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Consumers' Reaction to Greenwashing in the Saudi Arabian Skincare Market: A Moderated Mediation Approach

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Abstract: Amidst the abundance of skincare options, the process of identifying the most fitting products is a daunting task. This challenge is further intensified when brands frequently lack transparency concerning their environment-friendly characteristics, fostering skepticism among consumers or potential adopters. As a result, to resolve the problem of consumers' mixed emotions towards skincare brands, it is necessary to understand how greenwashing, green skepticism with two moderators (information quality and brand reputation) shape consumers' intentions. Drawing on a theoretical conceptual model rooted in the consumer behavior literature, the present investigation tested the hypotheses through cross-sectional survey research. Using convenience sampling, 441 participants were recruited through social media platforms and skincare-related forums. This study establishes the mediating role of green skepticism and the direct impact of greenwashing on consumers' purchase intentions. Consequently, the statistical significance of the path coefficients provide empirical support for the influence of greenwashing and green skepticism on consumers' intentions. Our research contributes to the broader discourse on sustainable consumption, offering theoretical advancements and practical implications for the researchers, policymakers, and businesses involved in the Saudi Arabian skincare market.

Keywords: greenwashing; green skepticism; information quality; brand reputation; moderated mediation; skincare products; environment-friendly; Saudi Arabia



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1. Introduction

The consumption of environment-friendly products and reducing waste are important steps to achieve the United Nations' sustainable goals [1,2]. In fact, recent years have seen a substantial shift in the personal care and beauty industry, with a growing emphasis on ethical brands [3]. As a result, consumers are becoming more conscientious about the ingredients of their skincare products and the environmental benefits (such as the use of natural ingredients, sustainable packaging, and cruelty-free practices) associated with its usage [3,4]. Hence, environment-friendly skincare products play a pivotal role in satisfying the demand for environmentally conscious choices. These products are promoted as not only protecting skin health but also contributing to a greener planet, reducing the environmental footprint of beauty routines. It is not uncommon for skincare brands to highlight about their commitment to sustainability, aligning themselves with the growing demand for natural and clean beauty products [5,6]. From high-end luxury lines to more

environment-friendly options, companies in the skincare sector are capitalizing on the opportunities for increased profits and enhanced brand reputation. This environment-friendly trend is prominently displayed through skincare campaigns, product launches, and social media promotions [7], showcasing the industry's dedication to ecological values and its intention to transition towards more sustainable practices.

Meanwhile, on the contrary, researchers such as Sadiq et al. [1] reported significant skepticism and reluctance among consumers regarding purchasing environmentally friendly cosmetic products. This could be because consumers' distrust and actions tend to be perceived as greenwashing. Greenwashing refers to brands withholding, deceiving, or providing false information about their environmental commitment, product orientation, or process orientation [8,9]. Companies frequently use terms like "natural", "organic", and "environment-friendly" [10], which could be misleading, deceptive, or incomplete [10,11]. As such, these actions are commonly performed to appease customers or boost company profitability [12].

Despite the considerable body of research in green marketing, there is a marked paucity of scholarly inquiry specifically dedicated to understanding consumers' perspectives on greenwashing and their levels of green skepticism [12]. Thus, based on the conceptual model, this study explores whether and how consumers' greenwashing influence consumers' intention to purchase environmental products by integrating the moderating roles of information quality and brand reputation.

Cosmetics can be classified into several categories, i.e., ranging from high-end decorative cosmetics (e.g., nail polish, lipsticks, makeup etc.) [13] to everyday skincare products (e.g., hair care, facial care, hand care, and body care) [14]. The prior literature indicates that consumers show varying degrees of skepticism depending on the cosmetics category. Therefore, this research focuses exclusively on everyday skincare products.

Hence, this study aims at addressing the following research questions: a. whether greenwashing and green skepticism exert substantial adverse influences on consumers' intention to purchase environmentally friendly skincare products?; and b. do information quality and brand reputation actually decrease the negative effect of green skepticism on intention to purchase?

Sadiq et al. [1] and Amber and Fogarassi [15] noted that despite a large number of studies in developed and emerging nations [1,16–18], research on consumers' intentions toward environment-friendly skincare purchases in Middle East Asian countries has been modest [19,20]. For instance, Husain [19] examined the cosmetic usage and experiences of 106 Saudi female undergraduate students drawn from a single province of Saudi Arabia, which was limited in its scope. Similarly, Kaliyadan et al. [20] examined 413 Saudi adult females between the ages of 18 and 50 to determine their attitudes, awareness, and practices related to organic cosmetics. There are two limitations to this study: 1. this study focuses only on female respondents; 2. statistical techniques such as percentages are used to show the results; and 3. this study focuses on the awareness and attitudes of the respondents.

Accordingly, the limitations of the aforementioned studies [19,20] and much of the previous literature on environment-friendly skincare products are mainly centered on South and North America, Europe, and Asia (for example, Ruiz-Mafe et al. [21] and India [1]). Due to this, there is a lack of comprehensive empirical research that takes into consideration both genders (i.e., male and female) in Gulf countries, specifically Saudi Arabia. According to a recent survey, a significant portion of Saudi consumers (78%) express concern about climate change, indicating a burgeoning interest in sustainable choices [22]. Furthermore, the rising population of working women in Saudi Arabia [23] is amplifying the demand for various skincare products, reflecting an increasing societal consciousness towards appearance and self-care [22]. Hence, we chose Saudi Arabia as our study context.

The following section offers an outlook on Saudi Arabia's environmentally friendly product market, followed by a model conceptualization and hypothesis development. The subsequent methodology section sets the stage for the survey instrument, sampling method, and data collection. This is followed by the analysis section, which tests the model and

presents the results, which are then discussed in the next section. Implications and future research directions are drawn from the discussion.

2. Review of the Literature

2.1. Sustainability and the Saudi Arabian Cosmetics Market

Saudi Arabia plays an increasingly important role in the global demand for sustainable and environment-friendly products [24]. The Saudi population finds itself at the nexus of a global movement towards sustainable living, especially through the consumption of sustainable and environment-friendly products. As such, Saudi consumers' landscape is experiencing a transformation driven by an increasing appetite for sustainable living [25]. Factors such as rising awareness of climate change, concerns about environmental degradation, and a desire for healthier lifestyles have contributed to a discernible shift in consumer preferences. The Saudi government has also embarked on several initiatives to promote sustainability. In 2019, the Ministry of Environment, Water, and Agriculture launched the National Environment Strategy, highlighting the country's commitment to environmental protection [26]. These efforts emphasize the importance of responsible consumption and environmental stewardship.

In this vein, the domain of environment-friendly personal care products, is witnessing a remarkable surge in Saudi Arabia [25]. The demand for chemical-free personal care items is steering the growth of the environment-friendly personal skincare market, with the skin care segment leading the charge [27]. This dominance is attributed to the rising standard of living in emerging markets and the growing inclination of female consumers towards beauty products. It is predicted to grow at an annual rate of 9.4% during the forecast period (2022–2028). This robust expansion is fueled by a heightened awareness regarding the adverse effects of harsh chemicals in personal care items [27].

The market's positive trajectory is further propelled by favorable government policies [26], which support manufacturing environment-friendly personal care products over chemical alternatives. Additionally, the prevalence of environment-friendly skincare products on e-commerce platforms, coupled with extensive marketing through social media, contributes to the market's momentum [28]. Hence, the skin care market in Saudi Arabia represents a broad consumer base spanning various demographic groups [25,27].

2.2. Model Conceptualization

To achieve this objective, we proposed a theoretical framework that unravels the complexities of Saudi consumers' responses to greenwashing practices in the market for environment-friendly skin products. At its core, our model explores the relationship between greenwashing—a prevalent challenge in the global market—and consumers' intentions to purchase environment-friendly skincare products. This relationship is mediated by green skepticism—a construct reflecting consumers' reservations and skepticism towards the authenticity of green marketing claims [29]. Recognizing the pivotal role of perceived authenticity in shaping consumer trust, our model incorporates trust and credibility theories to expound on the mediating role of green skepticism [20,30]. Moreover, our model introduces two crucial moderators—information quality and brand reputation. Information quality, in the context of our study, refers to the accuracy and reliability of information available to consumers regarding the environmental attributes of products [31,32]. Brand reputation encapsulates the credibility and trustworthiness associated with a brand in the eyes of consumers [33,34]. These moderators are theorized to influence the strength of the relationship between green skepticism and consumers' intentions to purchase environment-friendly skincare products. As such, this theoretical framework provides a comprehensive lens to explore the nuanced dimensions of consumers' attitudes and intentions [35,36] regarding environment-friendly skincare products (see Figure 1).

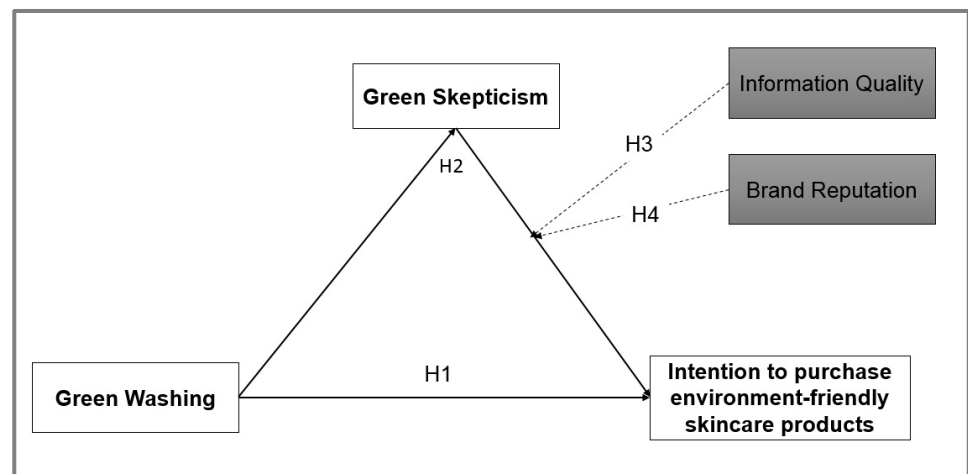


Figure 1. Conceptual model. Source: Authors' own.

This model provides a precise, focused, and manageable approach to analyzing causal relations between green skepticism and greenwashing by isolating them as discrete linear phenomena. It facilitates targeted interventions, enhances analytical convenience, ensures practical applicability, and provides businesses and policymakers with clearer and more independent results. The relevance of our theoretical framework is underscored by a growing body of literature that addresses the intricate relationships between greenwashing, consumer skepticism, and purchasing behavior. Studies conducted in diverse global contexts, such as those by Parguel et al. [37] and Jog and Singhal [38], have illuminated the complexities of consumer responses to greenwashing practices. Among the psychological processes involved, Parguel et al. [37] found a connection between greenwashing, consumer skepticism, and altered purchasing intentions. The multifaceted nature of consumer responses to environmental claims has also been underscored by Jog and Singhal [38], who highlighted the crucial role information quality and brand reputation play in moderating skepticism.

The above discussion serves as a valuable background for our study of Saudi Arabian consumers, providing insights in the following ways: First, this study's insights not only aid researchers and practitioners in tailoring strategies but also have practical applications for businesses, helping them adapt marketing approaches globally. Second, policymakers, on a global scale, can draw valuable insights from diverse cultural contexts to inform effective regulations addressing greenwashing practices. Third, the academic community benefits from the expanded empirical studies, contributing to a more comprehensive understanding of variable relationships and enhancing theoretical development in the field of consumer behavior. Fourth, identifying key factors influencing consumer intentions in Saudi Arabia allows businesses in the region to adapt marketing strategies. Additionally, global businesses benefit from understanding diverse consumer responses to greenwashing, enabling the development of more effective global marketing strategies.

2.3. Hypothesis Development

2.3.1. Greenwashing and Intention to Purchase Environment-Friendly Skincare Products

Greenwashing can be framed within the broader context of environmental psychology, which investigates the relationships between individuals and their environment. As a result, prior investigations into the impacts of greenwashing on consumer behavior often utilized deductive survey methods to collect quantitative consumer data, allowing researchers to validate models and illustrate relationships between greenwashing and variables such as mediators and outcomes [37–41].

Parguel et al. [37] explored the impact of greenwashing on consumer behavior, highlighting the psychological mechanisms at play. This study emphasized the need to understand how consumers perceive and react to environmentally deceptive marketing practices.

In the context of skincare products, where claims of environmentally friendly attributes abound, the implications of greenwashing are particularly significant. Understanding the psychological underpinnings of greenwashing is essential for comprehending its effects on consumer intentions. As such, consumers seeking environment-friendly skincare products may be vulnerable to misleading environmental claims, affecting their perceptions and purchase decisions. Hence, the gap in trust created by greenwashing practices can influence consumers' intentions to purchase environment-friendly skincare items. Therefore, we propose the following hypothesis:

Hypothesis 1 (H1): *The prevalence of greenwashing practices negatively influences consumers' intentions to purchase environment-friendly skincare products.*

2.3.2. Green Skepticism as a Mediator

Green skepticism, representing consumers' reservations about the authenticity of green marketing claims, aligns with trust theories and information processing models. The Trust Transfer Model posits that consumers transfer trust from a trusted source to a less-known entity [42]. In the context of green skepticism, consumers may trust well-established certifying bodies or environmental organizations, and this trust is then transferred to products claiming to be environmentally friendly. Moreover, the Elaboration Likelihood Model [43] provides insights into how consumers process information. In the presence of green skepticism, consumers may systematically process information more critically to discern the authenticity of sustainability claims.

In sustainable consumption, green skepticism emerges as a crucial construct, reflecting consumers' reservations and doubts regarding the authenticity of green marketing claims. A study by Nguyen et al. [29] explored the mediating role of green skepticism in understanding the intricate relationship between greenwashing and altered purchasing intentions. Study results suggest that consumer skepticism plays an important role in influencing the strength and nature of the connection between greenwashing practices and subsequent consumer behavior. With skincare products, which are frequently marketed as environment-friendly, green skepticism becomes an increasingly important factor in shaping consumer attitudes and intentions [44]. Wary of deceptive greenwashing practices, consumers may develop skepticism towards environmental claims associated with skincare items. This skepticism, in turn, can mediate the direct impact of greenwashing on consumers' intentions to purchase environment-friendly skincare products. Building on the literature, we propose the following hypothesis:

Hypothesis 2 (H2): *Green skepticism mediates the relationship between greenwashing practices and consumers' intentions to purchase environment-friendly skincare products.*

2.3.3. Information Quality as a Moderator

The quality of information, which refers to the accuracy and reliability of information about the environmental attributes of products, can be analyzed through the lens of information processing theories. The Information Processing Model [45] suggests that consumers go through stages of information processing, from exposure and attention to comprehension and acceptance. Higher information quality ensures that consumers receive accurate information, influencing their perceptions and attitudes. In the context of trust theories, the Information Asymmetry Model [46] highlights the importance of reducing information asymmetry between consumers and sellers. Higher information quality addresses this asymmetry, fostering trust and positively influencing consumer perceptions. In our context, the information could be self-made green claim labels by the skincare brands, or it could be a third-party environment-friendly certification that influences consumer intentions.

In sustainable consumption, the quality of information plays a pivotal role in shaping consumer attitudes and behavioral outcomes. Extending trust theories and information

processing models, the concept of moderated mediation becomes relevant. Moderated mediation occurs when the strength of a mediating variable's effect on the dependent variable is contingent on the level of a moderator variable [47]. Applied to the current context, information quality moderates the mediating role of green skepticism in influencing consumers' intentions to purchase environment-friendly skincare products. A higher quality of information will enhance the effectiveness of mediation under green skepticism. Accurate and reliable information allows consumers to scrutinize information more critically, potentially increasing green skepticism's mediating effect. From a trusted perspective, the Information Asymmetry Model [46] suggests that reducing information asymmetry fosters trust. As information quality improves, consumers may trust the information more, amplifying the mediating influence of green skepticism. Trusting the information becomes crucial in determining how consumers respond to sustainability claims, especially when mediated by green skepticism. Moderated mediation, as a theoretical framework, posits that the strength of the mediating effect (green skepticism) on the dependent variable (intention to purchase) is contingent on the level of the moderator (information quality) [48]. In this case, as information quality increases, the mediation effect of green skepticism may intensify, leading to more pronounced influences on consumers' intentions. Building on this literature, we propose the following hypothesis:

Hypothesis 3 (H3): *Information quality moderates the mediating relationship between green skepticism and consumers' intentions to purchase environment-friendly skincare products.*

2.3.4. Brand Reputation as a Moderator

Expanding the conceptual framework, we introduce brand reputation as an additional moderator [49] in the relationship between green skepticism and consumers' intentions to purchase environment-friendly skincare products. As it pertains to sustainable consumption, brand reputation refers to the credibility and trustworthiness associated with a brand. In branding literature and trust theories, brand reputation encapsulates the credibility and trustworthiness associated with a brand [49,50]. The Brand Credibility Model [51] emphasizes the role of perceived brand credibility in shaping consumer attitudes and behaviors. Trust theories, such as the Relationship Marketing Theory [52], suggest that trust is crucial in establishing and maintaining strong brand-consumer relationships. Understanding the intricacies of how brand reputation influences consumer perceptions requires an exploration of the Brand Personality Framework [53], which posits that brands have personality traits that consumers associate with them. In the context of sustainability, a positive brand reputation contributes to the perception of authenticity and trustworthiness [50].

In addition to information quality, the inclusion of brand reputation as a moderator provides a holistic view of how external factors can shape the mediating role of green skepticism. Trust theories, such as the Relationship Marketing Theory [46], emphasize the crucial role of trust in building and maintaining strong brand-consumer relationships. As a component of trust, brand reputation becomes a significant factor in moderating the impact of green skepticism. In the context of moderated mediation [54], the interactive effects of both information quality and brand reputation can be beneficial. Moderated mediation posits that the strength of the mediating effect (green skepticism) on the dependent variable (intention to purchase) is contingent on the levels of both moderators (information quality and brand reputation) [54–56]. This suggests that the combined influence of information quality and brand reputation could result in nuanced variations in the mediating role of green skepticism [55,56]. Building on this literature, we propose the following hypothesis:

Hypothesis 4 (H4): *Brand reputation moderates the mediating relationship between green skepticism and consumers' intentions to purchase environment-friendly skincare products.*

3. Research Methodology

3.1. Survey Instrument

A survey was designed to assess Saudi Arabian consumers' intentions to purchase environment-friendly skincare products in response to perceived corporate greenwashing practices, considering the mediating influence of green skepticism and the moderating roles of information quality and brand reputation. The questionnaire was initially developed in English and then translated into Arabic by a linguistic expert to ensure its suitability for Saudi Arabian consumers. The expert was an academic who was well versed in both English and Arabic. To ensure robustness and cross-cultural applicability, the expert examined the questionnaire for linguistic nuance, cultural relevance, and respondent comprehension.

To re-confirm the validity of the translated questionnaire, pre-tests were conducted with selected Saudi scholars to check the questionnaire for clarity. The survey commenced with a brief explanation of greenwashing and corporate green claims, highlighting the prevalent trend of companies portraying themselves as environmentally friendly without genuine adherence. Experts' feedback was solicited to finalize the questionnaire. All variables were gauged on a seven-point Likert scale (ranging from 1, indicating "strongly disagree", to 7, indicating "strongly agree"). Following the established literature, a three-item greenwashing measurement scale was adapted from Singh et al. [57], a three-item green skepticism scale was adapted from Kwon and Ahn [58]; Webb and Mohr [59], a three-item purchase intention was adapted from Sadiq et al. [1,35], a three-item information quality scale based on Saha et al. [60], and a three-item brand reputation scale based on Bang et al. [61] were employed. These measurement scales were drawn from reputable sources, ensuring the robustness of the survey instrument.

The final questionnaire contained three sections, with the first section explaining the study objectives and greenwashing, followed by a privacy and confidentiality statement to uphold the ethical standards of the survey by guaranteeing respondents' anonymity. The second section collected respondent demographic details, followed by a filter question to ensure their past experience purchasing environmentally friendly skincare products. Lastly, the third section contained the items to measure our study variables.

3.2. Data Collection and Study Sample

This study involved participants from the Saudi Arabian population with prior experience in purchasing environment-friendly skincare products. Under the Code of Federal Regulations (Part 46, Subpart A), the survey was exempted from IRB review. The survey was conducted from October 2023 to November 2023, employing an online medium to reach a diverse sample. The sampling technique involved convenience sampling, with participants recruited through social media platforms, skincare-related forums, and various closed groups of students and faculty members of different universities. The sampling frame encompassed Saudi Arabia's residents aged 18–65, ensuring geographic representation across urban and sub-urban areas. Based on the literature [62], efforts were made to include a balanced gender distribution, acknowledging men's increasing interest in green skincare products. After sending two reminder emails twice a week, a total of 487 responses were received within six weeks. After screening for incomplete or extreme responses, 441 responses were included in the empirical analysis. The demographic composition revealed that 58.8% of participants identified as female, while 41.2% identified as male. This could be possible due to the fact that an online survey link was circulated among students and faculty members of one of the largest women's universities located in Riyadh. Regarding age distribution, 38.7% were below 30, 47.1% were between 31 and 45, and 14.2% were aged 46 and above. Additionally, educational attainment indicated that 89.6% held bachelor's, master's, or doctoral degrees, and 87.3% reported a personal average monthly income of SAR 10,000 and above.

3.3. Model Testing

In examining our proposed conceptual model, structural equation modeling (SEM), a statistical method recognized for its ability to assess complex relationships, was employed [31,36]. Adhering to established guidelines, our study, with five variables and 441 effective observations, significantly surpasses the recommended minimum sample size for SEM, ensuring robust statistical power. To examine the mediating role of green skepticism, we applied the bootstrap confidence intervals method, offering a nuanced understanding of the indirect effects. Additionally, the moderating impacts of information quality and brand reputation were investigated by analyzing their measurement invariance, shedding light on potential variations in the model across different levels of these moderators. The data analysis was executed using IBM SPSS and SmartPLS version 3, demonstrating the utilization of rigorous statistical methods. Through these advanced analytical approaches, our study contributes novel insights into the interplay of greenwashing, green skepticism, and consumers' intentions to purchase environment-friendly skincare products, offering a comprehensive exploration of moderated mediation in this under-researched area.

4. Results

4.1. Measurement Model

Before subjecting our hypotheses to testing, we rigorously evaluated the reliability and validity of the measurement model. Cronbach's α coefficients were calculated for each construct, showcasing impressive factor loadings surpassing the 0.7 threshold and Cronbach's α values exceeding the 0.6 benchmark [32]. This robust internal consistency ensures the reliability of all constructs within our research model (see Table 1).

Table 1. Items, reliability, and convergent validity.

Variable	Mean Median STDEV	Item Label Loadings	Items	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted
Information quality (IQ)	4.755 4.670 1.148	IQ1 0.761	The information (self certifications /third-party certifications) provided by the skincare brands about their environmental practices is clear and reliable.	0.789	0.790	0.877	0.704
		IQ2 0.855	I feel well-informed about the environmental impact of the skincare products I consider purchasing.				
		IQ3 0.812	I trust the accuracy of the information provided by the skincare brands regarding their environment-friendly initiatives.				
Greenwashing (GW)	4.366 4.330 1.481	GW1 0.898	The skincare products I encounter often make exaggerated environmental claims.	0.864	0.868	0.917	0.786
		GW2 0.854	I believe that many skincare brands use misleading environment-friendly marketing.				
		GW3 0.905	I am skeptical about the sincerity of environmental claims made by skincare brands.				

Table 1. Cont.

Variable	Mean Median STDEV	Item Label Loadings	Items	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted
Green skepticism (GS)	4.234 4.330 1.489	GS1 0.899	I critically evaluate environmental claims made by skincare brands.	0.836	0.855	0.902	0.755
		GS2 0.925	I am cautious about trusting skincare brands that promote their products as environmentally friendly.				
		GS3 0.775	I often doubt the authenticity of skincare brands' environmental commitments.				
Brand reputation (BR)	5.033 5.000 1.275	BR1 0.814	I consider the reputation of skincare brands when making decisions about purchasing their products.	0.743	0.882	0.845	0.647
		BR2 0.804	A positive brand reputation influences my trust in skincare brands' environmental claims.				
		BR3 0.884	I am more likely to purchase skincare products from brands with a good environmental track record.				
Purchase intention (PI)	4.645 4.500 1.319	PI1 0.942	I am likely to purchase environment-friendly skincare products in the near future.	0.672	0.682	0.858	0.752
		PI2 0.941	When considering skincare purchases, I prioritize products with genuine environmental commitments.				
		PI3 0.712	I intend to support brands that demonstrate a sincere commitment to environment-friendly practices in their skincare products.				

Moving beyond reliability, we scrutinized the discriminant and convergent validity of the overall measurement model [31]. The average variance extracted was employed for assessing convergent and discriminant validity, as illustrated in Tables 1 and 2. Since each average variance extracted exceeds 0.5, it affirms strong support for convergent validity, reinforcing the reliability and validity of the proposed model. Table 2 reveals that the square root of the average variance extracted for each construct (diagonal elements in bold) surpassed the correlations among constructs. This outcome establishes the measurement model's robust discriminant validity [1].

Table 2. Results of discriminant validity.

Variable	PI	BR	GS	GW	IQ
Purchase intention (PI)	0.867				
Brand reputation (BR)	0.323	0.804			
Green skepticism (GS)	0.556	0.207	0.869		
Greenwashing (GW)	0.613	0.181	0.794	0.886	
Information quality (IQ)	0.690	0.447	0.528	0.559	0.839

4.2. Hypothesis Testing

The model's fit was assessed through multiple indices, including NFI and SRMR. The results showcased favorable fit indices: NFI: 0.862 and SRMR: 0.079, meeting satisfactory levels [35,36]. The hypotheses testing results unveil compelling insights into the relationships within the proposed model (see Table 3). Firstly, the path from greenwashing to purchase intention yielded a negative effect, with a standardized coefficient of -0.288 ($T = -3.297$, $p = 0.001$), affirming H1. Secondly, the mediation analysis results shed light on the indirect effects within the model. The path from greenwashing to intention to purchase via the mediating effect of green skepticism is insignificant [47,48], -0.058 ($t = -0.852$, $p = 0.394$), not supporting H2. Although the indirect effect exists, indicating a potential mediating influence of green skepticism, it did not reach statistical significance at the conventional significance level of 0.05. This suggests that green skepticism may not fully mediate the relationship between greenwashing and purchase intention in the context of environment-friendly skincare products. These findings underscore the intricate dynamics of greenwashing and green skepticism [50] in shaping Saudi Arabian consumers' intentions to purchase environment-friendly skincare products.

Table 3. Hypothesis testing and results.

Relationship	O	STDEV	O/STDEV	p-Value	Result
Greenwashing → PI	-0.288	0.087	-3.297	0.001	Accepted
Greenwashing → green skepticism	0.794	0.028	28.471	0.000	Accepted
Green skepticism → PI	-0.073	0.085	-0.858	0.391	Rejected
Greenwashing → green skepticism → PI	-0.058	0.068	-0.852	0.394	Rejected

Note: O: original sample; STDEV: standard deviation; |O/STDEV|: t-statistics; and PI: purchase intention.

Specifically, the indirect effect of greenwashing on purchase intention through green skepticism was examined, yielding an indirect effect coefficient of -0.058 ($t = -0.852$, $p = 0.394$). While the indirect effect did not achieve significance in this analysis, the nuanced nature of the mediation process emphasizes the need for further exploration and consideration of additional factors that might contribute to the complex interplay between greenwashing, green skepticism, and purchase intention in the consumer decision-making process.

Our study examined the moderated mediation effects involving green skepticism, information quality, and brand reputation in defining the relationship between greenwashing and purchase intention (see Table 4). When information quality was introduced as a moderator ($R^2 = 0.78$ for GS, $R^2 = 0.73$ for PI), the direct effect of greenwashing on purchase intention was substantial ($\beta = 0.23$, $p = 0.00$), and green skepticism alone did not significantly influence purchase intention. However, the interaction effect of Green Skepticism* Information Quality positively impacted purchase intention ($\beta = 0.33$, $p = 0.00$), emphasizing the moderating role of information quality in the Green Skepticism → Purchase Intention link.

Similarly, when brand reputation acted as a moderator ($R^2 = 0.78$ for green skepticism; $R^2 = 0.63$ for PI), greenwashing exhibited a noteworthy direct effect on purchase intention ($\beta = 0.39$, $p = 0.00$), while green skepticism alone showed a marginal impact on purchase intention ($\beta = 0.12$, $p = 0.08$). The interaction effect of Green Skepticism * Brand Reputation did not significantly influence the Green Skepticism → Purchase Intention pathway ($\beta = -0.03$, $p = 0.28$).

In summary, the NFI (0.862) and SRMR (0.079) indicated a well-fitting model. Hypothesis testing affirmed significant positive effects of greenwashing on purchase intention (H1) and green skepticism (H2) [8,9,12,58]. Mediation analysis suggested a positive but non-significant indirect effect of green skepticism on the greenwashing-purchase intention relationship. The moderated mediation [56] analysis revealed that information quality (H3) significantly moderated the green skepticism-purchase intention link. These nuanced findings underscore the complex interplay between greenwashing, green skepticism, and

the moderating roles of information quality and brand reputation in shaping Saudi Arabia's consumers' intentions to purchase environment-friendly skincare products.

Table 4. Moderated mediation results.

Information Quality as a Moderator						
	GS (R ² = 0.78)			PI (R ² = 0.73)		
	β Coefficient	Standard Error	p-Value	β Coefficient	Standard Error	p-Value
Greenwashing	0.79	0.17	0.0	0.23	0.06	0.00
Green skepticism (GS)				0.05	0.06	0.34
Information quality (IQ)				0.58	0.05	0.00
GS*IQ				0.33	0.03	0.00
Brand Reputation as a Moderator						
	GS (R ² = 0.78)			PI (R ² = 0.63)		
	β Coefficient	Standard Error	p-Value	β Coefficient	Standard Error	p-Value
Greenwashing	0.79	0.03	0.0	0.39	0.06	0.00
Green skepticism (GS)				0.12	0.06	0.08
Brand reputation (BR)				0.22	0.05	0.00
GS*BR				−0.03	0.03	0.28

Note: *: interaction.

Moreover, recognizing the potential gender imbalance in the cosmetics market, the multigroup structural model was employed to assess potential significant differences in relationships among male and female subjects [63]. Initially, the overall fit measures of the unconstrained model suggest that the model aligns well with the data (χ^2 (15) = 18.19 ($p > 0.05$), NFI = 0.97, CFI = 0.98, IFI = 0.98, RMSEA = 0.04). Subsequently, a structural model was estimated with all hypothesized effects constrained to be invariant across the samples (χ^2 (20) = 25.14 ($p > 0.05$), NFI = 0.96, CFI = 0.98, IFI = 0.98, RMSEA = 0.06). The chi-square difference test comparing the unconstrained and constrained structural models indicates that full structural invariance is supported ($\Delta \chi^2$ (5) = 6.95 ($p > 0.05$)). This implies that, as a whole model, there is no significant difference in relationships among variables between males and females.

5. Discussion

The findings from our analysis offer valuable insights into the complex dynamics surrounding consumers' perceptions of greenwashing, green skepticism, and their intentions to purchase environment-friendly skincare products. The direct effect results indicate that greenwashing significantly negatively impacts purchase intention, reinforcing the idea that consumers are discerning and respond negatively to deceptive green marketing practices. This aligns with the existing literature on environment-friendly skincare products [9,12], emphasizing the importance of authenticity in sustainability claims for consumer trust [11] and positive purchasing behavior.

Moreover, our examination of the mediation effect through green skepticism suggests that while greenwashing has a positive indirect effect on green skepticism, this mediation pathway did not reach statistical significance. This finding implies that green skepticism might not be the sole mediator in the relationship between greenwashing and purchase intention. Considering the multifaceted nature of consumer responses to environmental claims, the non-significant indirect effect prompts further exploration into additional factors that may contribute to the mediation process.

In the context of moderation, our results present interesting insights. Information quality was identified as a significant positive moderator in the relationship between green skepticism and purchase intention. This suggests that even when consumers perceive the information regarding the environmental attributes of products to be of high quality, the negative impact of green skepticism on purchase intention is mitigated.

Conversely, brand reputation did not emerge as a significant moderator in this relationship, indicating that the credibility and trustworthiness associated with a brand might not play a substantial role in influencing the strength of the relationship between green skepticism and purchase intention, aligning with the findings of [29,44,58]. A possible explanation for this phenomenon is that familiarity with a brand leads consumers to trust it inherently, shifting their focus from the brand itself to the information it provides. Additionally, reluctance to switch brands may stem from the perceived risks associated with new brands, attributed to a lack of trust during the transition [37,64].

These findings contribute to the growing body of literature on consumer behavior in the context of sustainability and green marketing. However, they also highlight the intricacies and variability in consumer responses, emphasizing the need for a more comprehensive understanding of the factors shaping purchasing decisions in the realm of environment-friendly skincare products in Saudi Arabia.

6. Implications and Limitations

6.1. Academic

Our study's findings hold significant academic implications for consumer behavior, marketing, and sustainability.

Firstly, by revealing the negative impact of greenwashing on consumers' purchase intentions for environment-friendly skincare products, this research substantiates the importance of authenticity and transparency in sustainability claims. Academically, it contributes to the ongoing discourse on ethical marketing practices, urging scholars to explore ways to enhance the credibility of green marketing strategies.

Secondly, in addition, academics need to reevaluate the assumed mediation role of green skepticism in the context of greenwashing, indicating that there may be variation between consumer segments or industries.

Thirdly, identifying information quality as a significant positive moderator sheds light on the crucial role of accurate and reliable information in influencing consumers' responses to green marketing. This academic insight underscores the need for a nuanced understanding of information processing mechanisms and their impact on skepticism and purchasing intentions. It opens avenues for scholars to delve into the cognitive processes that drive consumer decision making in sustainable product contexts, considering the role of information in shaping attitudes and behaviors. Moreover, as our study considers both self-green claims and third-party environment-friendly certifications as information influencing consumer perceptions, it would be worthwhile to explore consumers' perceptions by distinguishing between information sourced from third parties and information provided directly by the brand. This approach could shed light on potential variations in how Saudi Arabian consumers perceive and respond to information depending on its origin [65–67].

Fourth, the non-significant moderating effect of brand reputation in the relationship between green skepticism and purchase intention adds a layer of complexity to the existing literature on branding and consumer trust. The academic implications here include a call for further investigation into the specific dimensions of brand reputation that might influence consumer responses in green marketing contexts. Scholars can explore whether certain aspects of brand credibility, such as past environmental initiatives or corporate social responsibility efforts, play a more pronounced role in mitigating skepticism and fostering positive purchase intentions.

Hence, in broader academic terms, our study contributes to the ongoing dialogue on sustainable consumption and ethical consumerism. It urges researchers to consider the diverse and evolving nature of consumer attitudes toward sustainability, emphasizing the need for updated frameworks and theories that capture the contemporary nuances of green marketing. The academic community can build upon these findings to develop comprehensive models that integrate multiple variables and their interactions in understanding consumer behavior in the ever-evolving landscape of sustainable and environment-friendly product markets.

6.2. Practical and Strategic

Our study's practical and strategic implications offer valuable insights for Saudi businesses, marketers, and policymakers aiming to navigate the intricate landscape of green marketing and consumer behavior in the skincare industry.

Firstly, Saudi businesses operating in the environment-friendly skincare sector should recognize the detrimental impact of greenwashing on consumer purchase intentions [68]. Our findings underscore the importance of transparent and genuine sustainability practices [69]. Companies should invest in robust communication strategies to convey their environment-friendly initiatives accurately, ensuring alignment with consumer expectations. By doing so, businesses can build trust, enhance brand loyalty, and differentiate themselves in a competitive market.

Secondly, strategically, our identification of information quality as a significant moderator emphasizes the pivotal role of accurate and reliable information in influencing consumer responses. Skincare brands must invest in clear and accessible communication channels, providing consumers with detailed and trustworthy information about the environmental attributes of their products [70].

Thirdly, leveraging informative and transparent marketing campaigns can enhance consumer perceptions, mitigate skepticism, and positively impact purchase intentions. Businesses should also consider collaborations with third-party certifications or environmental organizations to authenticate their green claims, offering an external validation that reinforces credibility. While brand reputation did not emerge as a significant moderator in our study, its strategic implications remain noteworthy.

Fourth, skincare companies should not solely rely on their reputation but continually invest in building and reinforcing positive associations with their brand. Consistent and authentic sustainability efforts, coupled with effective communication, can contribute to a positive brand image and foster consumer trust over the long term.

Thus, from a policy perspective, our findings suggest that regulatory bodies and policymakers should consider reinforcing guidelines and standards for green marketing claims, ensuring a more transparent and standardized approach. Clearer regulations can help curb deceptive practices, creating a level playing field for businesses while protecting consumers from misleading information. Policymakers should also encourage industry-wide initiatives that promote genuine sustainability practices, fostering a culture of responsibility within the skincare sector.

6.3. Limitations and Avenues for Future Research

While our study contributes valuable insights, it is not without limitations that warrant acknowledgment.

Firstly, the generalizability of our findings may be limited to the context of Saudi Arabia, and caution should be exercised when extending the results to different cultural or market settings. Future research could explore the cross-cultural variations in consumer responses to greenwashing in the skincare industry to provide a more comprehensive understanding. The focus on environment-friendly skincare buyers aimed to gain detailed insights into their preferences yet acknowledged limitations, such as potential selection bias. Future research should consider a broader consumer base for a more comprehensive understanding of skincare market dynamics and diverse perspectives.

Secondly, the conceptual model employed in our study focuses on specific variables within the skincare industry, and future research could extend this framework to other product categories or industries to explore potential variations in consumer responses to greenwashing.

Thirdly, another avenue for future research involves examining the temporal stability of consumer responses to greenwashing. Given the evolving nature of consumer attitudes and the dynamic landscape of sustainability practices, longitudinal studies could provide insights into how perceptions and behaviors change over time.

Fourth, we explored participants' responses when supporting multiple brands, acknowledging the potential presence of greenwashing practices. Furthermore, we did not assume universal awareness of greenwashing among the brands used by participants, recognizing that awareness levels may vary among respondents, aligning with the definition provided. Future research may address this limitation.

Despite these limitations, our study lays the groundwork for further investigations into the complex interplay between greenwashing, consumer skepticism, and purchasing intentions in the skincare industry. By addressing these limitations and building on our findings, researchers can continue contributing to the growing body of knowledge in sustainable marketing and consumer behavior.

7. Conclusions

As part of this study, the researchers developed a model to determine what factors influence Saudi Arabian consumers' intentions to purchase environment-friendly skincare products. Further, this study is a pioneering attempt to investigate whether information quality and brand reputation moderate consumer intentions to purchase skincare products. Five primary and secondary hypotheses were proposed to gain a deeper understanding of consumers' greenwashing, green skepticism, and intentions. These hypotheses were analyzed through 441 respondents' responses. The results showed that only three of the five hypotheses were significant, with two being non-significant. Moreover, these findings show no moderating effect of brand reputation on green skepticism and intention to purchase environment-friendly skincare products. Our study will help the cosmetic and skincare industry understand what consumers think and what they are looking for when buying environment-friendly skincare products.

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