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Promoting Sustainable Consumption in Tourism Cities: How Consumer Value Drives Refillable Beauty Product Adoption Across Online and Offline Shoppers in Da Nang

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Abstract

The rapid growth of global consumption is intensifying environmental pressures, particularly plastic waste, which is projected to increase by 68% by 2050 without intervention. In Vietnam, about 1.8 million tons of plastic garbage are produced annually, with only 10–27% being recycled, while the cosmetics industry significantly contributes to single-use packaging and emissions. Refillable beauty products have emerged as a circular solution, reducing packaging waste while offering economic benefits to consumers. In Da Nang, an emerging eco-city and major tourism hub, local residents show growing environmental awareness, yet the adoption of refillable beauty products remains limited due to habit and convenience barriers.

This study investigates the key determinants influencing consumers' purchase decisions toward refillable beauty products by integrating both cognitive (perceived value) and affective (positive emotion) pathways. A quantitative method was applied utilizing a standardized questionnaire with a 5-point Likert scale. Data were collected through an online survey using convenience sampling, yielding 420 valid responses from Da Nang local residents. Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4 was utilized to examine the data. The findings show that both consumer value determinants and marketing signals influence the customer's purchasing decisions of refillable beauty products. Furthermore, the dual dimensions of perception and emotion serve as mediators, predominantly affecting the consumer's decision-making process. Furthermore, through MGA, the study identified differences in purchase behaviors (online versus offline). The research provided theoretical contributions and suggested managerial implications for marketers and policymakers within the cosmetics industry.

Keywords: Sustainable consumption; Refillable beauty products; SOR framework

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1. Introduction

The explosion of global consumer demand is presenting significant environmental challenges, particularly the plastic waste crisis. According to [1], the amount of plastic waste entering the environment will rise by 68% by 2050 without prompt intervention efforts. Vietnam generates roughly 1.8 million tons of plastic garbage annually; however, only between 10% and 27% is collected and recycled, while the balance is either landfilled or discharged into the natural environment. The beauty and cosmetics business significantly contributes to packaging trash, with billions of single-use main plastic packaging units (bottles, jars, and tubes) consumed annually, exerting considerable pressure on waste treatment systems and the ecosystem. The environmental consulting firm Quantis reports that the cosmetics industry contributes 0.5% to 1.5% of worldwide greenhouse gas emissions, with packaging responsible for 20% of this total [2].

Refillable beauty products have emerged as a viable way to promote a circular economy. This concept enables consumers to retain the old packaging and solely acquire

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the replacement core, thus reducing packaging waste, diminishing microplastic hazards, and preserving natural resources [3]. Besides ecological benefits, refillable products offer substantial economic advantages, enabling consumers to save significantly on shopping expenses relative to buying completely packaged items [4].

Da Nang, a major economic and urban tourism hub in Vietnam, is currently focused on evolving into an "eco-city" aimed at ecosystem preservation and quality of life enhancement [5]. Danang citizens are attentive to green purchasing trends, digital communication and possessing a strong environmental awareness. The cosmetic purchasing behaviors of this demographic are quite varied, demonstrated by the popularity of online buying platforms and the introduction of in-person experiences at refill stations by certain innovative companies. Nonetheless, despite the city's initiatives for sustainable development, the adoption and utilization of refillable beauty products among the local residents remain limited and encounter numerous obstacles related to habits and convenience.

From an academic perspective, while sustainable consumption has received considerable attention, the majority of research on refillable items concentrates on industrialized nations, where distribution systems and environmental consciousness are firmly established. Research on this subject in Vietnam remains constrained and often analyzes aspects in isolation. There is a notable deficiency of comprehensive research models that concurrently assess the influence of consumption values (price, quality, and convenience) and marketing signals (advertising, packaging, and influencers), particularly in explaining the psychological mechanisms that encourage green consumption behavior in the particular situation of a growing tourist city of Da Nang. Moreover, most current studies focus on visitors, whereas the local residents of Da Nang, those who live and work in the city, have not been thoroughly examined on sustainable consumption habits.

This research, entitled *"Promoting Sustainable Consumption in Tourism Cities: How Consumer Value Drives Refillable Beauty Product Adoption Across Online and Offline Shoppers in Da Nang,"* was undertaken to address gaps. The study discusses the following research issues:

RQ1. Which factors affect the decision to purchase the refillable beauty products among local residents in Da Nang City?

RQ2. In what manner do perceived value and positive emotions mediate the relationship between these factors and the decision to purchase the refillable beauty products?

RQ3. In what manner do the purchasing behaviors of Da Nang local residents affect their choices about the refillable beauty products?

The research results enhance the theoretical framework of green consumer behavior and offer strategic management insights for cosmetic enterprises to advocate a circular model in tourist cities.

2. Literature review and hypothesis

2.1. Theoretical background

The theory and role of refillable beauty products

Refillable beauty products are cosmetics that are constructed with a packaging system that enables consumers to replenish the interior product after use without the need to replace the entire original enclosure. This form is frequently implemented by adding replacement cores, refill bags, or direct refill systems into the original packaging. This approach contributes to the extension of the packaging's longevity, the reduction of plastic waste, and the conservation of resources in the production chain.

From a sustainable development perspective, the refillable product is entirely in line with the "circular economy," where materials are maintained in the usage cycle for as long as possible instead of being discarded after a single use [6]. Specifically, studies based on life cycle assessment (LCA) have demonstrated that reuse and refill systems significantly reduce the consumption of raw materials as well as the negative environmental impacts compared to traditional single-use packaging models [7]. Extending the lifespan of packaging and reducing the demand for new packaging production are key factors in alleviating pressure on natural resources and ecosystems [3].

In addition to the outstanding ecological benefits, the refillable packaging model also brings "economic and marketing value" that is strategic for businesses. Based on the foundation of signaling theory [8], in conditions of market information asymmetry, businesses can use sustainable packaging design as a strong "signal" to convey messages about product quality and environmental responsibility, thereby establishing and enhancing consumer trust and loyalty. The refillable beauty products play an important and comprehensive role in promoting sustainable consumer trends.

First, the adoption of the "Reuse" strategy through refillable systems is seen as a core solution to optimize materials and support the cosmetics industry in transitioning to a circular economy [9]. By encouraging customers to retain the main shell and only replace the core, this model significantly reduces the demand for original plastic, thereby limiting the risk of microplastic generation and alleviating pressure on waste management systems [10].

Secondly, refillable beauty products act as a driver for promoting responsible consumer behavior. According to [4], when customers clearly perceive both the practical environmental benefits and financial savings, they will be

more motivated to change their habits, thereby pushing the refill model beyond simple packaging technology innovation to become a tool for changing social awareness.

Finally, for businesses, this is a strategic tool to restructure the traditional business model. Integrating the refillable beauty products helps businesses reduce their ecological footprint and creates a strong competitive advantage by spreading the image of a green and responsible brand.

Overall, refillable beauty products play a multifaceted role: they not only directly address the plastic waste problem but also reshape customer shopping habits and drive the green transformation of the entire supply chain.

SOR Theoretical Framework

The "Stimulus – Organism – Response" (SOR) model, which was proposed by [11], is a fundamental theoretical framework that aims to explain the mechanisms of human behavior. It emphasizes that behavior must go through an intermediate processing of cognition and emotion rather than being a direct response to the environment. This study thoroughly employs the SOR framework to comprehend the psychological process that influences customers' decisions to buy refillable cosmetic items. The agents from the external world that customers encounter are specifically represented by the "Stimulus (S)" factor, which is separated into two categories: "Product consumption value" (price, quality, and convenience) and "marketing information" (green advertising, refillable package design, and influencer marketing). These stimuli will have a significant impact on the "Organism (O)," which is the consumer's internal psychological state as determined by "Perceived Value" and "Positive Emotion." The "Response (R)," which appears in the "Purchase Decision" of refillable beauty products, is the ultimate outcome of this process of changing perception and emotion. All things considered, the S-O-R model highlights the crucial mediating role of internal psychological states, such as perceived value and emotions, in the context of sustainable consumption in addition to aiding in the identification of the direct relationship between influencing elements and purchasing behavior, which can include factors like social norms and environmental awareness.

Theory of Consumption Values

[12] proposed the Theory of Consumption Values, which asserts that the overall evaluation of various values, including functional, emotional, social, cognitive, and conditional values, influences individual choice and consumption behavior rather than solely relying on the economic aspect. The study is designed to explain consumer behavior by utilizing functional value as a fundamental theoretical foundation in the context of researching refillable beauty products. This concept demonstrates the product's consumption value to satisfy the practical requirements of the customers through three primary factors: price (PRICE), quality (QUAL), and convenience (CONV). In particular, the functional value of refillable beauty products is evident in the product's reasonable price, guaranteed quality (equivalent to or superior to traditional products), and the convenience and ease of the core replacement and utilization process. The model is influenced by the application of this theory, which establishes a clear impact mechanism: the initial positive evaluations will be influenced by the positive response in terms of price, quality, and convenience, thereby significantly increasing the perceived value of consumers and indirectly motivating their sustainable purchasing decisions.

Signaling Theory

Signaling Theory, which was developed by [8], is a significant theoretical framework that is frequently employed to explain the behavior of individual decision-makers in the presence of information asymmetry. This condition occurs when consumers lack sufficient information to accurately evaluate the quality of a product prior to making a purchase. The issue of information asymmetry is further increased when the context of the study is refillable beauty products, a type of innovative product that is not yet broadly popular and is frequently associated with sustainability claims. Consequently, consumers frequently depend on external "signals" to determine the product's reliability and actual quality. This study specifically regards marketing factors as fundamental market signals: Green advertising (GAD) provides information positioning the product within the framework of sustainable consumption, while refillable packaging design (PACK) acts as a signal conveying messages about esthetics and environmental friendliness. Influencer marketing (INFL) serves as a reliable social signal source that helps reduce perceived uncertainty and risk. The mechanism by which communication strategies function as effective tools to reduce information asymmetry, evoke positive emotions in customers, and thereby promote purchase intentions for sustainable beauty products is clarified by the application of signaling theory.

2.2. Product's consumption value and customer's perception

Product Price

In the Theory of Consumption Values model, which was developed by [12], price (PRICE) is one of the fundamental components that contribute to functional value. This value is indicative of the product's capacity to satisfy practical requirements. In the context of refillable beauty products, the product price directly reflects the cost that consumers must trade off to obtain beauty and ecological benefits. The reasonableness of the price is particularly important for the local residents, who frequently exhibit a high level of financial sensitivity, when evaluating the benefits received in comparison to the costs incurred. Price has been shown to have a direct influence on consumers' perceptions of the quality and overall value of a product in numerous previous

studies [13]. Although sustainable products are frequently priced higher than conventional products, customers are still willing to pay if they believe that the quality and environmental value provided are entirely commensurate with the amount spent [14], [15]. In particular, the perceived value of consumers will be substantially enhanced when the cost-effectiveness and price-to-quality ratio of refillable packaging solutions are guaranteed [4]. Subsequently, reasonable prices not only mitigate financial obstacles but also directly foster sustainable purchasing intentions and positive attitudes among consumers.

Therefore, we suggest the following hypothesis:

H1a: The price of the refillable beauty product has a positive influence on customers' perceived value.

Product Quality

Product quality reflects the degree of compliance with standards regarding effectiveness, safety, and stability throughout the entire product usage process. In the cosmetics industry, which inherently carries a relatively high perceived risk, quality plays a decisive role in building and reinforcing customer trust. Applying this to the case of the refillable beauty products, if these products prove to be as effective as traditional packaged versions, consumers will reduce their concerns about risk and appreciate their functional value. Many research studies have confirmed that product quality is a core premise that directly and positively impacts the perceived value of customers while also being closely related to perceived risk [16], [17]. The increase in perceived quality is considered the most effective way to create superiority in perceived value [18]. When a product possesses excellent quality attributes (such as performance, reliability, and features), it will fully meet the functional needs of the customer [19]. Therefore, when the quality benefits provided by the beauty product are perceived as significantly superior to the costs incurred, customers will develop a high perceived value, thereby creating a strong motivation that drives their intention and actual purchasing decision.

Therefore, we suggest the following hypothesis:

H1b: The quality of the refillable beauty product has a positive influence on customers' perceived value.

Convenience

The simplicity of storage, use, and core replacement is evidence of the convenience of refillable beauty products. Based on the theoretical foundation of the Technology Acceptance Model (TAM) developed by [20], "Perceived Ease of Use" is confirmed as a vital premise that directly and significantly influences "Perceived Usefulness," thereby determining the product's overall perceived value for customers. These convenience factors are particularly beneficial for local residents, a demographic that places a high value on flexibility and speed, as they reduce behavioral barriers and improve the overall experience of transitioning to green consumption. This relationship has also been demonstrated through various empirical studies, including [21] researched sustainable labeling, and [4] asserted that "expected ease of use" is a significant motivator for the intention to use alternative cosmetic packaging. Consequently, consumers will generally have a greater appreciation for the value that refillable beauty products provide when they are designed to be convenient, user-friendly, and not cause any inconvenience in their daily lives.

Therefore, we suggest the following hypothesis:

H1c: The convenience of the refillable beauty product has a positive influence on customers' perceived value.

Green Advertising

In the context of sustainable consumption, green advertising is interpreted as a form of communication that underscores the product's environmental benefits and sustainable development message. In the context of the refillable beauty products, prior research has demonstrated that visually appealing green advertisements can effortlessly elicit positive emotions in consumers, including relaxation, excitement, and pleasure [22]. Furthermore, a green advertisement that is emotionally engaging will establish a strong emotional bond, eliciting a sense of pride in consumers as they are making a positive impact on the environment and society [23]. The affective states of consumers are directly and positively influenced by the level of reception of green advertising, as confirmed by experiments conducted by [24]. In general, the more customers comprehend green advertising messages regarding refillable beauty products, the more readily they experience positive psychological states. Consequently, this establishes a critical foundation for promoting actual shopping behavior.

Therefore, we suggest the following hypothesis:

H2a: Green advertising for the refillable beauty product has a positive influence on customers' positive emotions.

Refillable packaging design

The refillable packaging design is important in the context of sustainable consumption because it not only protects the product but also serves as a visual and psychological stimulus, eliciting emotional responses from consumers. [25] and [26] have demonstrated that an aesthetically pleasing and appealing packaging design can directly elicit feelings of joy, comfort, and satisfaction in consumers by utilizing the S-O-R model and Signal Theory. [27] has previously shown that the visual design elements of packaging have a significant influence on the perceived emotional value. The packaging design is even more likely to powerfully activate positive emotions in customers when it has ecological protection characteristics, such as refillables, as they perceive the ethical value and their contribution to environmental protection. In a similar vein, [28] asserted that eco-responsible packaging is instrumental in the development of consumer attitudes and purchase intentions by eliciting positive emotions.

Therefore, we suggest the following hypothesis:

H2b: The refillable packaging design of the refillable beauty product has a positive influence on customers' positive emotions.

Influencer marketing

In the context of digital media, influencer marketing functions as a dependable source of "social signals," which aids in the reinforcement of trust and the mitigation of perceived risks for consumers when they encounter innovative products like refillable cosmetics. The "emotional energy" associated with a product is effectively transmitted when a brand conveys product value through a character that resonates with the customer, as per [29]. In the context of online purchasing, high interactivity and influencer-led content will generate "emotional excitement" and provide viewers with a sense of satisfaction [30]. Additionally, the research of [31] confirmed that the strong bond between Key Opinion Consumers (KOCs) and buyers is consistently characterized by "emotional resonance," while the influencer's personal appeal, authenticity, and reliability contribute to the formation of customer perceptions through persuasive strategies [32]. Previous experimental investigations have shown that influencer marketing has a positive impact on consumers' decisions to buy eco-friendly beauty goods [33]. Consequently, the presence and interaction of influencers will assist in the elimination of psychological barriers, thereby highly activating enthusiastic and positive psychological states in consumers when applied to the field of refillable beauty products.

Therefore, we suggest the following hypothesis:

H2c: Influencer marketing of the refillable beauty product has a positive influence on customers' positive emotions.

2.3. Perceived value and purchase decision of the refillable beauty product

In consumer behavior research, perceived value is defined as the comprehensive assessment by customers of the benefits they receive, including economic, environmental, and functional value, in relation to the expenses they incur when selecting refillable beauty products [34], [35]. In terms of behavioral mechanisms, consumers will form positive evaluations and make purchasing decisions more readily when they believe that refillable products offer superior benefits and are entirely worth their trade-offs [36]. This positive relationship has been consistently verified through a multitude of experimental studies conducted in sustainable consumption contexts. For instance, the research conducted by [37] in developing markets and the study conducted by [24] on energy-saving products both illustrate that consumers prioritize options that provide the highest value for themselves and that perceived green value has a direct and positive impact on their intention to purchase eco-friendly products. Similarly, in the realm of sustainable fashion, the enhancement of perceived value not only directly influences purchase intention but also indirectly influences purchasing decisions by reinforcing consumers' positive attitudes toward the ecosystem [38].

Therefore, we suggest the following hypothesis:

H3: Perceived value has a positive influence on the purchase decision of the refillable beauty product.

2.4. Positive emotions and purchase decision of the refillable beauty product

In consumer behavior research, emotions are acknowledged as a critical factor in the decision-making process for purchasing green and sustainable products. [39] have observed that consumers frequently rely on their initial visceral reactions while evaluating innovative products or environmental protection solutions, such as refillable beauty products, rather than solely depending on rational perceptions. Many studies have shown that purchase intentions and decisions are directly and significantly influenced by positive emotional states, including joy, pride, optimism, and excitement. In particular, customers' purchasing motivation is considerably increased when they believe that they are contributing positive values to the ecosystem and society as a result of experiencing these emotions [24]. This direct catalyst for actual purchasing decisions in the market is the positive affective responses, which are elicited by the sustainable attributes of the product or by advertising messages [27].

Therefore, we suggest the following hypothesis:

H4: Positive emotions have a positive influence on the purchase decision of the refillable beauty product.

2.5. The mediating role of perceived value between the consumption value of the product and the purchase decision of the refillable beauty product.

Perceived Value (PV) is a significant psychological mechanism in consumer behavior research. It is defined as the comprehensive assessment of customers' utility of a product by comparing the benefits they receive (such as quality and features) to the sacrifices they must make (such as cost and time) [37]. In the context of refillable beauty products, the primary characteristics of the product, such as price (PRICE), quality (QUAL), and convenience (CONV), are essential in assisting consumers in identifying the actual functions and benefits. Previous research has shown that the perception of product value will be directly influenced by the comprehension and responsiveness of these characteristics [13]. In particular, the product will directly establish "green value" in the customers' perceptions when it guarantees superior quality, reasonable pricing, and convenience in the replenishment process [38]. The purchase decision (PD) will be strongly influenced by the high appreciation of this perceived value, which will function as an intermediary lever, transforming input factors (product characteristics) into a powerful driving force.

Therefore, we suggest the following hypothesis:

H5a: Perceived value mediates the relationship between price and purchase decisions for the refillable beauty product.

H5b: Perceived value mediates the relationship between quality and purchase decisions for the refillable beauty product.

H5c: Perceived value mediates the relationship between convenience and purchase decisions for a refillable beauty product.

2.6. The mediating role of positive emotions between the product's promotion information and purchase decision of the refillable beauty product.

The relationship between media information and purchasing decisions is not solely a rational cognitive process in consumer behavior studies; it is also significantly influenced by affective mechanisms [40]. In the context of refillable beauty products, the internal psychological state of consumers is influenced by stimulating media signals, including green advertising (GAD), refillable packaging design (PACK), and influencer marketing (INFL). Previous research has demonstrated that advertisements that incorporate environmental protection elements or visually present information on eco-friendly packaging have the potential to significantly stimulate customers' emotional values, which in turn directly influence their purchase intentions [27]. Additionally, consumer emotions are directly influenced by information stimuli from the online environment, such as product quality that is introduced through evaluations by KOLs/KOCs, which in turn drives purchasing behaviors. Consequently, positive emotions serve as a critical intermediary "bridge": customers will experience positive psychological states (e.g., excitement, joy, and pride) when they receive reliable and green media signals. These states subsequently transform into strong motivation, which in turn leads to actual purchase decisions.

Therefore, we suggest the following hypothesis:

H6a: Positive emotion mediates the relationship between green advertising and purchase decisions for the refillable beauty product.

H6b: Positive emotion mediates the relationship between the refillable packaging and purchase decisions for the refillable beauty product.

H6c: Positive emotion mediates the relationship between influencer marketing and purchase decisions for the refillable beauty product.

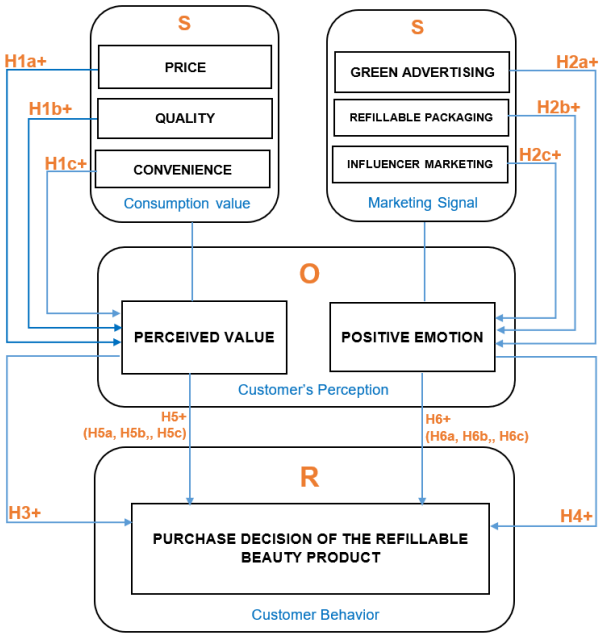

Figure 1. Research model

3. Methodology

Measurement instruments

This study used scales derived and modified from prior research, which have undergone evaluations for reliability and validity. Indicators assess the model's observable variables to ensure a comprehensive representation of the underlying principles.

The original scales have been modified in wording and phrasing to align with the research setting focused on consumer behavior regarding refillable beauty products. This modification primarily aims to alter the phrasing to improve clarity and relevance to the study environment while maintaining the fundamental meaning of the original scales and keeping theoretical consistency.

All observable criteria were rated on a 5-point Likert scale, with 1 indicating "strongly disagree" and 5 indicating "strongly agree." The selection of a 5-point Likert scale is deemed suitable in consumer behavior research, as it strikes a compromise between differentiating evaluation levels and minimizing cognitive load for respondents [41].

The measurement approach is structured to guarantee reliability, content validity, and contextual relevance while closely aligned with recognized theoretical frameworks.

Prior to the official survey, the questionnaire was distributed to professional researchers and colleagues for feedback collection. This procedure seeks to assess content validity, examine the logical structure of the questions, and

concurrently reduce the likelihood of misunderstandings or ambiguous statements.

The operational definitions of each research variable have been formulated and are displayed in Table 1, providing a foundation for precise and successful measurement of the components in the research model.

Table 1. Construct definition

Construct	Item	Definition	Reference
PRICE	PRICE	The extent to which consumers perceive that refillable beauty products are reasonably priced, cost-effective, and in accordance with the value received in comparison to traditional packaged products.	[4]
QUALITY	QUAL	The extent to which consumers perceive that refillable beauty products are high-quality, reliable, and meet usability and environmental criteria.	[13]
CONVENIENCE	CONV	The extent to which consumers perceive that buying, using, and refillable beauty products is easy, time-saving, and convenient in the consumption process.	[4]
GREEN ADVERTISING	GAD	The extent to which consumers perceive that the advertising activities of the refillable beauty product clearly, reliably, and convincingly convey the environmental benefits of the product.	[42]
REFILLABLE PACKAGING	PACK	The extent to which consumers perceive that the refillable packaging of beauty products is designed to be environmentally friendly, simple to use, and effectively supports refilling.	[43]
INFLUENCER MARKETING	INFL	The extent to which consumers perceive that influencers convey information about refillable beauty products in a reliable, expert, pursuasive, and influential manner affecting their purchasing decisions.	[33]
PERCEIVED VALUE	PV	The extent to which consumers evaluate the overall benefits received from the refillable beauty product (including quality, price, and convenience) affecting their purchasing decisions.	[24], [37]
POSTITIVE EMOTION	PE	The extent to which consumers experience positive emotions (such as excitement, happiness, and eagerness) when using or purchasing refillable beauty products.	[24]
PURCHASE DECISION	PD	The extent to which consumers are willing to choose, prioritize, encourage and engage in the purchase of refillable beauty products in practice.	[44]

Methodology

The relationships between the variables in the research model were tested in this study using a cross-sectional technique and a quantitative methodology. Data were acquired through an online survey utilizing Google Forms in Da Nang, a rapidly developing tourist city, notable for its focus on sustainable development and environmental protection.

The survey subjects are local residents in Da Nang who have used or are aware of the refillable beauty products. To ensure the suitability of the research sample, respondents must pass the initial screening questions; those who do not meet the criteria will be excluded from the survey.

Using the following parameters, predicted effect size = 0.1, statistical power = 0.8, number of observable variables = 43, number of latent variables = 9, and significance level = 0.05, the minimum sample size was calculated using the Free Statistics Calculator (danielsoper.com). The results indicate that the minimal sample size necessary is 92 observations. However, to increase the reliability of the data and ensure eligibility for advanced analyzes such as Multigroup Analysis (MGA), the study collected a total of 442 responses. After conducting data cleaning using SPSS, including removing missing values, duplicates, and outliers, the final dataset consisted of 420 valid observations used for further analyses.

In the multi-group analysis (MGA) section, shopping habits were chosen as the main grouping variable, specifically distinguishing between online shopping and in-store shopping. The basis for selecting this variable is based on previous studies, which show that shopping habits can significantly influence consumer behavior, especially in the context of cosmetics consumption, where emotional factors play an important mediating role. Two forms of shopping, online and offline, often exhibit different levels of sensitivity to information and product characteristics. Therefore, using this variable helps test the differences in the cognitive and emotional mechanisms of consumers.

Table 2. Profile of respondents

Demongraphic	Category	Subject (N = 305)	
		Frequency	Percentage (%)
Gender	Male	159	36.4
	Female	261	63.6
Education	Undergraduate	319	84.3
	Post graduate	101	15.7
Marriage status	Single	314	88.5
	Married	106	11.5
Employment status	Student	238	70.8
	Employed	116	20.7
	Self-employed	66	8.5
Monthly income (millions VND)	Under 5	190	61.3
	5 - 10	95	20.3
	10 - 20	77	13.1
	More than 20	58	5.2
Shopping habit	Offline shopping	205	11.8
	Online shopping	215	88.2

4. Results

The measurement model and the structural model in this study were assessed using the partial least squares structural equation model (PLS-SEM).

4.1. Measurement model

The internal reliability

Cronbach's alpha and composite reliability (CR) are the two primary methods used to assess the scale's reliability. According to the recommended threshold, the measures are only considered reliable when both coefficients exceed 0.7 [45]. The results in Table 3 show that all variables meet this standard, reflecting good internal consistency among the observed variables within the same conceptual structure.

In terms of validity, the study evaluates both convergent validity and discriminant validity to ensure the quality of the measurement model. Convergent validity is calculated using the AVE value and outer loading coefficient of each observed variable. The results show that all AVE values are greater than 0.50, ranging from 0.567 to 0.743 [46], meeting the proposed requirements. At the same time, all the outer loadings exceeded the threshold of 0.70 and were statistically significant, demonstrating that the observed variables are well-represented by the corresponding latent variables [20].

Discriminant Validity (HTMT)

The Heterotrait-Monotrait (HTMT) ratio is a valid approach to determine how diverse the constructs are in the study model. The HTMT value must be less than or equal to 0.85 to assure empirical distinctiveness of the concepts, as recommended in [47]. The data in Table 4 indicate that all structural pairs possess HTMT values beneath the established threshold, thus validating that the scales utilized in the study satisfy the criteria for discriminant validity.

Table 3. Scale reliabilities

Construct	Items	Factor loading	Cronbach's Alpha	rho_A	CR	AVE
PRICE	PRICE1	0.831	0.903	0.908	0.928	0.719
	PRICE2	0.850				
	PRICE3	0.879				
	PRICE4	0.851				
	PRICE5	0.828				
QUALITY	QUAL1	0.860	0.912	0.913	0.934	0.740
	QUAL2	0.876				
	QUAL3	0.850				
	QUAL4	0.866				
	QUAL5	0.849				
CONVENIENCE	CONV1	0.858	0.884	0.887	0.920	0.742
	CONV2	0.891				
	CONV3	0.862				
	CONV4	0.833				
GREEN ADVERTISING	GAD1	0.870	0.910	0.913	0.933	0.735
	GAD2	0.852				
	GAD3	0.851				
	GAD4	0.844				
	GAD5	0.870				
REFILL PACKAGING	PACK1	0.858	0.914	0.915	0.935	0.743
	PACK2	0.877				
	PACK3	0.849				
	PACK4	0.859				
	PACK5	0.868				
INFLUENCER MARKETING	INFL1	0.873	0.913	0.914	0.935	0.741
	INFL2	0.858				
	INFL3	0.864				
	INFL4	0.835				
	INFL5	0.874				
PERCEIVED VALUE	PV1	0.812	0.864	0.865	0.902	0.648
	PV2	0.809				
	PV3	0.810				
	PV4	0.797				
	PV5	0.797				
POSITIVE EMOTION	PE1	0.824	0.829	0.831	0.886	0.661
	PE2	0.819				
	PE3	0.806				
	PE4	0.803				
DECISION TO BUY	PD1	0.752	0.809	0.809	0.867	0.567
	PD2	0.742				
	PD3	0.760				
	PD4	0.762				
	PD5	0.748				

Table 4. Discriminant Validity

	CONV	GAD	INFL	PACK	PD	PE	PRICE	PV	QUAL
CONV									
GAD	0.041								
INFL	0.065	0.047							
PACK	0.091	0.063	0.042						
PD	0.516	0.349	0.300	0.281					
PE	0.036	0.556	0.549	0.515	0.508				
PRICE	0.053	0.052	0.051	0.058	0.396	0.036			
PV	0.639	0.055	0.067	0.064	0.783	0.053	0.491		
QUAL	0.082	0.035	0.058	0.047	0.451	0.088	0.039	0.519	

4.2. Structural model

Using SmartPLS 4, the PLS-SEM approach was applied to assess the given hypotheses. The stability and statistical significance of the computed parameters were assessed using a bootstrapping procedure that involved 5,000 resamples.

The examination of the structural model adhered to a four-step approach [47], [48], [49], detailed as follows:

1. Evaluate model fit utilizing the SRMR and NFI indices;
2. Investigate multicollinearity concerns via the Variance Inflation Factor (VIF).
3. Analyze the path coefficients and the explanatory capacity of endogenous constructs (R^2).
4. Determine the model's predictive relevance employing the Q^2 statistic.

First, the research looks at the model fit using the NFI and SRMR indices. Model fit mostly serves a supportive role in PLS-SEM rather than being a determining factor as it is in CB-SEM. aiming to reinforce the model's reliability rather than being a basis for rejection. As long as the SRMR index meets the proposed standard and NFI does not exceed the allowed thresholds, the model can still be accepted.

Specifically, the recommended SRMR value is less than 0.08 [50], and NFI should be above 0.9, with values between 0.80 and 0.90 considered acceptable [48]. The results of this study show that the SRMR and NFI indices are 0.043 and 0.880, respectively. Thus, SRMR meets the proposed threshold, while NFI has not yet fully reached the ideal standards. However, these values are not significantly deviated, especially NFI which has approached the level of 0.9, a level that is still acceptable in studies using PLS-SEM. Therefore, the model is still considered acceptable, and the subsequent evaluation steps continue to be carried out.

Second, the Variance Inflation Factor (VIF) is used to evaluate the multicollinearity problem. The data in Table 5 indicate that all VIF are beneath the threshold of 3, signifying that the correlation among the variables is negligible. These indications affirm that the model does not experience significant multicollinearity difficulties, as stated in [50].

Table 5. Variance Inflation Factor

	CONV	GAD	INFL	PACK	PD	PE	PRICE	PV	QUAL
CONV								1.005	
GAD						1.004			
INFL						1.001			
PACK						1.003			
PD									
PE					1.000				
PRICE								1.000	
PV					1.000				
QUAL								1.005	

Third, the model is reevaluated using the bootstrapping approach with 5,000 resamples, and the statistical significance of the principal path coefficients is evaluated using a significance threshold of 0.05. At the same time, the coefficient of determination (R^2) is used to evaluate the endogenous variables' explanatory power.

According to [50], an R-squared value of 0.75 shows strong explanatory power, 0.50 reflects moderate explanatory power, and 0.25 suggests a weak level of explanation. The results of the coefficient of determination (R^2) indicate that the model demonstrates a moderate level of explanatory power for the endogenous constructs. Specifically,

purchase decision (PD) achieves an R^2 of 0.609 (adjusted R^2 = 0.607), implying that 60.9% of the variance in purchase decision is driven by the predictors in the research model. Likewise, positive emotion (PE) records an R^2 of 0.651 (adjusted R^2 = 0.648), indicating a 65.1% explanatory level, while perceived value (PV) shows the highest explanatory capacity with an R^2 of 0.675 (adjusted R^2 = 0.672), accounting for 67.5% of its variance.

Based on frequently known standards in PLS-SEM [50], these R^2 values fall within the moderate range, suggesting that the model provides an acceptable level of explanatory capability for consumer perceptions and behaviors in the context of the refillable beauty products. Furthermore, the minimal differences between R^2 and adjusted R^2 indicate that the model is not substantially inflated by the number of predictors, thereby reinforcing the robustness and reliability of the estimation results.

Table 6. Path outcomes of the structural model

Hypothesis	Paths	Path coefficients	T statistics	P-values	Result
H1a	PRICE → PV	0.428	14.508	0.000	Accepted
H1b	QUAL → PV	0.426	14.214	0.000	Accepted
H1c	CONV → PV	0.521	17.900	0.000	Accepted
H2a	GAD → PE	0.473	16.615	0.000	Accepted
H2b	PACK → PE	0.418	13.808	0.000	Accepted
H2c	INFL → PE	0.486	16.496	0.000	Accepted
H3	PV → PD	0.659	24.395	0.000	Accepted
H4	PE → PD	0.423	13.935	0.000	Accepted

The structural model results in Table 6 suggest that all hypotheses are statistically significant (p = 0.000). Specifically, PRICE (β = 0.428), QUAL (β = 0.426), and CONV (β = 0.521) all have a positive impact on perceived value (PV), with CONV showing the strongest influence. Additionally, GAD (β = 0.473), PACK (β = 0.418), and INFL (β = 0.486) positively affect positive emotion (PE). Furthermore, both PV (β = 0.659) and PE (β = 0.423) exert significant positive impacts on purchase decisions (PD), with PV having a stronger effect. Overall, the findings highlight the critical roles of both cognitive (PV) and affective (PE) factors in driving consumers' purchase decisions.

This research evaluated the mediating roles of perceived value (PV) and positive emotion (PE) in explaining the relationships between key product-related factors and purchase decision (PD). A bootstrapping method with 5,000 resamples at a 95% confidence level was used to do the mediation analysis. Following the approach of [51], mediation effects were assessed based on the significance and direction of direct and indirect effects, allowing the identification of mediation types such as partial (complementary), full (indirect-only), or no mediation.

As presented in Table 7, the results reveal that perceived value (PV) plays a significant mediating role in several relationships. Specifically, for H5a, H5b, and H5c, the indirect effects of PRICE, QUAL, and CONV on PD through PV are all positive and statistically significant. At the same time, the direct effects remain significant, indicating partial mediation. This suggests that these antecedents influence purchase decisions both directly and indirectly through enhancing consumers' perceived value.

The results recorded are consistent with the mediating role of positive emotion (PE). Consequently, positive emotion mediates the relationship between GAD, PACK, and INFL on PD for H6a, H6b, and H6c. All of these mediating relationships are statistically significant and positive, showing partial mediation. This indicates that these factors influence purchasing decisions both directly and indirectly by enhancing consumers' positive emotions.
Overall, the results highlight that perceived value consistently acts as a robust mediator, whereas the mediating role of positive emotion is more context-dependent, varying across different antecedents.

Table 7. Mediation influence

Hypotheses	β	t value	p value	Result	
				Hypothesis Testing	Mediation Type
H5: Mediation Influence of Perceived Value					
H5a					
Path estimate	0.173	4.816	**0.000**	Accepted	Partial Mediation
H5a: PRICE→PV→PD	0.166	7.112	**0.000**	Accepted	
Total Effects (H5a)	0.339	10.772	**0.000**	Accepted	
H5b					
Path estimate	0.175	4.923	**0.000**	Accepted	Partial Mediation
H5b: QUAL→PV→PD	0.165	7.012	**0.000**	Accepted	
Total Effects (H5b)	0.340	11.316	**0.000**	Accepted	
H5c					
Path estimate	0.188	4.830	**0.000**	Accepted	Partial Mediation
H5c: CONV→PV→PD	0.203	7.124	**0.000**	Accepted	
Total Effects (H5c)	0.039	12.785	**0.000**	Accepted	
H6: Mediation Influence of Positive Emotion					
H6a					
Path estimate	0.219	6.448	**0.000**	Accepted	Partial Mediation
H6a: GAD→PE→PD	0.078	3.275	**0.000**	Accepted	
Total effects (H6a)	0.297	10.911	**0.000**	Accepted	
H6b					
Path estimate	0.133	3.889	**0.000**	Accepted	Partial Mediation
H6b: PACK→PE→PD	0.069	3.189	**0.001**	Accepted	
Total effects (H6b)	0.202	7.365	**0.000**	Accepted	
H6c					
Path estimate	0.158	4.149	**0.000**	Accepted	Partial Mediation
H6b: INFL→PE→PD	0.080	3.233	**0.001**	Accepted	
Total effects (H6b)	0.238	7.911	**0.000**	Accepted	

Finally, the blindfolding process was used to assess the model's predictive relevance; the results are shown in Table 8. According to established guidelines, Q^2 values greater than zero imply that the model has predictive validity for a specific endogenous construct. The results show that all constructs exhibit Q^2 values well above zero, ranging from

0.295 to 0.481, thereby confirming moderate to strong predictive relevance across the model.

Specifically, variables such as PACK (0.481), QUAL (0.469), CONV (0.466), GAD (0.466), INFL (0.465), and PRICE (0.453) demonstrate strong predictive relevance, closely approaching the threshold for a strong effect. Meanwhile, the other constructs, comprising PV (0.372), PE (0.357), and PD (0.295), significantly above the 0.25 threshold, signifying a robust 'medium' predictive capability. Overall, these findings firmly confirm that the proposed structural model possesses satisfactory out-of-sample predictive relevance and robust quality.

Measurement invariance and MGA readiness

Before conducting the multi-group analysis (MGA) to examine differences between online and offline shopping groups, the measurement invariance of the constructs was evaluated by the MICOM (Measurement Invariance of Composite Models) technique. Deploying measurement invariance is a necessity for MGA, as it assures that constructs are perceived and measured similarly among groups, thereby allowing meaningful group comparisons [45].

Three steps of the MICOM technique: configural invariance (1), compositional invariance (2), and the assessment of equal means and variances (3). As shown in Table 9, configural invariance is established for all constructs, indicating that the measurement models across the two groups share similar data treatment, indicators, and algorithm.

MICOM results

A MICOM (Measurement Invariance of Composite Models) procedure was conducted to assess the measurement invariance between the two groups of online shoppers and offline shoppers.

Compositional invariance (step 2) is supported for all constructs, as the correlation values (c) exceed the 5% quantile threshold. Specifically, constructs such as CONV, GAD, INFL, PACK, PD, PE, PRICE, PV and QUAL demonstrate compositional invariance.

In Step 3, the equality of means and variances is assessed. The results indicate that most constructs achieve non-significant differences ($p > 0.05$), thereby satisfying both equal mean and variance conditions and establishing full measurement invariance (e.g., CONV, GAD, INFL, PD, PE, PRICE, and PACK). For PV, although compositional invariance is achieved, the difference in means is significant ($p = 0.001$), indicating only partial measurement invariance. Meanwhile, the MICOM results indicate that compositional invariance is not established for the construct PV, as the correlation value does not exceed the 5% quantile threshold.

Overall, since the minimum requirement of partial measurement invariance was achieved for all constructs, the measurement models are confirmed to be invariant. Consequently, the data is fully qualified and valid for proceeding with the Partial Least Squares Multi-Group Analysis (PLS-MGA) to compare the structural path coefficients between the two groups of online shoppers and offline shoppers.

Multigroup analysis of shopping habits (online shopping and offline shopping)

To examine whether shopping habits (online shopping and offline shopping) lead to differences in structural relationships, a permutation-based multigroup analysis (MGA) was conducted. Table 10 illustrates that shopping habits (Online vs. Offline) serve as a moderator for 4 of the 8 relationships in the structural model, specifically: convenience and perceived value, price and perceived value, influencer and positive emotion, and perceived value and purchase decision. Convenience significantly influences perceived value among offline shoppers, while price has a greater effect on perceived value for online shoppers. Additionally, influencer marketing elicits more positive emotions among online shoppers, and perceived value more profoundly affects purchase decisions for offline shoppers. The other correlations exhibit no statistically significant differences, including those between green advertising and positive emotion, refillable packaging and positive emotion, quality and perceived value, as well as positive emotion and purchase decision. In summary, the MGA results demonstrate that consumer behavior fluctuates based on the shopping context. Offline shoppers are primarily motivated by convenience and are more adept at converting perceived value into purchasing decisions. In contrast, online consumers exhibit heightened sensitivity to pricing and are more susceptible to the effects of influencer marketing.

Table 8. Results of Q^2 level assessment

Construct	Predictive Relevance Q^2			
	Construct Cross-validated Communality		Construct Cross-Validated Redundancy	
CONV	0.466	High predictive relevance	-	
GAD	0.466	High predictive relevance	-	
INFL	0.465	High predictive relevance	-	
PACK	0.481	High predictive relevance	-	-
PD	0.295	Moderate predictive relevance	0.339	Moderate predictive relevance
PE	0.357	Moderate predictive relevance	0.423	Moderate predictive relevance
PRICE	0.453	High predictive relevance	-	-
PV	0.372	Moderate predictive relevance	0.431	Moderate predictive relevance
QUAL	0.469	High predictive relevance	-	-

Table 9. MICOM Analysis of Shopping Habit (Online shopping vs Offline shopping)

Construct	Step 1: Configural Invariance	Step 2: Compositional Invariance (c)	5% Threshold	Result	Step 3a: Equal Means (p-value)	Step 3b: Equal Variance (p-value)	Invariance Type
CONV	Yes	0.999	0.999	Yes	0.940	0.373	Full measurement invariance
GAD	Yes	1.000	0.999	Yes	0.235	0.392	Full measurement invariance
INFL	Yes	1.000	0.999	Yes	0.290	0.479	Full measurement invariance
PACK	Yes	0.995	0.999	Yes	0.356	0.803	Full measurement invariance
PD	Yes	1.000	0.999	Yes	0.467	0.405	Full measurement invariance
PE	Yes	1.000	0.998	Yes	0.507	0.162	Full measurement invariance
PRICE	Yes	0.998	0.999	Yes	0.637	0.326	Full measurement invariance
PV	Yes	1.000	0.999	Yes	0.311	0.001	Partial measurement invariance
QUAL	Yes	1.000	0.999	Yes	0.352	0.118	Full measurement invariance

Table 10. Multigroup Analysis of Shopping Habits (Online Shopping - Offline Shopping)

	Original (Offline)	Original (Online)	Original difference	Permutation mean difference	2.50%	97.50%	Permutation p value
CONV -> PV	0.613	0.411	0.202	0	-0.115	0.115	0.001
GAD -> PE	0.459	0.492	-0.033	-0.001	-0.113	0.107	0.560
INFL -> PE	0.385	0.579	-0.194	-0.001	-0.115	0.114	0.001
PACK -> PE	0.458	0.394	0.065	0	-0.118	0.114	0.281
PE -> PD	0.388	0.452	-0.064	0.001	-0.117	0.124	0.298
PRICE -> PV	0.393	0.509	-0.116	0	-0.115	0.117	0.050
PV -> PD	0.713	0.602	0.111	0	-0.108	0.104	0.040
QUAL -> PV	0.366	0.481	-0.115	0	-0.119	0.119	0.058

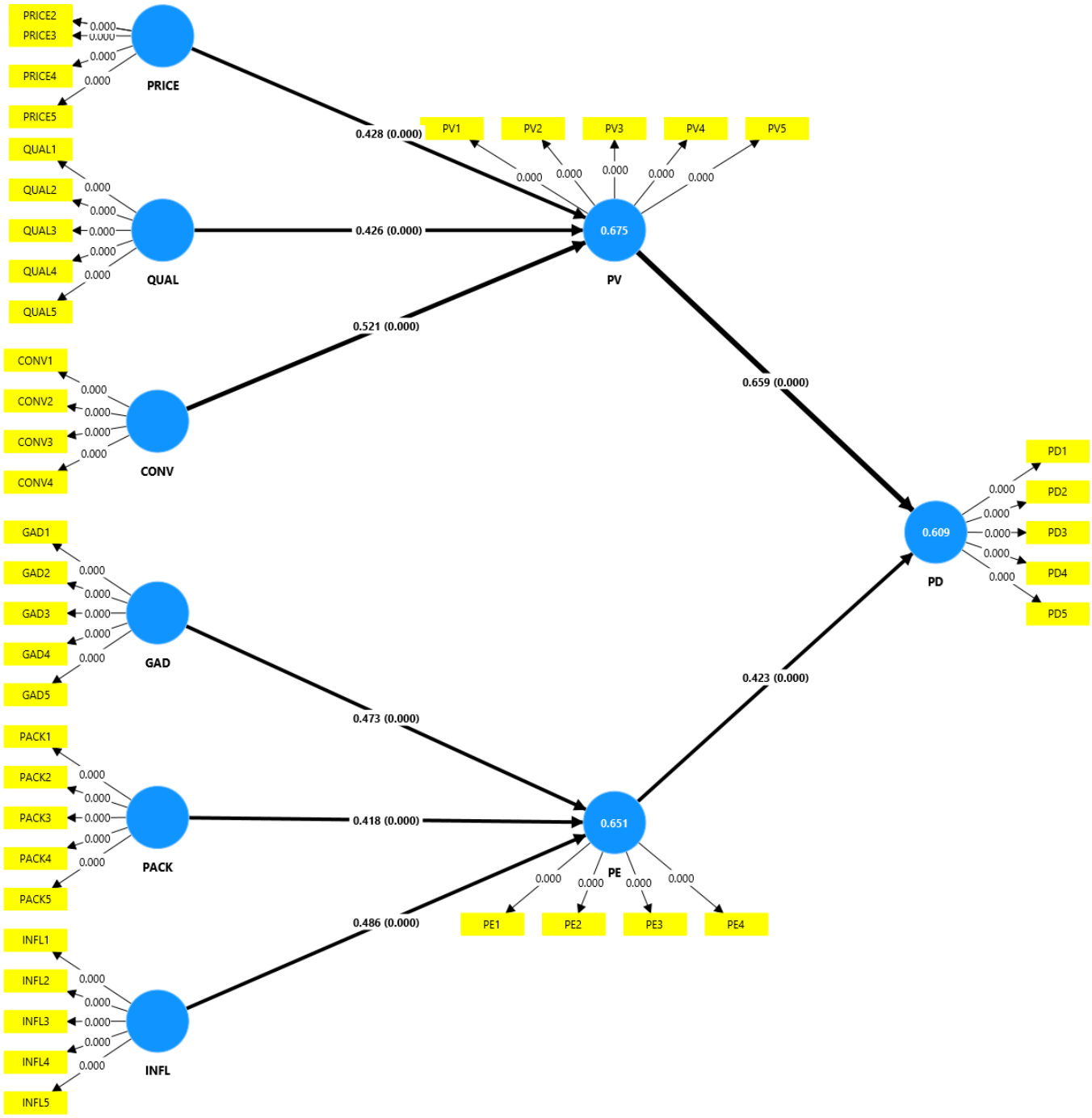

Figure 2. Measurement Model

5. Discussion

5.1. Main paths

This study analyzes the main factors that influence purchasing decisions for refillable beauty products in the emerging tourist city of Da Nang. The results affirmed that various antecedent factors, product price (PRICE), product quality (QUAL), convenience (CONV), green advertising (GAD), refillable packaging design (PACK), and influencer marketing (INFL) significantly influence consumer behavior.

These elements specifically affect purchase decisions (PD) through two primary psychological mechanisms: perceived value (PV) and positive emotions (PE). Simultaneously, these cognitive (PV) and emotional (PE) elements serve as mediators influencing purchase intention.

The study has established the correlation between product price and customers' perceived cognitive values. The research indicated that the product's price (PRICE)

positively influences perceived value (PV) (Hypothesis 1a). This finding aligns with the results from the research conducted by [4], [13], [14]. This outcome indicates that customers generally regard the price of green products as justifiable when they are authentically associated with and accurately represent the value benefits offered by the product.

Furthermore, the study discovered that quality (QUAL) had a positive effect on perceived value (PV) (Hypothesis 1b). This result is entirely consistent with previous studies by [16], [18], which argue that when the benefits from product quality are perceived to far exceed the costs incurred, consumers will evaluate the product as providing high perceived value, thereby driving purchase intention.

Additionally, among the factors related to product attributes, the study found that convenience (CONV) is the factor with the strongest influence on perceived value (PV) ($\beta = 0.521$), thereby confirming that convenience is a decisive factor in shaping customers' perceived value (Hypothesis 1b). Specifically, [21] demonstrated that when consumers perceive sustainable products as easy and convenient to use, their perception of the product's usefulness increases significantly. Similarly, [4] affirmed that expected ease of use is the most influential driver in consumers' decision-making processes regarding refillable products. These studies suggest that consumers are likely to make smart shopping decisions when they perceive convenience in purchasing and using the refillable beauty products, such as easy refill replacement, easy storage, and the availability of these product lines.

Next, the research has also confirmed that green advertising (GAD) significantly contributes to the positive emotions (PE) of consumers (Hypothesis 2a). This result is consistent with previous findings by [22], [23]. These studies have shown that visually stimulating advertisements with green elements easily evoke positive emotions in consumers such as joy, excitement, satisfaction, and relaxation. These emotions have led consumers to develop strong emotional connections, making them feel that they are positively contributing to the environment and society.

In addition, according to the research results, the design of refillable packaging (PACK) also significantly impacts consumers' positive emotions (PE) (Hypothesis 2b). This means that an aesthetically pleasing and attractive packaging design can directly evoke feelings of joy, comfort, and satisfaction for the customer. Moreover, when packaging design possesses ecological protective characteristics such as reusability, it is even more likely to strongly activate positive emotions in customers, as they perceive the ethical value and their contribution to environmental protection. This finding aligns with the results of [25], [26], [28].

And influencer marketing (INFL) is also considered to contribute to the positive emotions (PE) of consumers (Hypothesis 2c). This finding once again confirms the "emotional resonance" between influencers and consumers through the personal appeal, authenticity, and reliability of the influencers. These are interesting findings from previous studies by [31], [32].

Regarding the relationship between perceived value (PV) and purchase decision (PE) (Hypothesis 3), the study has once again confirmed this significant relationship, consistent with quite a few previous studies by [37], [52]. As for the relationship between positive emotions leading to purchase intentions, this study further confirms this significant impact (Hypothesis 4). This means that when consumers experience a positive psychological state, they believe they are contributing beneficial values to the environment and society, thereby significantly increasing their motivation and purchase intention. The results are consistent with the studies of [27], [52].

Regarding the mediating role of product attributes, the study found a significant relationship between price (PRICE), quality (QUAL), convenience (CONV) of the product, and purchase intention through the mediating role of perceived value (PV) (Hypotheses 5a, 5b, 5c). This relationship has been demonstrated in several studies [13], [37], [38].

Regarding the mediating role of positive emotions, the research has found a significant relationship between communication signals such as green advertising (GAD), refillable packaging design (PACK), influencer marketing (INFL), and purchase intention through the mediating role of perceived value (PV) (Hypothesis 6a, 6b, 6c). This mediating mechanism has been elucidated in several previous studies in different shopping contexts [27], [40]. These studies affirm that marketing stimuli (such as advertisements, packaging, and influencers) contribute to consumer emotions to drive purchasing behavior.

5.2. Multigroup analysis (MGA)

Shopping Habits

The Multi-Group Analysis (MGA) results reveal statistically significant differences in four structural relationships between the two shopping habit groups. Specifically, these paths comprise CONV → PV ($p = 0.001$), INFL → PE ($p = 0.001$), PRICE → PV ($p = 0.050$), and PV → PD ($p = 0.040$). Regarding the relationship between convenience and perceived value, the effect is significantly more pronounced in the offline shopping context (0.613) compared to the online setting (0.411). Conversely, the impact of influencers on positive emotions is substantially stronger during online shopping (0.579) than in offline contexts (0.385). Notably, at the 5% significance level, price exerts a greater impact on perceived value for the online shopping cohort (0.509)

relative to the offline group (0.393). Finally, the transition from perceived value (PV) to purchase decision (PD) demonstrates a dominant and stronger effect within the offline group (0.713) compared to the online group (0.602).

In terms of perceived value, the online shopping group is predominantly driven by price, whereas the offline cohort is more heavily influenced by convenience. This phenomenon can likely be attributed to price transparency and the optimization of search costs in the digital environment, which heighten consumers' awareness and perception of pricing strategies and promotional campaigns. In contrast, convenience plays a paramount role in fostering perceived value among offline shoppers. While online shopping entails delivery waiting times and restricts physical product evaluation, brick-and-mortar stores effectively resolve these limitations by allowing customers to visually and physically inspect products prior to purchase. Ultimately, the inherent advantages of instant gratification and the elimination of delivery latency prove more efficacious in optimizing perceived value for in-store consumers relative to the e-commerce environment.

Furthermore, the transition from Perceived Value (PV) to Purchase Decision (PD) is more pronounced among the offline shopping cohort compared to their online counterparts. This divergence primarily stems from the physical retail environment's capacity to mitigate perceived risk and facilitate instant gratification. Specifically, as previously discussed, brick-and-mortar stores enable customers to engage in multi-sensory, hands-on product experiences, which effectively dispels skepticism and prompts more decisive purchasing behaviors. Moreover, driven by the implicit costs associated with travel time and physical effort, in-store consumers are highly inclined to finalize transactions immediately to enjoy the privilege of instant ownership. Conversely, in the online environment, the absence of physical touchpoints coupled with low switching costs renders consumers more susceptible to hesitation. They frequently delay their purchases to continue comparing alternatives or await promotional offers, which inherently inflates the cart abandonment rate and attenuates the direct conversion from perceived value to the final purchase decision.

6. Conclusion

6.1. Theoretical contributions

So far, in Vietnam in general and the tourist city of Da Nang in particular, research on green consumer behavior has received attention; however, there are still quite limited in-depth studies on the impact on purchasing decisions for the refillable beauty products, a developing trend in sustainable consumption. Therefore, this research has made significant contributions to the theoretical foundation of green consumer behavior and purchasing decisions in the beauty sector, specifically as follows:

First, the research contributes to the theoretical framework on green product purchasing behavior in general and refillable beauty products in particular. Specifically, the research expands the context to the cosmetics industry, particularly refillable beauty products, where consumer behavior is significantly influenced by awareness, personal feelings, and sustainable consumption trends, thereby clarifying how consumers evaluate and make decisions regarding environmentally friendly products.

Secondly, the research contributes to the measurement system to assess the factors influencing the decision to purchase refillable beauty products through the development and validation of observed variables. The scales are adjusted to fit the context of Danang market and the characteristics of refillable beauty products, thereby ensuring reliability and value and providing a reference basis for future research.

Thirdly, the study contributes to validating the mediation role of perceived value and good emotions in the relationship between influencing factors and purchasing decisions. This result shows that the decision to purchase replenishable beauty products is not only directly influenced by external factors but also the process of evaluating perceived value and positive emotional responses of consumers, thereby contributing to clarifying the psychological mechanisms in green consumer behavior.

6.2. Managerial implications

To promote green consumption behavior, cosmetic brands in Da Nang cannot merely rely on generic appeals for "environmental protection." Instead, they must convert sustainability into tangible values (convenience, price, quality) while simultaneously stimulating consumers' emotions. In this study, the authors propose three primary categories of solutions: optimizing perceived value (PV), evoking positive emotion (PE), and executing omnichannel integration.

Optimizing perceived value

Among the factors influencing perceived value (PV), Convenience emerges as the most impactful factor. Furthermore, the MGA results indicate that the offline shoppers is more profoundly affected by this factor than the online shoppers. Therefore, The authors advocate for the creation of a network of "refill stations" to improve accessibility for this demographic. Specifically, brands should strategically deploy these refill stations at locations that align seamlessly with the daily routines of local residents. Potential sites include the vicinity of traditional markets (e.g., Con Market, Han Market), residential supermarkets or convenience stores, schools (catering to

parents picking up children), and densely populated apartment complexes or districts such as Hai Chau, Thanh Khe, and Son Tra. The objective is to integrate the refill process as a convenient "transit point" rather than a distinct destination. Additionally, considering the nature of this repeat-purchase market, brands might adopt a subscription refill strategy. This may include home delivery services or automated refill reminders aligned with the product's usage cycle (e.g., shampoo depletion every 4–6 weeks), thus reducing the cognitive burden on clients to recall and initiate repurchase.

Subsequently, price acts as the second most impactful factor of perceived value, exhibiting particular sensitivity among online shoppers. Consequently, brands should concentrate their discount programs, flash sales, and voucher offerings on e-commerce channels, encompassing both official brand platforms and third-party e-commerce marketplaces. Conversely, it is imperative for brands to maintain stable and consistent pricing to prevent price confusion (price discrepancy) within direct purchasing channels. As the offline shopping group predominantly consists of residents making recurrent purchases at familiar retail points, brands could design pricing packages based on membership tiers or geographic locations. For instance, introducing a "Tribute to the Livable City" pricing tier exclusively for Da Nang residents can serve as a collaborative initiative to cultivate a green consumption community. The design of such pricing architectures aims to amplify perceived value through accumulated financial benefits and a sense of community belonging.

The ultimate component of perceived value is Quality (QUAL). Consumers sometimes express concern regarding whether the quality of subsequent refills of refillable products truly aligns with that of the initial product. Consequently, businesses must implement consistent quality control protocols for each refill transaction and clearly convey that the refilled product contains the same ingredients and effectiveness as the original item. It is strongly advised to implement a batch code system for each batch of refill materials to enhance traceability in case of discrepancies. This technique concurrently conveys a professional image of rigorous quality control, essential for fostering a lasting reputation and confidence with returning customers.

Evoking positive emotion

Positive Emotion (PE) is shaped by Influencers (INFL), Green Advertising (GAD), and Refillable Packaging (PACK). Among these antecedents, influencers significantly contribute to eliciting pleasant feelings, especially via internet platforms. Consequently, enterprises should reallocate their marketing budgets by reducing the proportion allocated to mass green advertising and increasing investments in influencer collaborations. Priority should be given to local micro and nano-influencers in Da Nang, as this demographic generally fosters a greater sense of closeness and authenticity than macro-celebrities. Collaborative content must focus on genuine personal experiences, including the transition to a refill-centric lifestyle, the psychological satisfaction from reducing plastic waste, and localized narratives related to Da Nang, rather than straightforward promotional posts that simply list product features. Furthermore, businesses should invest in digital-native content formats. Utilizing short-form videos (e.g., TikTok, Instagram Reels) to visually document the refill experience, livestreams to demonstrate the refill process, or longitudinal content series tracking an influencer's sustainable living journey can effectively leverage the high virality and engagement metrics of these formats, thereby maximizing the proliferation of positive emotions within the community.

Subsequently, given that the efficacy of green advertising in evoking emotions is relatively lower than that of influencers, enterprises should deploy green advertising primarily as a foundational tool to establish brand awareness and credibility. Additionally, content should be designed to provide personal emotional benefits (e.g., visualizing the quantified reduction in plastic waste achieved by a Da Nang resident utilizing refillable products over a year). This approach facilitates audience self-identification and elicits genuine emotional responses, which are vastly superior to superficial or generic slogans. To enhance the emotional impact of green advertising, there should be a strategic shift from informational advertising formats (i.e., benefit listing) to storytelling approaches. For instance, narratives highlighting the preservation of the Han River and Da Nang's beaches through locals' joint efforts to reduce plastic trash might cultivate a deeper local emotional connection than abstract environmental messaging.

The final factor constituting positive emotions is Refillable Packaging (PACK). Due to the tendency of refillable packaging to adopt a "simple and minimalist" design to reduce expenses and material consumption, some companies accidentally overlook the aesthetic aspect. Nevertheless, scientific findings indicate that packaging continues to be a crucial influencer of emotion. Consequently, it is essential to invest in refined minimalist designs to overcome the current customer perception that eco-friendly items lack aesthetic value. Moreover, emotions are often stimulated by personalization. Consequently, marketers ought to contemplate incorporating basic customization alternatives (e.g., name engraving, cap color choices, personalized labeling) for refillable bottles. The psychological ownership of a "personalized, durable" item generally fosters a stronger emotional attachment compared to mass-produced, single-use packaging, thereby reinforcing the behavioral intention to retain the bottle for subsequent refills. This personalization strategy could also be aligned with Da Nang's seasonal tourism events (e.g., Danang International Firwork Festival - DIFF, the summer beach tourism season). This positioning elevates the refillable bottle

beyond a mere functional item into a symbol of community engagement and local identity, subsequently consolidating long-term positive emotions. Finally, packaging design must maintain consistency in imagery, color palette, and tone of voice with the ongoing influencer and green advertising campaigns. This ensures that upon tactile engagement with the bottle, customers immediately recognize the connection to the emotional narratives previously encountered across media channels, ultimately yielding a seamless omnichannel brand experience..

Executing ommichannel integration

Considering that the target population of this study consists of local citizens demonstrating both offline and online shopping tendencies, businesses must consider the adoption of a comprehensive omnichannel approach. This omnichannel strategy must be precisely designed to support long-term repeat purchasing habits, integrate smoothly into consumers' everyday routines, and promote strong community involvement.

Enterprises should design these two channels to be mutually supportive: the online channel should drive foot traffic to physical touchpoints, while the offline channel should facilitate the proliferation of the digital presence. Specifically, advertising content and influencer endorsements on digital platforms should incorporate suggestive calls to action, actively directing customers to "visit the nearest refill station for a hands-on experience." Conversely, offline touchpoints at refill stations can be optimized by integrating QR codes that route customers to online communities (e.g., Zalo groups, Facebook communities). This allows consumers to engage in knowledge sharing, access and disseminate information, or receive notifications regarding upcoming community events. Simultaneously, by leveraging customer data within a centralized Customer Relationship Management (CRM) system that synchronizes online and offline interactions, businesses can proactively issue automated refill reminders, refine product offerings based on real-time feedback, and dispatch personalized content that precisely aligns with individual customer preferences.

6.3. Limitations

Even though the study has made a lot of progress, there are still certain issues that need to be resolved in subsequent research.

First, the study uses cross-sectional data, which only reflects the relationship between variables at a specific point in time and does not consider the changes and developments over time in consumers' perceptions, emotions, and intentions.

Secondly, the scope of the research was primarily conducted in Danang city, so the data obtained may not entirely reflect the characteristics of other geographical areas. This somewhat limits the ability to generalize the research results to the entire market.

Thirdly, the survey mainly focused on local residents, especially the group of young consumers, leading to a lack of representation of customer groups from different age and demographic characteristics. Therefore, the research results may not fully reflect the behavior and perceptions of the entire consumer base.

Fourth, the research model and the variables used do not encompass all the factors that could influence the dependent variable, especially new variables or latent factors in the context of a rapidly changing market. This may reduce the comprehensiveness and explanatory power of the research model.

Finally, the study examined the moderating role of shopping habits; however, there are still many other factors that could influence customer responses to purchasing refillable beauty products that have not yet been tested.

6.4. Future research

Future research may contemplate the following research directions as a result of the aforementioned limitations:

First, future research should employ a longitudinal design or panel data to monitor alterations in consumer perceptions, emotions, and behaviors across time. This methodology facilitates enhanced examination of causal links and assessment of the decision-making process, rather than only viewing a static moment in time. Furthermore, experimental design or field tests may be employed to evaluate the influence of marketing variables (e.g., eco-friendly slogans, refill experiences at points of sale) on real behavior.

Secondly, future research could broaden the survey's scope to include other prominent cities such Vietnam Hanoi and Ho Chi Minh City, or environmentally-focused tourist sites like Phu Quoc, to provide cross-regional comparisons. Simultaneously, cross-national research in Southeast Asia presents a viable avenue to evaluate the model's resilience across many cultural contexts and developmental stages.

Finally, future research must enhance the survey sample's diversity by employing the stratified sampling technique according to age, income, occupation, or lifestyle. Particularly, the distinctions among generations such as Gen Z, Millennials, and Gen X must be taken into account to do multi-group analysis (MGA), thereby explaining the variances in green consumption behavior and the acceptability levels of refill items across costumer segments.

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