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Product packaging and consumer purchase intentions: a structural analysis in the afghan perfume market

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ABSTRACT

In the context of fragrant products in Kabul, Afghanistan, this study investigates the impact of packaging attributes on consumer purchase intentions. Through examining five critical dimensions—packaging color, design, printed information, materials and font styles—this research endeavors to determine how these components influence consumer perceptions and decision-making. This research explores the influence of visual, textual, and material cues on consumer behavior through theoretical frameworks, including the Stimulus-Organism-Response (S-O-R) Framework, the Theory of Planned Behavior (TPB) and Cue Utilization Theory. In order to verify the hypotheses, 389 participants were administered a structured questionnaire, and the data were analyzed using Structural Equation Modeling (SEM) and Confirmatory Factor Analysis (CFA). The results suggest that packaging design, materials and font styles substantially influence consumer purchase intentions, while packaging color and printed information have non-significant effects. These results challenge conventional beliefs regarding the primacy of textual elements and color, underscoring the increasing significance of typography, material quality and design in forming consumer preferences. The study provides valuable theoretical contributions by extending established consumer behavior models and highlights practical implications for marketers, such as adopting sustainable materials and culturally relevant design strategies. Future research should address cultural variability, interactive packaging and longitudinal consumer behavior trends.

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1. Introduction

In recent years, marketing research has increasingly emphasized the critical role of product packaging in shaping consumer purchase intentions. Packaging is no longer perceived as a purely functional container; instead, it serves as a strategic communication tool that enhances perceived product value, conveys brand identity and evokes emotional responses (Shukla et al., 2023; Silayoi & Speece, 2007). Particularly for luxury products like perfumes, packaging significantly influences consumer perceptions by projecting status, creating emotional bonds and signaling product quality (Magnier & Schoormans, 2015).

While substantial research has been conducted on packaging's influence in developed economies, studies exploring its impact in emerging and culturally diverse markets remain limited. In Afghanistan—a country characterized by rapid urbanization, socio-economic transitions and an evolving consumer landscape—the role of packaging in shaping purchasing behavior remains largely underexplored. Recent reports indicate a growing middle class, an increase in international brand exposure and a gradual expansion of organized retail in urban centers like Kabul (Sarwari & Ono, 2023). The Afghan retail sector has shown resilience despite ongoing economic and political challenges, with consumer behavior increasingly reflecting aspirations toward global lifestyle trends and luxury consumption.

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Previous studies predominantly focused on Western or relatively stable markets, where consumer preferences are shaped by high purchasing power, consistent brand familiarity and mature retail infrastructures (De Canio et al., 2021; Rundh, 2016). However, Afghanistan presents a unique environment where consumer choices are influenced not only by socio-economic factors but also by cultural traditions, emerging brand consciousness and limited access to product trials. These conditions make extrinsic product cues—such as packaging design, material and branding—especially critical in influencing purchase decisions.

Perfume products offer an ideal category for investigating the relationship between packaging and consumer behavior. Perfumes hold significant cultural value in Afghanistan, often associated with hospitality, religious practices and social status. As fragrances are experiential goods whose intrinsic qualities (e.g. scent) cannot always be sampled prior to purchase, consumers are more likely to rely on packaging cues when making purchasing decisions (Acebrón & Dopico, 2000; Orth & Malkewitz, 2008).

The novelty of this research is underscored by three key contributions. First, it offers an empirical investigation into the specific packaging attributes—such as design, color, material and printed information—that influence consumer purchase intentions for luxury products within the unique context of an emerging, post-conflict economy. Second, the study critically examines the applicability and adaptability of established Western consumer behavior theories, including the Theory of Planned Behavior (TPB), Cue Utilization Theory and the Stimulus-Organism-Response (S-O-R) Framework, within a non-Western cultural setting, thereby contributing to the cross-cultural validation and extension of these theoretical models. Third, the research provides actionable insights and practical recommendations for marketers and policymakers operating in Afghanistan and comparable developing economies, with the goal of enhancing packaging strategies that resonate with local consumer preferences and expectations.

To achieve these objectives, the study adopts a quantitative research approach, collecting primary data from perfume consumers in Kabul. By bridging the gap between academic inquiry and practical marketing application, this research contributes to the global discourse on packaging design and consumer purchase behavior while offering context-specific insights for Afghanistan's growing retail sector.

2. Literature review

2.1. Theoretical underpinnings

This research is underpinned by several well-established theories that establish a connection between the attributes of product packaging and consumer behavior and decision-making. Initially, the Theory of Planned Behavior (TPB) by Ajzen (1991) provides a solid foundation for comprehending the impact of external factors, such as packaging color, design and font style, on consumers' attitudes, subjective norms and perceived behavioral control, thereby influencing their purchase intentions. The visual appeal and informational components of packaging directly impact attitudes, which are critical determinants of behavioral intentions. The TPB is particularly suitable for this study because it has been effectively applied to contexts where external marketing stimuli shape consumer attitudes and behavior. For instance, Teng and Wang (2015) demonstrated that green product packaging significantly shaped consumers' purchase intentions through attitudes and perceived behavioral control, based on TPB. Similarly, the perfume market in Kabul, where visual cues dominate first impressions, fits well with the TPB framework.

Secondly, the fundamental premise of the Cue Utilization Theory is that any entity of interest (a product, service, organization etc.) is composed of a variety of signals that indicate quality (Olson & Jacoby, 1972). Cue utilization theory posits that a product comprises various signals surrogate quality indicators for consumers/shoppers (Richardson et al., 1994). In the context of perfume products, where intrinsic cues like scent quality cannot be experienced without purchase, packaging attributes such as material, printed information and font style become critical extrinsic cues that consumers rely on to assess quality and brand image. This theory is highly relevant because perfume products are categorized as 'experience goods' where extrinsic signals heavily influence consumer perceptions. Previous studies, such as Acebrón and Dopico (2000) in the food sector and Orth and Malkewitz (2008) in the wine industry, confirmed that when intrinsic product qualities are difficult to evaluate pre-purchase, consumers rely extensively on

packaging and design cues. Therefore, Cue Utilization Theory provides a precise framework for investigating Kabul consumers' reliance on packaging when purchasing perfumes.

Lastly, Mehrabian and Russell (1974) developed the Stimulus-Organism-Response (S-O-R) Framework, which elucidates the affective and cognitive responses that sensory stimuli, such as packaging elements, elicit in consumers. In turn, these responses influence behavioral outcomes, such as purchase decisions. IMAGINE a consumer strolling through the cereal aisle of a grocery store. A diverse array of visual signals emanates from the boxes that line the shelves, including colors, fonts and logos. Color is the most critical of all visual signals. Color can enhance memory, draw attention and most importantly, evoke emotions, moods and sentiments (Floyd, 2011). Similarly, Poturak (2014) verified that product design elements, including color, printed information, background image and packaging materials, may influence consumers' purchasing behavior. The S-O-R model is particularly appropriate for this study because it explains how sensory marketing stimuli drive emotional and cognitive reactions leading to purchasing behaviors. Research by Spence and Gallace (2011) on multisensory packaging confirmed that visual and tactile stimuli heavily influence consumer emotional responses and purchasing decisions. Given that perfumes are often positioned as emotional and sensory products, the S-O-R framework is a powerful lens through which to examine packaging's influence on purchase intentions in Kabul.

2.2. Evaluating product packaging and its impact on consumer purchase intention

The brand message and the knowledge about the commodity are conveyed to the target consumers through product packaging (Nancarrow et al., 1998). According to Gómez et al. (2015), 'A well-packaged product sells itself.' 'Good packaging is far more than a salesman; it is a flag of recognition and a symbol of values' (Akkaya, 2021). Additionally, it has been estimated that approximately 73% of consumers make their purchasing decisions at the point of sale (Rettie & Brewer, 2000). Packaging is frequently the consumers' final impression (Mazhar et al., 2015; Treiblmaier & Garaus, 2023). Rundh (2016) also asserted that packaging is a factor in the perception of your product and captures consumers' attention. The central pillar of packaging has recently been regarded as the perfume-related industry. Perfumes have endured a substantial transformation, becoming a mainstream business in the personal care and cosmetics industry. The significant communicative function and significant influence on consumers' purchasing decisions have led to an increasing emphasis on packaging by companies in developed regions (Salem, 2018).

Perfume products, such as fragrances, are classified as personal luxury goods (Krishnan et al., 2022). Academics and marketers are equally drawn to the luxury goods market, one of the most attractive and rapidly expanding global markets (Heine, 2012). Shao et al. (2021) anticipated the industry would generate \$6658 million in sales in 2022, with a compound annual growth rate (CAGR) of 6.72% from 2022 to 2025. Within this sector, the Prestige Cosmetics and Fragrances category led the market with a valuation of \$1907 million in 2022 (Treiblmaier & Garaus, 2023).

Countries such as India, Japan, China, Korea and Australia exhibit notable growth trends in luxury goods consumption. Among these nations, India exhibits a distinctive dynamic fueled by its swiftly expanding middle class and favorable demographics, including a 65% under-35 age group, economic growth, urbanization, increasing disposable income levels and increased digital connectivity. These factors contribute to the growing inclination of Indian youth to purchase luxury goods. Similarly, China has experienced a surge in luxury consumption, supported by robust economic growth and urbanization (Theurillat, 2022). In contrast, Japan's luxury market demonstrates maturity, with higher purchasing power concentrated among older demographics (Herrador & Imanishi, 2025). Korea and Australia, on the other hand, showcase balanced growth across both younger and older segments, reflecting a diversified market for premium products (Choy et al., 2023). These comparative trends underscore the necessity of effective product packaging strategies customized to cultural and economic contexts, as packaging is a critical factor in determining consumer purchase intentions in the competitive luxury market.

Furthermore, the packaging is increasingly emphasized to distinguish relatively similar products (Rundh, 2016). Packaging is particularly significant for luxury goods like perfumes as it reflects the brand's positioning and creates emotional appeal. Worldwide research underscores the importance of packaging attributes in consumers' decision-making process. According to a study that examined the interplay of influential factors during the purchase of perfumes in Pakistan, consumers are inclined to spend more

when presented with high-quality perfumes in attractive packaging and beautifully designed perfume bottles (Raza et al., 2013). In Kabul, Afghanistan, consumer preferences for product packaging are influenced by distinctive cultural and economic dynamics. Afghan consumers often prioritize aesthetic and functional packaging due to limited disposable income and heightened sensitivity to product value. While international brands dominate the perfume market, locally tailored packaging designs and culturally relevant cues remain underexplored. Research on the marketing aspect of packaging indicates widespread agreement among researchers that the consumer purchase decision is influenced by packaging design, including shape, logo, size, color and language (Salem, 2018).

Nevertheless, additional research is required to address this matter, as empirical research on the impact of packaging on consumer behavior is scarce and particularly little of it is conducted in Asian markets. Numerous cross-cultural researchers contend that knowledge acquired in one culture should be verified before application in novel cultural contexts (Majeed et al., 2022; Silayoi & Speece, 2007). This lacuna is further exacerbated by the absence of empirical studies specific to a particular region investigating the influence of packaging attributes on consumer purchase intentions.

Addressing these gaps is essential to a better understanding how Afghan consumers perceive and evaluate packaging. While numerous fundamental issues are likely consistent across cultures, specific details, such as responses to specific colors or themes, may be interpreted differently in different cultures (Silayoi & Speece, 2007). Factors such as color symbolism, which varies across cultures, may have distinct implications for luxury goods in Afghanistan and the need for localized research to provide actionable insights for marketers and researchers alike.

2.2.1. Packaging color (PC)

Maule et al. (2023) assert that color is believed to convey meaning that affects an individual's cognition and behavior. Color can communicate distinct messages to consumers depending on their cultural background in the context of packaging (Pereira, 2021). Hallez et al. (2023) suggest that consumers may favor specific colors over others when selecting products from various categories. Additionally, consumers are affirmed to have color preferences for various product categories influenced by their cultural affiliations (Chan & Meng, 2021). Customers' purchasing judgments are significantly influenced by color (Levrini et al., 2021). Martinez (2021) has also noted that approximately 90% of rapid product evaluations are exclusively based on color. The marketing literature demonstrates that packaging colors can elicit various emotions, sentiments, and behaviors in consumers (Chitturi et al., 2022). Studies on the relationship between color, marketing and consumer behavior are still deficient despite research on color perception related to physics, linguistics, physiology and synesthesia (Theben et al., 2020).

Studies predominantly focus on Western contexts, where color associations such as red for passion or blue for trust are assumed to be universal. Nevertheless, packaging colors are linked to various cultural values in numerous cultures and those visually enticing in one culture may not be so in another (Hasnat et al., 2024; Kuo et al., 2023). According to previous research, consumers favor products packaged in colors that align with their cultural values (Chitturi et al., 2022; Liang & Hangeldiyeva, 2024). Afghan culture attributes distinct meanings to colors, shaped by traditional and religious values, which may influence consumer perceptions differently. Research should examine how Afghan consumers associate colors with luxury and quality to address these gaps. For example, exploring the symbolic meanings of culturally significant colors, such as Green, which is regarded as a holy hue in Islamic civilizations and is connected to fertility and heaven (Rahimi et al., 2023), can provide valuable insights. Tailoring packaging colors to resonate with Afghan consumers' preferences can help brands enhance their market appeal.

#H1: *Packaging color has a positive effect on consumer purchase intention.*

2.2.2. Packaging design (PD)

Packaging encompasses creating and manufacturing a product's container, which safeguards and promotes the product (Kotler et al., 2024). Packaging design is a significant factor in consumers' perceptions of a product, necessitating it being prominently displayed (Wang et al., 2023) in luxury products like

perfumes; innovative designs such as elegant bottle shapes or embossed packaging add perceived value and foster a sense of exclusivity (Wang & Li, 2022).

While global research underscores the importance of innovative designs, limited attention has been given to how design preferences vary across cultural contexts. For instance, minimalist designs are often favored in Western markets but may not resonate with Afghan consumers, who might prefer intricate patterns or culturally inspired motifs. Furthermore, the economic constraints in developing markets often necessitate cost-effective yet appealing designs, a factor most studies overlook. Future studies should focus on identifying Afghan consumers' design preferences, particularly regarding cultural aesthetics and functional needs. For instance, incorporating traditional Afghan patterns or motifs into packaging may enhance local appeal while preserving the luxury image.

#H2: *Packaging design has a positive effect on consumer purchase intention.*

2.2.3. Packaging material (PM)

Bahrami and Sablani (2025) assert that packaging material envelops a product on its exterior to safeguard it from injury. Consumers are naturally more inclined to prefer a product made with high-quality materials over one made with lower-grade materials (Rosenboom et al., 2022). Furthermore, Meet et al. (2024) asserted that packaging materials significantly impact consumer purchase intention and buying behavior. It was determined by Hein (2022) that the variances in product material have a significant impact on purchase intention. Similarly, Shukla et al. (2023) investigated the packaging components influencing purchase intention. Previous research has demonstrated that packaging material directly correlates with consumer purchase intentions and indirectly correlates with purchase intentions through perceived quality (Tan et al., 2022). Although research highlights the importance of material in consumer decision-making (Jeesan & Seo, 2020), studies primarily focus on sustainability in Western markets (Chattopadhyay, 2023); there is limited understanding of how consumers in developing economies, such as Afghanistan, evaluate packaging materials. Economic constraints and limited awareness of environmental issues may lead to material preferences different from those of Western markets. By examining Afghan consumers' preferences for cost-effective yet luxurious materials, this study addresses the gap in understanding material perceptions in developing markets. For instance, assessing the trade-off between affordability and luxury appeal can help brands cater to local needs effectively.

#H3: *Packaging material has a positive effect on consumer purchase intention.*

2.2.4. Packaging printed information (PPI)

Panda et al. (2022) have identified four primary packaging elements that have the potential to influence consumer purchase decisions. These elements can be categorized as visual and informational. Informational elements are more likely to address the cognitive side of decisions and are related to the information provided and technologies used in the bundle. Furthermore, printed information is intended to entice consumers and encourage them to purchase a product (Ahmad et al., 2019). In developing countries, consumers typically prioritize the expiration date and ingredients of products (Kumar et al., 2021). Ha (2021) discovered that perceived quality and uniqueness moderated the relationship between printed information and consumer purchase intentions. On the contrary, Cavite et al. (2022) found that perceived risk and socio-demographic factors mediate the relationship between printed information and consumer purchase intentions. While the importance of printed information has been widely studied in functional product categories, its role in luxury products, particularly in culturally diverse regions, remains underexplored. In Afghanistan, where literacy rates and language preferences vary, the accessibility and relevance of printed information are critical considerations. Research should focus on how Afghan consumers interpret and value printed information on perfume packaging. Tailoring information to align with local language preferences and consumer needs can enhance product appeal and foster trust.

#H4: *Packaging printed information positively affects consumer purchase intention.*

2.2.5. Packaging font style (PFS)

According to Su and Wang (2023) research, consumers' purchase intentions are significantly influenced by font design, with color following closely behind. Consumers perceived it as more luxurious when a brand employed a more ostentatious, formal typeface. Simultaneously, using a more practical, informal font led to a more informal perception of the brand. The results indicate that the type font impacts consumers' responses to the type font and their perceptions and attitudes toward the brand (Singla & Sharma, 2022). Consumers employ these font impressions to infer information about the brand (Hasnat et al., 2023; Wu et al., 2021). Kim et al. (2021) identify four impressions that typefaces evoke: prominent, reassuring, engaging, and pleasing. They then correlate the characteristics of type fonts with these impressions. Color and font design are among the attributes that can persuade consumers to establish a favorable brand image (Singla & Sharma, 2022). Font style can offer valuable insights into a company's messaging and values and capture customers' attention, facilitating improved consumer comprehension. This emphasizes the significance of selecting a font type that is easily identifiable with the intended expression of a product or brand, as it improves the consumer's capacity to understand and assimilate the intended message (Kim & Lim, 2019; Wijekoon & Sabri, 2021). Despite its significance, font style remains an under-researched area in packaging studies. Most existing research focuses on font readability and aesthetic appeal, neglecting the cultural nuances that may shape font preferences in different markets. In Afghanistan, where traditional and modern design elements coexist, studying consumer preferences for font styles can provide valuable insights. For example, exploring the appeal of traditional calligraphy-inspired fonts versus modern minimalist fonts can help brands make informed design decisions.

#H5: *Packaging font style positively affects consumer purchase intention.*

2.2.6. Consumer purchase intentions (CPI)

Purchase decisions encompass numerous factors, such as the location of the purchase, the brand and model of the item, the timing of the purchase, the amount of money to spend, and the payment method of choice. Product packaging substantially determines this decision (Bou-Mitri et al., 2021; Hasnat et al., 2024). Price, packaging, promotion and previous experience influence consumer purchasing (Moslehpour et al., 2021). While extensive research has been conducted on purchase intentions in Western contexts, studies addressing the influence of cultural, economic, and social factors on CPI in developing economies remain limited. Understanding the interplay between packaging attributes and purchase intentions in culturally specific markets is essential for luxury products like perfumes. This research addresses the gap by examining how packaging attributes influence consumer purchase intentions in Kabul, Afghanistan. By contextualizing global insights within a local framework, the study provides a comprehensive understanding of consumer behavior in a developing economy.

Table 1 comprehensively summarizes the variables and measurement items associated with the influence of packaging attributes on consumer purchase intentions for perfume products. The variables encompass multiple packaging dimensions, including color, design, printed information, materials and font styles, each playing a distinct role in shaping consumer perceptions and purchase decisions. These dimensions are evaluated using coded items sourced from relevant studies, offering valuable insights into how packaging's visual, textual and material elements contribute to brand identity, emotional resonance and consumer behavior.

2.3. Conceptual framework

This research focuses on consumer purchase intentions and product packaging in Kabul, Afghanistan, specifically concerning fragrant products. The pertinent literature has developed the research model in Figure 1. The research model is used to quantify the impact of each dimension of product packaging (packaging color, packaging design, packaging material, printed information and font styles) on consumer purchase intentions in Kabul.

Table 1. Definition of the operational variables and measurements.

Variable(s)	Code	Item	Source
Packaging Color (PC): It refers to the visual attribute of a product's packaging that influences consumer perceptions, emotions and purchase decisions. It is a powerful nonverbal cue that communicates brand identity, evokes specific feelings, and resonates with cultural and psychological associations unique to different consumer groups.	PC1	I like the color of the packaging of this perfume product/brand.	(Jeesan & Seo, 2020)
	PC2	The color of the packaging of this perfume product/brand matters to me when purchasing it.	
	PC3	I can recall this perfume brand when I see a similar color.	
	PC4	I can associate the color of this perfume product/brand with its brand image.	
Packaging Design (PD): It refers to the creative and functional process of developing the external appearance of a product's container to attract attention, communicate brand identity and enhance perceived value. It encompasses elements such as shape, graphics, colors and material, aiming to make the product visually appealing while ensuring practicality and protection.	PD1	The bottle design of this perfume product/brand is important to me.	(Ahmad et al., 2019)
	PD2	The design of this perfume product/brand's packaging inspires me to purchase it.	
	PD3	The packaging design influences my perception of this perfume product.	
Packaging Printed Information (PPI): It refers to the textual and graphical details displayed on a product's packaging, such as ingredient lists, usage instructions, brand names and expiration dates. It informs consumers about the product's attributes and benefits, aiding their decision-making process by providing clarity, transparency, and trustworthiness.	PPI1	I pay attention to the printed information on the package of this perfume product.	(Kumar et al., 2021)
	PPI2	The information provided on the package of this perfume product/brand influences my purchase decision.	
	PPI3	I consider product information on the package of this perfume product/brand to be important.	
Packaging Materials (PM): It refers to the physical substances used to encase and protect a product, ensuring its safety, durability and visual appeal during storage, transport and display. They are crucial in consumer perception, often serving as product quality and sustainability indicators, influencing purchase decisions.	PM1	I prefer this perfume brand due to the quality of its packaging material.	(Tan et al., 2022)
	PM2	The packaging material of this perfume brand/product attracts me.	
	PM3	The quality of the packaging material of this perfume product/brand indicates that the product is better.	
	PM4	The quality of the packaging material of this perfume product/brand does not matter to me.	
	PM5	I perceive this brand as prestigious due to its packaging.	
Packaging Font Style (PFS): It refers to the design and arrangement of text on a product's packaging, including typeface, size, color and layout. It plays a crucial role in capturing consumer attention, reinforcing brand identity and evoking emotional responses, ultimately influencing purchase intentions.	PFS1	The font styles used on the package of this perfume product/brand are visually appealing.	(De Canio et al., 2021)
	PFS2	Creative font styles on the package of this perfume product/brand catch my attention.	
	PFS3	The font size and style used on the package of this perfume product/brand help me remember it.	
Consumer Purchase Intention (CPI): It refers to a consumer's planned or expected decision to buy a specific product or brand based on their preferences, perceptions and external influences. It is a key indicator of potential buying behavior, shaped by product attributes, marketing strategies and individual or cultural considerations.	CPI1	I am highly likely to buy this perfume product/brand.	(Shukla et al., 2023)
	CPI2	I intend to purchase this perfume product/brand in the future.	
	CPI3	When buying perfume, I often consider this perfume product/brand.	
	CPI4	This perfume product/brand is among my preferred choices when shopping for perfume.	
	CPI5	I would recommend this perfume product/brand to friends and family.	

(Source: Authors).

3. Research method

3.1. Consent to participate statement

Participants provided informed consent prior to participation, which was obtained both in written form via Google Forms and verbally during face-to-face interviews, ensuring voluntary participation and ethical compliance.

3.2. Ethics statement

The study received approval from the Research Committee at Parwan University, Afghanistan, as it involves human participants (Ethics Number: PU/Regi.Office/Letter/2024/53). Consent was obtained face to face and via Google Forms, where participants were informed that each question was optional and no personally identifying information would be collected, ensuring strict anonymity. Participants' consent was confirmed physically and by submitting the completed Google Form.

3.3. Data collection method

The respondents were selected using a non-probability convenience sampling technique, targeting perfume product consumers in Kabul, Afghanistan. This method was chosen due to its practicality and effectiveness in reaching a large number of relevant participants within a limited timeframe. Eligible participants were individuals aged 18 and above who had previous experience purchasing perfume products, ensuring their relevance to the research objective concerning packaging preferences and purchase intentions. Participants were approached in retail settings such as malls, perfume shops and public areas where perfumes are commonly sold. Additionally, some responses were collected online via social media platforms popular in Kabul to broaden the demographic reach, ensuring diversity across age, education and income levels, as reflected in Table 2. To encourage participation, respondents were informed that their input would contribute to academic research aiming to improve marketing and packaging strategies in the local perfume industry. No monetary incentive was provided; however, participants were offered a chance to enter a lucky draw for small non-monetary prizes (such as a branded notebook or a fragrance sample), which increased the response rate and participant engagement. Furthermore, the data was collected between May 27, 2024 and July 20, 2024. The reliability and validity of the scale were established through the use of IBM SPSS 27 and IBM AMOS 26 programs in the research. Descriptive statistics were implemented to evaluate the participant's demographic characteristics (frequency and percentage). The research hypothesis is evaluated using the structural equation model (SEM). The current study's sample size is sufficient to perform the SEM model, as the sample size should be at least 15 instances per indication (Collier, 2020; Stevens, 1996). Additionally, the prescribed

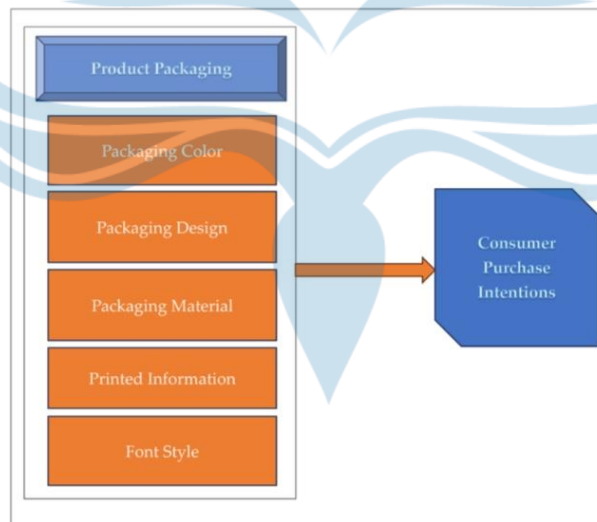


Figure 1. Conceptual framework: Influence of product packaging attributes on consumer purchase intentions (Source: Authors).

range of 100–150 respondents is met to obtain dependable results (Kline, 2011). As a result, the sample size of 389 in this study is consistent with the recommendations of Stevens (1996) and Collier (2020).

3.4. Measurement

The questionnaire utilized in the investigation was selected based on prior research. The validity and reliability of the measuring instruments were evaluated. The questionnaire is divided into two sections: 389 queries were employed to investigate the demographic information (gender, age and marital status) and product packaging information of the participants in the initial section. The product packaging (packaging color, packaging design, packaging material, printed information, and font styles) was primarily influenced by the work of Jeelan and Seo (2020), Ahmad et al. (2019), Kumar et al. (2021), Tan et al. (2022), De Canio et al. (2021) and Shukla et al. (2023). This study evaluated all the variables using a 5-point Likert rating scale (from 1=strongly disagree to 5=strongly disagree).

4. Result analysis and discussion

4.1. Socio-demographical characteristics

Table 2 provides a comprehensive demographic and consumer preference analysis as part of a research study. The age distribution reveals an intense concentration of younger individuals, with over 50% of respondents falling within the 22–25 age range and another 26.20% in the 18–21 bracket. Together, these groups constitute more than three-fourths of the total sample. Older age groups are underrepresented, with 15.90% in the 26–29 range and only 7.70% aged 29 or older, emphasizing the youthful focus of the study's respondents. Regarding marital status, most participants (79.40%) are single, while married individuals comprise only 20.60% of the sample. This aligns with the study's younger demographic composition. Regarding gender, there is a significant disparity in the data, with 100% of respondents being male and 0% female. The exclusive focus on male respondents was due to significant socio-cultural constraints present in Afghanistan, where traditional norms often limit female participation in public surveys, especially in commercial settings like perfume shops and malls. In Kabul, interactions between unrelated men and women in public spaces are still sensitive and many women are reluctant to engage with male researchers or participate in street-level surveys, particularly on topics related to personal products like fragrances.

Table 2. Socio-demographical characteristics of the participants (N=389).

Description	Level	Frequency	Percent
Age	18–21	102	26.20%
	22–25	195	50.10%
	26–29	62	15.90%
	29+	30	7.70%
Marital_Status	Single	309	79.40%
	Married	80	20.60%
Gender	Male	389	100.00%
	Female	00	00.00%
Income Range	8000–13,000	74	19.00%
	13,001–18,000	125	32.10%
	18,001–23,000	90	23.10%
	23,001–28,000	49	12.60%
	28,001–33,000	29	7.50%
	33,001–38,000	10	2.60%
	>38,000	12	3.10%
What is the highest level of education you have completed?	Secondary	160	41.10%
	High school	123	31.60%
	Bachelor's degree	90	23.10%
	Master's degree	12	3.10%
	Doctorate	4	1.00%
What type of packaging do you prefer for perfume products?	Plastic Bottle	46	11.80%
	Glass Bottle	112	28.80%
	Metal Bottle	67	17.20%
	Refillable Bottle	100	25.70%
	Other	64	16.50%

The income distribution demonstrates that many respondents are in middle-income brackets. The largest group earns between 18,001 and 23,000 (23.10%), followed closely by those earning 13,001–18,000 (22.50%) and 8000–13,000 (19.00%). Higher-income categories, such as those earning above 38,000, are minimally represented (3.10%), suggesting that the study sample predominantly focuses on middle- and lower-income individuals. Educational attainment shows a well-rounded distribution, with the most significant proportion of respondents having completed secondary education (41.10%), followed by high school graduates (31.60%). Those with bachelor's degrees constitute 23.10%, while advanced degrees (master's and doctorate) collectively comprise only 4.10%, indicating a limited representation of highly educated participants. Finally, consumer preferences regarding perfume packaging reveal an apparent inclination toward glass bottles, which 28.80% of respondents favor. Refillable bottles are the second most preferred option (25.70%), suggesting growing interest in sustainable options. Plastic bottles (11.80%) and metal bottles (17.20%) are less popular, while 16.50% of respondents indicated a preference for other types of packaging. These insights provide valuable information about consumer behavior and choices in the perfume market.

4.2. Confirmatory factor analysis (CFA)

The first-order Confirmatory Factor Analysis (CFA) factorial structure was tested using the AMOS program. A covariance matrix was generated by the maximum likelihood (ML) technique, which was based on the normal distribution of data collected from 389 participants on a five-point Likert scale (Gürbüz & Şahin, 2018; Kline, 2011). Additionally, confirmatory factor analysis (CFA) was implemented to evaluate the intended structure of a questionnaire (Yaşlıoğlu, 2017). Furthermore, confirmatory factor analysis is a method for estimating the measurement model. It endeavors to ascertain whether the masses and number of components (constructs) of the observed (indicator) variables are consistent with the predictions of Malhotra (2010). In other words, confirmatory factor analysis is employed to evaluate the accuracy of a scale or model constructed using acquired data, has a theoretical foundation, or has been used in previous research (Gürbüz, 2021).

The values of χ^2/df , Root Mean Square Error of Approximation (RMSEA), Goodness-of-Fit Index (GFI), Normed Fit Index (NFI), Tucker Lewis Index (TLI), Incremental Fit Index (IFI), Comparative Fit Index (CFI), and Root Mean Square Residual (RMR) values are examined in the research to check the model for good fit (Nikhil et al., 2024). The goodness of fit values of the measurement model is obtained as ($\chi^2/pdf = 1.522$; IFI = 0.978; TLI = 0.974; CFI = 0.978; GFI = 0.93; NFI = 0.940; RMSEA = 0.038; and RMR = 0.055) the accepted goodness-of-fit values have been reached. This result shows that the measurement model is confirmed to produce the goodness of fit values with the factor structure in the previous questionnaire. The values of these indices are given in Table 3, and Figure 2 demonstrates the CFA measurement model.

4.3. Reliability and validity test of measurement model

A measurement model aims to elucidate the efficacy of observable variables as measuring instruments for latent variables (Amin, 2016). The measurement model was assessed using a two-stage analytic approach encompassing reliability and validity evaluations. Composite reliability (CR) and Cronbach's alpha (CA) are the most frequently employed methodologies for assessing reliability during the initial phase. The internal consistency of the dataset was analyzed using reliability analysis to investigate consumer purchase intentions, packaging color, packaging design, packaging material, printed information and font styles. Furthermore, the datasets' reliability should be assessed by a Cronbach's alpha (CA) value that exceeds 0.70 (Collier, 2020). Table 4 illustrates that nearly all CA values satisfied the standard criteria. Additionally, the composite reliability (CR) value should exceed 0.60 (Henseler et al., 2009); however, all CR values in Table 4 exceed the necessary criteria.

Nevertheless, the convergent and discriminant validity tests, discussed in the second analysis stage, are two distinct categories of validity tests. Furthermore, Table 4 assessed the convergent validity of factor loading of at least 0.7 (Fornell & Larcker, 1981) and the average variance extracted (AVE). Table 5 assessed the discriminant validity of the square root of the average variance extracted

(AVE). Additionally, although the average variance extracted (AVE) must exceed 0.50 (Henseler et al., 2009), nearly all of the AVE values in Table 4 exceed this threshold. Furthermore, the discriminant validity must be demonstrated by the square root of the average variance extracted (AVE) being more significant than the association between the other two components (Cheng et al., 2019). The statistical output in Table 5 demonstrates that all square roots of AVE exceed the association between any other two parameters, thereby establishing discriminant validity (Gaskin et al., 2019).

Table 3. The cut-off value of the goodness of fit model (CFA model).

Metric	Good limit	Accepted limit	Result of CFA
p value	$.05 < p \leq 1.00$	$.01 \leq p \leq .05$	0
χ^2/df	$0 \leq \chi^2/df \leq 2$	$2 < \chi^2/df \leq 3$	1.552
RMSEA	$0 \leq RMSEA \leq .05$	$0.05 < RMSEA \leq .08$	0.038
CFI	$0.97 \leq CFI \leq 1.00$	$0.95 \leq CFI < 0.97$	0.978
GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI < 0.95$	0.931
NFI	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI < 0.95$	0.940
IFI	$0.95 \leq IFI \leq 1.00$	$0.90 \leq IFI < 0.95$	0.978
SRMR/RMR	< 0.05	< 0.08	0.055

Source: (Gürbüz, 2021).

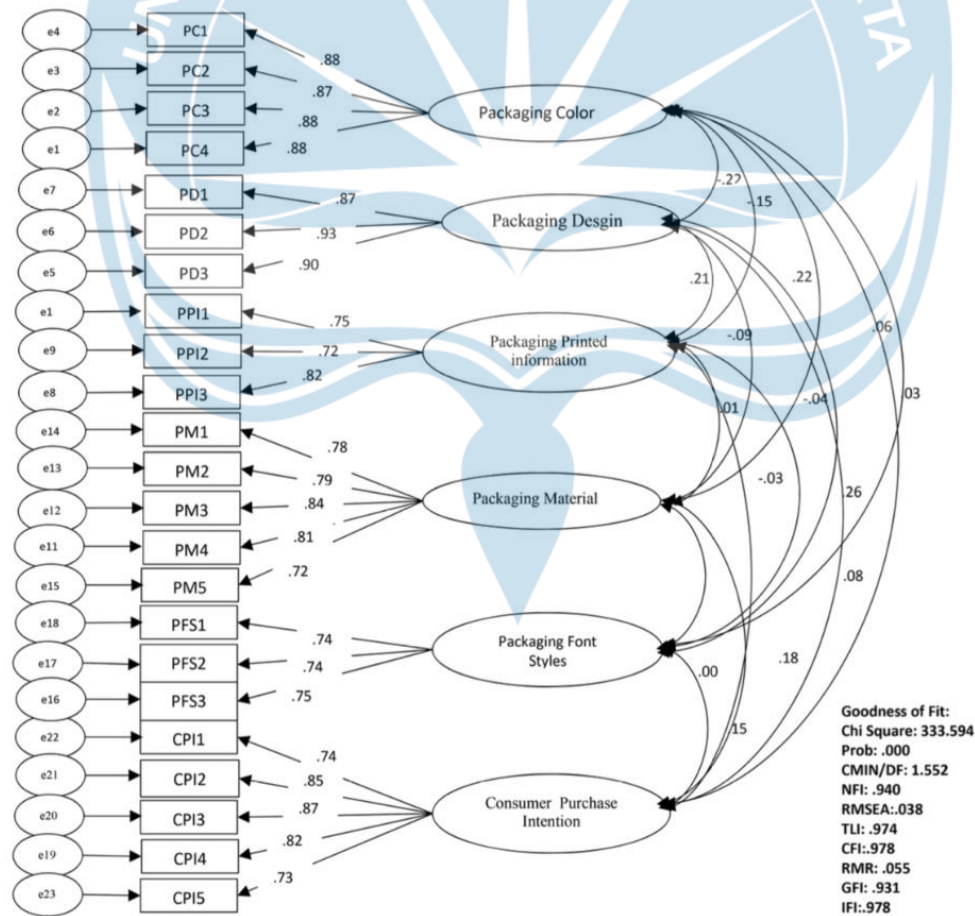


Figure 2. CFA measurement model.

Furthermore, Table 5 illustrates that each value exceeds the values of the inter-structure association between them. Consequently, these figures serve as sufficient evidence that discriminant validity is present. The internal consistency of the measures was analyzed using the confirmatory factor analysis with the maximum likelihood estimate. All components were incorporated into this study to address the measurement's reliability and validity.

4.4. Analysis of structural Equation model testing

The structural equation model (SEM) was employed to evaluate the study hypotheses after the measurement model had been validated with Amos 24. Figure 3 shows that H1 and H3 were unsupported, whereas other research hypotheses (H2, H4 and H5) were. The goodness-of-fit cut-off values for the SEM model are presented in Table 6 and all values are within desirable ranges.

4.5. Hypothesis testing

According to the result of the structural equation model (SEM) in Table 7, Packaging design ($\beta=0.296$, CR = 5.4, $p=.000$), Packaging material ($\beta=0.193$, CR = 3.476, $p=.000$) and Packaging font style ($\beta=0.195$, CR = 2.762, $p=.000$) on consumer purchase intentions show a positive and statistically significant effect on consumer purchase intentions, leading to acceptance of H2, H4 and H5. In addition, according to the result of the SEM model, Packaging color ($\beta=0.053$, CR = 0.947, $p=.165$), Printed information ($\beta=0.084$, CR = 1.479, $p=.139$) show a positive but not statistically significant effect on consumer purchase intentions, leading to not acceptance of H1 and H3.

Table 4. Validity and reliability test.

Items & variables				Factor loading > 0.05	Validity		Reliability	
					p value	AVE > 0.5	CR > aVE	Cronbach's alpha
Packaging Color (PC)	PC4	<---	PC	0.877	***	0.771	0.931	0.930
	PC3	<---	PC	0.885	***			
	PC2	<---	PC	0.873	***			
	PC1	<---	PC	0.878	***			
Packaging Design (PD)	PD3	<---	PD	0.905	***	0.813	0.929	0.928
	PD2	<---	PD	0.932	***			
	PD1	<---	PD	0.868	***			
	PPI3	<---	PPI	0.819	***			
Packaging Printed Information (PPI)	PPI2	<---	PPI	0.723	***	0.583	0.807	0.803
	PPI1	<---	PPI	0.747	***			
	PM4	<---	PM	0.815	***			
	PM3	<---	PM	0.845	***			
Packaging Material (PM)	PM2	<---	PM	0.788	***	0.626	0.893	0.892
	PM1	<---	PM	0.784	***			
	PM5	<---	PM	0.721	***			
	PFS3	<---	PFS	0.751	***			
Packaging Font Style (PFS)	PFS2	<---	PFS	0.740	***	0.550	0.786	0.783
	PFS1	<---	PFS	0.735	***			
	CPI4	<---	CPI	0.823	***			
	CPI3	<---	CPI	0.866	***			
Consumer Purchase Intentions (CPI)	CPI2	<---	CPI	0.854	***	0.674	0.901	0.899
	CPI1	<---	CPI	0.744	***			
	CPI5	<---	CPI	0.726	***			

PC: Packaging Color; PD: Packaging Design; PPI: Packaging Printed Information PM: Packaging Material; PFS: Packaging Font Style; CPI: Consumer Purchase Intentions.

Table 5. Discriminant validity (the square root of AVE).

	CR	AVE	MSV	MaxR(H)	PC	1	2	3	4	5
PC	0.931	0.771	0.05	0.931	0.878					
PD	0.929	0.814	0.069	0.934	-0.223***	0.902				
PPI	0.808	0.584	0.023	0.815	-0.152**	0.02	0.764			
PM	0.893	0.627	0.049	0.898	0.221***	-0.091	0.014	0.792		
PFS	0.786	0.551	0.022	0.786	0.06	-0.036	-0.029	0.003	0.742	
CPI	0.901	0.647	0.069	0.91	0.026	0.262***	0.08	0.179**	0.150*	0.804

5. Discussion on findings

The study results highlight the influence of various packaging attributes on consumer purchase intentions, providing significant theoretical and practical insights. These findings align with established theories, including the Theory of Planned Behavior (TPB), Cue Utilization Theory, and the Stimulus-Organism-Response (S-O-R) Framework, while offering directions for future research and practical applications in marketing.

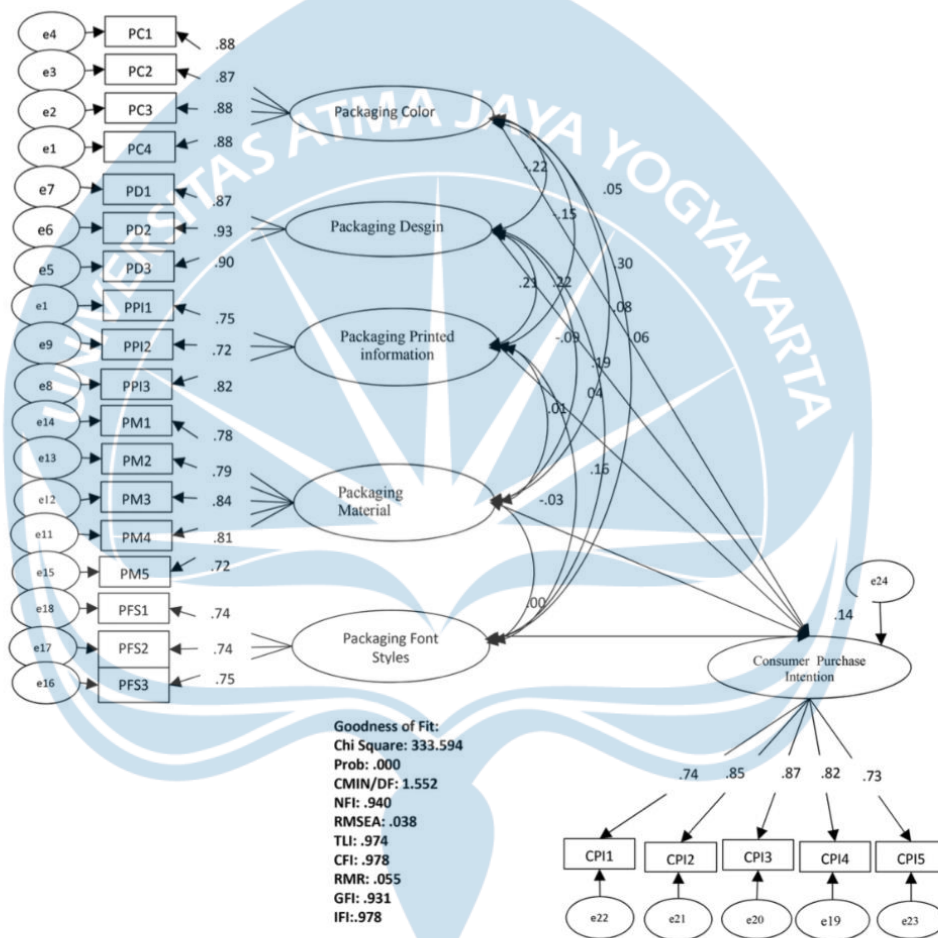


Figure 3. Structural equation model (SEM).

Table 6. The cut-off value of the goodness of fit model (SEM model).

Metric	Good limit	Accepted limit	Result of SEM
p value	.05 < p ≤ 1.00	.01 ≤ p ≤ .05	.000 ≤ p ≤ .165
χ^2/df	0 ≤ χ^2/df ≤ 2	2 < χ^2/df ≤ 3	1.552
RMSEA	0 ≤ RMSEA ≤ 0.05	0.05 < RMSEA ≤ 0.08	0.038
CFI	0.97 ≤ CFI ≤ 1.00	0.95 ≤ CFI < 0.97	0.978
GFI	0.95 ≤ GFI ≤ 1.00	0.90 ≤ GFI < 0.95	0.931
NFI	0.95 ≤ NFI ≤ 1.00	0.90 ≤ NFI < 0.95	0.940
IFI	0.95 ≤ IFI ≤ 1.00	0.90 ≤ IFI < 0.95	0.978
SRMR/RMR	< 0.05	< 0.08	0.055

Source: (Gürbüz, 2021).

Packaging design, material and font styles emerged as significant predictors of consumer purchase intentions, with packaging design proving to be the most impactful variable. These findings validate the Cue Utilization Theory, which posits that external product cues, such as design and material, act as surrogate indicators of quality, shaping consumer perceptions and influencing decisions (Richardson et al., 1994). The significant impact of packaging material further supports this theory, as it emphasizes the growing consumer focus on sustainability and perceived quality. As sustainability continues to be a key driver of purchase decisions, the findings align with the S-O-R Framework, which underscores how sensory stimuli like material evoke emotional and cognitive responses that drive consumer behavior (Mehrabian & Russell, 1974).

Contrarily, the non-significant relationship between packaging color and purchase intentions challenges traditional assumptions grounded in Color Psychology and the S-O-R Framework, which suggest that color is a critical factor in evoking emotions and influencing behavior (Labrecque & Milne, 2012). In the context of Afghan consumers, color plays a less pivotal role in shaping purchase intentions, possibly due to cultural preferences or product-specific factors. This deviation underscores the cultural variability of the S-O-R Framework, where the same stimulus may evoke different responses based on regional norms and values (Aslam, 2006). Similarly, the non-significant role of printed information aligns with findings in sensory-driven product categories like perfumes, where visual and experiential cues tend to outweigh textual details. This supports the Stimulus-Organism-Response (S-O-R) Framework's emphasis on sensory stimuli over informational elements in driving consumer decisions. It also suggests a shift towards minimalistic and experiential packaging trends, where consumers prioritize visual appeal over functional communication (Underwood, 2003). Product category characteristics could also explain the limited influence of color and printed text. Perfumes are typically high-involvement, sensory products where consumers prioritize attributes like design, material quality and brand image over superficial color cues or written information. In addition, brand familiarity and symbolic attributes (e.g. prestige, luxury) often outweigh visual color influence in such categories. Moreover, the dominance of certain color norms (e.g. gold for luxury, white for purity) within Afghan retail markets may have led to reduced differentiation based on color alone, diluting its impact on purchase intentions. Emerging digital trends might be reducing the reliance on traditional printed packaging information. Afghan consumers—especially younger, urban demographics—are increasingly accessing product details through QR codes, social media and brand websites, even for in-store purchases. The shift towards mobile-first consumer behavior suggests that static printed details are becoming less critical compared to dynamic, easily updated digital content (Roth et al., 2024).

Theoretically, the findings advocate for a multidimensional understanding of packaging. Packaging attributes should be studied separately and as interconnected elements that collectively influence consumer behavior. This holistic approach aligns with the Integrated Model of Packaging Influence, highlighting multiple attributes' synergistic effects on purchase decisions (Silayoi & Speece, 2007). Furthermore, the results extend the Theory of Planned Behavior (TPB) by demonstrating how external cues, such as packaging design and font styles, shape consumer attitudes and behavioral intentions through perceived quality and brand image.

The findings also contribute to ongoing debates about the balance between visual appeal and functionality in packaging. While the significant role of design reinforces the TPB's emphasis on attitudes influenced by visual stimuli, the non-significance of printed information suggests a declining reliance on textual elements. This highlights the need for balanced strategies that integrate sensory and functional packaging elements, ensuring they comprehensively address consumer preferences.

Table 7. Results of hypotheses testing from SEM model.

	Hypothesized path		β	C.R.	p	Result
H1.CPI	<---	PC	0.053	0.947	.165	Not Supported
H2.CPI	<---	PD	0.296	5.4	***	Supported
H3.CPI	<---	PPI	0.084	1.479	.139	Not Supported
H4.CPI	<---	PM	0.193	3.476	***	Supported
H5. CPI	<---	PFS	0.159	2.762	***	Supported

β : Standardized Regression Weights; C.R.: Critical ratio.

Although this study focuses on Kabul, Afghanistan, the insights into how packaging influences purchase intentions for perfume products have broader applicability. Many emerging markets, especially in Middle Eastern, North African (MENA) and South Asian regions, share socio-cultural features with Afghanistan, including strong traditional values, the symbolic importance of luxury goods and limited in-store sensory trial opportunities. In these contexts, packaging attributes such as design, material quality and branding are similarly critical in shaping purchasing behavior. For example, studies in Islamic societies like Saudi Arabia and Pakistan have shown a heavy reliance on extrinsic cues due to limited in-store experiences (Ahmed et al., 2007; Alserhan, 2010). Therefore, the insights from this study are likely transferable to broader Islamic or culturally conservative markets where packaging significantly influences consumer behavior. Additionally, in developing countries, consumers often rely heavily on packaging as an extrinsic cue when intrinsic product qualities (such as scent) cannot be tested before purchase due to retail limitations (Acebrón & Dopico, 2000; Poturak, 2014). In more developed countries, despite the presence of sampling opportunities, packaging still plays a critical role in brand differentiation and emotional engagement in highly saturated markets (Spence & Gallace, 2011). Thus, the theoretical contributions regarding packaging as a surrogate signal for quality and emotional connection are transferable across different market contexts.

Fragranced products where packaging heavily influences consumer choice include body mists (e.g. Bath & Body Works in the U.S.), luxury perfumes (e.g. Chanel No. 5 globally), deodorants (e.g. Axe/Lynx in emerging markets) and personal care sprays (e.g. Dove body sprays). In all these cases, packaging color, bottle design, material and printed information play critical roles in shaping consumer perceptions and behaviors, regardless of the country's development status. Studies such as Underwood and Klein (2002) have shown that visual package design creates brand impressions even without product trial. Similarly, Rettie and Brewer (2000) emphasized that packaging acts as a communication tool influencing perception and purchase behavior across global markets. This supports the conclusion that packaging is a critical marketing lever for fragranced products universally, not just in Afghanistan. Therefore, the contributions of this work extend to helping both emerging and mature fragrance brands improve packaging strategies to influence consumer purchase decisions globally.

5.1. Theoretical implications

This research makes significant theoretical contributions by validating and extending key frameworks in consumer behavior and marketing literature, particularly the Theory of Planned Behavior (TPB), Cue Utilization Theory and the Stimulus-Organism-Response (S-O-R) Framework. Firstly, the study reaffirms the relevance of Cue Utilization Theory, which posits that extrinsic product attributes, such as packaging design, material and font styles, serve as critical indicators of perceived quality and brand image (Richardson et al., 1994). This study's significant influence of these elements demonstrates how external cues guide consumer perceptions and decision-making processes, particularly in product categories like perfumes where intrinsic cues (e.g. scent) are not immediately accessible. Packaging material, for example, signals quality and aligns with emerging sustainability trends, emphasizing its dual role in influencing perception and purchase behavior. The results also align with the Stimulus-Organism-Response (S-O-R) Framework, which underscores the impact of sensory stimuli on emotional and cognitive responses that drive behavioral outcomes (Mehrabian & Russell, 1974). The significant effects of packaging design and font styles highlight how visual stimuli evoke positive emotional responses, fostering brand recall and purchase intentions. These findings extend the application of the S-O-R Framework by emphasizing the role of design and typography in shaping consumer engagement and decision-making.

In contrast, the non-significant influence of packaging color challenges established paradigms rooted in Colour Psychology and aspects of the S-O-R Framework that emphasize color as a primary driver of emotional responses. This study suggests that color's impact may vary depending on cultural context, product category, or the growing prevalence of minimalist and experiential packaging trends. For Afghan consumers, practical and aesthetic considerations, such as packaging design and material, take precedence over color when evaluating perfumes. This finding indicates the need for more nuanced applications of the S-O-R Framework that account for cultural variability in sensory preferences.

(Aslam, 2006). The lack of significant impact from packaging printed information similarly challenges traditional information-based persuasion models, which often prioritize textual elements in marketing communication. The findings indicate a shift in consumer preferences towards visual and experiential cues, supporting the TPB's emphasis on attitudes shaped by external factors like design and material rather than textual details. This trend aligns with the decline in reliance on printed information in favor of digital and interactive platforms, where immediacy and sensory appeal dominate.

The study contributes to a more integrated understanding of packaging as a multidimensional construct, advocating for holistic frameworks that consider the interplay between various packaging attributes. This perspective aligns with the Integrated Model of Packaging Influence, which emphasizes the synergistic effects of multiple packaging elements on consumer behavior (Silayoi & Speece, 2007). Furthermore, by demonstrating the emotional resonance of font styles, the findings extend the application of the TPB and support the notion that visual attributes not only shape attitudes but also foster self-congruence and emotional connections with brands.

5.2. Practical implications

Marketers, designers and product managers striving to maximize packaging strategies will find the practical implications of this study to be exceedingly pertinent. The significance of investing in aesthetically pleasing designs that effectively communicate brand value and captivate consumer attention is underscored by the significant influence of packaging design. Marketers should prioritize cohesive and visually impactful designs that align with target audience preferences. Additionally, the strong effect of packaging material highlights the growing consumer demand for sustainability in packaging. Companies should consider incorporating eco-friendly materials into their packaging strategies to meet regulatory standards and enhance brand perception and consumer loyalty. The significance of font styles further implies that inconspicuous elements, such as typography, can influence consumer attitudes and purchase intentions. This discovery underscores the necessity of meticulously selecting fonts consistent with the brand's identity and eliciting the intended consumer response.

On the other hand, the non-significant results for packaging color suggest that businesses may need to rethink the role of color in packaging design. Rather than relying solely on traditional color psychology principles, companies should consider context-specific factors, such as product type and cultural preferences, to maximize the impact of color choices. Finally, the lack of influence of printed information points to the diminishing role of textual details in packaging, especially in an era dominated by visual communication and digital integration. Companies should adapt their packaging strategies to leverage visual storytelling and interactive elements like QR codes to engage consumers more effectively.

6. Conclusion, limitations, and future research agenda

This investigation provides valuable insights into the role of packaging attributes in influencing consumer purchase intentions, underscoring the significance of font styles, substance and design. The multidimensional nature of packaging was underscored by the significant effects of packaging material and font styles, in addition to the most influential factor, packaging design. The results challenge conventional assumptions regarding color and printed information functions while validating key theories, including the Stimulus-Organism-Response (S-O-R) Framework, Cue Utilization Theory and the Theory of Planned Behavior (TPB). Overall, the study emphasizes the strategic significance of consumer-oriented and holistic packaging design in contemporary marketing, with implications for both theoretical advancements and practical applications.

This study has certain limitations that warrant consideration despite its contributions. While the study offers valuable insights into male consumer behavior toward perfume packaging in Kabul, the findings may not fully represent female perspectives, which could differ in important ways due to different aesthetic preferences, purchasing motivations and cultural interpretations of luxury and packaging. Initially, the results are context-dependent and may not apply to all product categories or cultural contexts. Consumer preferences for packaging attributes, such as material and font styles, are often shaped by cultural norms, regulatory requirements and product-specific expectations, which were not

fully explored in this study. Second, the study primarily focused on a limited set of packaging attributes, potentially overlooking other critical factors such as interactivity, transparency and sustainability certifications. Finally, the research utilized cross-sectional data, which restricted the capacity to evaluate the long-term impacts of packaging on consumer behavior, including brand loyalty and recurrent purchases.

Future research should expand the scope of inquiry into the evolving dynamics of packaging and consumer behavior while addressing the limitations of this study, building upon its insights. First, cross-cultural studies are essential to explore how cultural differences shape consumer perceptions of packaging attributes, such as preferences for color, typography and sustainable materials. Comparative analyses across diverse cultural and regional contexts could provide a more comprehensive understanding of the generalizability of the findings. Second, future research should broaden its scope beyond the attributes currently examined to encompass contemporary and innovative elements, in line with interactive features such as QR codes and augmented reality, as well as transparent packaging and recognized sustainability certifications. These attributes are becoming increasingly relevant as consumers prioritize experiential and environmentally conscious products.

Additionally, longitudinal studies are recommended to capture the enduring effects of packaging on consumer behavior. Unlike cross-sectional research, a longitudinal approach would enable scholars to examine the long-term relationships between packaging attributes and outcomes like brand loyalty, repeat purchases and word-of-mouth advocacy. In addition, it is imperative to examine potential mediating and moderating factors that may affect the relationship between packaging and purchase intentions. A more comprehensive comprehension of the intricate pathways through which packaging influences decision-making could be achieved by incorporating variables such as consumer emotions, environmental consciousness and price sensitivity. Lastly, integrating technology into packaging presents a rich area for future inquiry. Research could explore how digital and innovative packaging features—such as personalized QR codes, augmented reality experiences, or near-field communication (NFC)—affect consumer engagement and purchase behaviors in an increasingly digitized marketplace. Future research can enhance academic comprehension and offer practical insights for practitioners traversing the intricacies of contemporary consumer preferences by addressing these areas.

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Authors contribution

CRedit: **Ziauddin Rahimi**: Conceptualization, Data curation, Formal analysis, Investigation, Methodology; **Md. Abu Hasnat**: Conceptualization, Formal analysis, Supervision, Validation, Writing – review & editing; **Md. Sohel Rana**: Data curation, Methodology, Software, Writing – original draft; **Nur-A-Alam Mishad**: Conceptualization, Writing – review & editing; **Kamrul Islam Talukder**: Methodology, Writing – original draft; **Saleh Md. Arman**: Data curation, Formal analysis; **Khandakar Kamrul Hasan**: Investigation, Supervision, Validation.

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Data availability statement

The data supporting this study's findings are available upon reasonable request, except for personally identifiable information, which cannot be shared due to ethical and privacy considerations.

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