced across color hues and products. This correspondence leads to higher purchase intentions for products for which softness is desirable, and anticipated comfort mediates this effect.
ID 23	Williams, Antonio S.; Son,	Sport rebranding : the effect of different	This study sought to examine how a		Experiment		The results suggest that color change and

	Sungwook;(2022)	degrees of sport logo redesign on brand attitude and purchase intention	critical aspect of rebranding – logo redesign – influences fans' attitudes toward a sport brand and intent to purchase merchandise bearing the rebranded logo.			revolutionary change generate the most negative attitudes from both high- and low-identified fans, and fan identification is not a significant factor influencing fan attitudes.
ID 24	Lim, Dongjae; Baek, Tae Hyun; Yoon, Sukki; Kim, Yeonshin; (2020)	Colour effects in green advertising	This article is a report of two experiments to observe consumer reactions to advertisements that use colour to indicate the environmental friendliness.	240	Experiment	The study concludes that green functions as a peripheral cue signalling an eco-friendly brand image, but the use of green may backfire when consumers are aware that green is used to bias responses.
ID 25	Suci, Afred; Wang, Hui-Chih; (2023)	Can whimsically cute packaging overcome young consumer product unfamiliarity?	This paper aims to identify how cute packaging design elements can influence young adult purchases of unfamiliar products, especially the perceived old-	240	Experiment	Anthropomorphized product characters, curvy, handwritten-like fonts, a mixture of colors and superhero story-like product information were considered the whimsically cutest packaging elements by young adults.

			fashioned ones.			
ID 26	Pichierri, Marco; Pino, Giovanni (2023)	Less saturated, more eco-friendly: Color saturation and consumer perception of product sustainability	Performed five experimental studies to confirm that consumers tend to unconsciously associate low color saturation with a product's "gentler" impact on the environment.	5	Experiment	The results reveal that, by fostering perceptions of eco-friendliness and green trust, such colors favorably influence consumers' behavioral intentions (i.e., their purchase intention and intention to pay a premium price for the product).
ID 27	Ramdani, Muhamad Abdilah; Belgiawan, Prawira Fajarindra (2023)	Designing Instagram Advertisement Content: What Design Elements Influence Customer Attitude and Purchase Behavior?	This study empirically investigates purchase behavior and evaluation of Instagram content ads from the visual elements of advertising (color, product image, design, and typography)	496	Survey	The findings further show that, except for color, all visual elements of advertising directly affect consumer attitude. Our results also confirm that actual purchases are formed by attitudes and purchase intentions.
ID 28	Marozzo, Veronica; Raimondo, Maria Antonietta; Miceli, Gaetano "Nino";	Effects of au naturel packaging colors on willingness to pay for healthy food	This study introduces and defines a novel color family—au naturel colors—and			This effect occurs irrespective of the fit between the colors of the product and of the packaging, and

	Scopelliti, Irene (2020)	proposes that featuring these hues on product packaging enhances consumer willingness to pay (WTP) for healthy food products, but not for unhealthy food products.				of the color lightness or saturation. Perceptions of product authenticity mediate the relationship between natural colors packaging and consumer WTP for the product.
ID 29	Cai, Ruiying; Chi, Christina Geng-Qing; (2020)	A recipe for food promotion: effects of color brightness on food evaluations and behavioral intentions	Building upon humans' trichromatic vision dual-process theory and halo effects, this paper aims to examine the effects of red and green color brightness of food pictures on customers', evaluations and purchase intention of restaurant food.	575	3 Experiment	This paper provides empirical evidence of the effects of red brightness and green brightness on customers' affective and cognitive evaluation of food and purchase intention in Study 1. Study 2 validates the effects of red and green brightness on food evaluation with the presence of nutrition information. Study 3 further elaborates on the halo effects of color brightness on customers' favorable intentions to

ID 30	Pelet, Jean-Éric; Durrieu, François; Lick, Erhar; (2020)	Label design of wines sold online: Effects of perceived authenticity on purchase intentions	This article aims at exploring the relation between customers' perception of the authenticity of wines and their purchase intentions in online retailing.	215 participa nts	Experi ment	patronize a restaurant and willingness to pay for a meal in a controlled lab experiment. The results reveal that perceived authenticity has a positive effect on both pleasure and purchase intent. Labels showing heraldic colors and low visual complexity lead to a stronger effect of authenticity on pleasure in comparison to labels with vivid colors and high visual complexity. The study finds that the stronger a participant's preference for a colour, the more likely they are to purchase a product in that colour. The data from interviews suggests that, for some of the products tested, participants are highly influenced by the colour association that they would purchase a
ID 31	Yu, Luwen; Westland, Stephen; Chen, Yun; Li, Zhenhong;(2021)	Colour association s and consumer product-colour purchase decisions	The purpose of this study is to test whether consumers' colour-associations connect with their product-colour association, and whether colour-association affects consumers' intended product-colour	a laborat ory experi ment and an interview		

			purchase decisions.		product-colour on their one of the colour association than other colours.
ID 32	Hagtvedt, Henrik; Brasel, S. Adam;(2017)	Color saturation increases perceived product size	his research demonstrates a visual phenomenon with broad implications for consumers: the perceived size of products depends on the saturation of their color.	Experiment	Results from six experiments, employing objects and products with various shapes and hues, show that increasing color saturation increases size perceptions.
ID 33	Aboubaker Ettis, Saïd; (2017)	Examining the relationships between online store atmospheric color, flow experience and consumer behavior	Using the Stimulus – Organism – Response model and the theory of optimal experience of flow, this study investigated the impact of online store background color on the achievement of flow and its effects on online consumer behavior.	On-line Experiment	The results underscore the important role online store color plays in creating the flow experience and revealed that blue hue induces more flow than yellow. The two dimensions of flow (perceived enjoyment and concentration) have direct and mediating effects on purchase intention and revisit intention.

ID 34	Pileliene, Lina; Grigaliunaite , Viktorija; (2017)	Colour temperatu re in advertising and its impact on consumer purchase intentions	The aim of this research is to determine the impact of the colour temperatur e used in advertisem ents on consumer purchase intentions.	Survey	The results of empiric research revealed the differences of the impact of colour temperature on consumer purchase decisions in terms of an attitude toward advertising and the brand, reported brand-related behaviour.
ID 35	Beneke, Justin; Mathews, Ozayr; Munthree, Travys; Pillay, Kavesan; (2015)	The role of package colour in influencing purchase intent of bottled water: Implication s for SMEs and entreprene urs	The purpose of this paper, conducted within an emerging market context, was to investigate the influence of colour in packaging on the purchase intent of consumers for bottled water.	Survey	The findings determined that while consumers appear somewhat indifferent between colours, there is a greater preference for neutral colours as opposed to cold and warm colours in bottled water packaging. It was also determined that income has a significant influence in colour preference for bottled water, with lower income groups preferring cold and warm colours and higher income groups

						preferring neutral colours.
ID 36	Huang, Lei; Lu, Ji; (2016)	The Impact of Package Color and the Nutrition Content Labels on the Perception of Food Healthiness and Purchase Intention	This article presents how the choice of color in food packaging, along with the nutrition content claim (NCC) labeling, can influence the consumer's perception of food healthiness and purchase intention.	Experiment		The results suggest that utilitarian, but not hedonic, food products in blue-colored packages were perceived to be healthier than those in red-colored packages.
ID 37	Suzianti, Amalia; Rengkung, Stephanie; Nurtjahyo, Boy; Al Rasyid, Harun; (2015)	An analysis of cognitive-based design of yogurt product packaging	In this study, the authors analyzed the implementation of cognitive-based design in developing yogurt product packaging to increase consumers' willingness to buy the product.	Survey		Preliminary results showed that 'Fineliner' and 'Bodoni' font type along with 'Analogue' and 'Tetradic' color schemes are judged to be the best combination and thus, these results would be combined in the main study with the shape factor.
