

Pathway to Sustainability: An Integrated Model of Fostering Green Purchase Intention through Celebrity Endorsement

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ABSTRACT

In a world where environmental sustainability ceased to be a fad and became a priority, the cosmetics industry stood in front of its challenge: persuading consumers to make the switch to green. Though environmental concerns have become widely known and popular trends continue to gain momentum for eco-friendly alternatives, consumers remain skeptical when buying green beauty products. This may be due to primarily two reasons: perceived brand inauthenticity and a lack of knowledge with regard to green products. The identification of such knowledge gaps will be vital in determining sustainable consumption patterns within the industry. This research explores complex interrelations between brand authenticity, celebrity endorsement, green product knowledge, environmental consciousness, and green purchase intention in Pakistan's beauty and cosmetics industry. It gives the results that celebrity endorsement influences both brand authenticity and knowledge about green product, which finally drive the green purchase intention. On one side, environmentally conscious consumers motivate or restrain themselves from taking a certain decision to buy greener products. While it can enhance the positive effect of brand authenticity on green purchase intentions, on the other hand, it leads consumers to critically assess green product claims and, therefore, moderates the impact of the product knowledge variable. These findings have useful implications for marketers and practitioners in the beauty and cosmetics industry.

Introduction

Consumer buying behavior is gradually becoming dynamic, and the influencing factors in the cosmetic and beauty industries over the last couple of years are too. In essence, sustainability becomes one of the influential reasons for choice, due to the heightened consciousness regarding such critical questions as climate change, resource depletion, and environmental pollution on the part of today's consumers (Ali et al., 2023). Today's consumers want more from their favorite brands than good looks: they call for transparency, ethics, and concrete commitments related to sustainability in order to have green purchase intention, and that change brought into the light a concept of green beauty where customers started giving more importance to effective but environmentally responsible products (Putri & Haryanto, 2023). Consequently, brands are compelled to revisit their marketing practices to keep pace with the changing challenges, making the understanding of green consumer behavior sharp (Meet et al., 2024).

In recent years, the global beauty and cosmetics industry has been undergoing an awakening process, with ever-increasing consumer focus on sustainability and ecological responsibility. This is a reflection of the broader consciousness by society around climate change, resource depletion, and generalized environmental harm caused by more traditional production methods. The customer of today wants more from brands, and among the younger demographics, quality products have to be seconded with actual commitments toward sustainability and ethics (Yu et al., 2024). Due to this, green beauty has reached a tipping point into mainstream dominance, with an interest in products that avoid harming the environment, are cruelty-free, and contain natural or organic ingredients on demand. Brands realizing such customer preferences, therefore, are in a position to command a loyal clientele base, while others that do not align well with such values risk being left behind in the increasingly aggressive marketplace (Safeer et al., 2023).

This shift in consumer preference has, therefore, enshrined brand authenticity, referring to the degree to which a brand is perceived to be genuine, transparent, and true to its values. When it comes to green beauty, authenticity is everything (Osorio et al., 2023). No one wants to be greenwashed- basically, lied to or sold on the environmental merits of a product by a brand that hypes empty environmentalism. In all beauty and cosmetic brands, authenticity means transparency regarding their acts of sustainability, good sourcing, and clarity of communication with consumers about their commitments to the environment (Song et al., 2024). Concurrent with brand authenticity is the strategic placement of celebrity endorsement in marketing. Celebrity endorsement has, over time, been a preferred method for brands in attempting to establish appeal, credibility, and desirability (Schnittka et al., 2023). Celebrities can use their huge followings to lend to a brand their established reputation and values, thus probably impacting the buying behavior of their fans.

A further influential component in driving consumer behavior in the context of this market involves green product knowledge. With increased consciousness of environmental issues, information provided to or sought by consumers about the environmental impact of their product choices has similarly mounted. More knowledgeable consumers in the beauty and cosmetic industry, whose ingredients and methods of production have a considerable impact on the environment, would go for products that agree with their values (Schartel Dunn & Nisbett, 2023). Environmental consciousness is another variable that has a very significant role, therefore, exploring how brand authenticity and celebrity endorsement influence consumer perception and purchase intent in the context described, hence adding to the knowledge of strategies that can make

brands succeed in the Pakistani market. Consumers today are really environmentally conscious and give a lot of afterthought before making any purchase, asking for only those products and brands which go hand in hand with their values. Many also look for brands highlighting eco-friendly packaging, being cruelty-free, and making use of ingredients that are sustainable in nature (Shafiq et al., 2023; Rauf et al., 2024; Sibte-Ali et al., 2024; Khan et al., 2024). Therefore, environmental consciousness may be an important moderator in the effects of brand authenticity and green product knowledge on their purchase intention. This study investigates the relationship between celebrity endorsement and green purchase intention through the mediating role of brand authenticity and green product knowledge. It also explores how environmental consciousness moderates the relationship between green product knowledge and green purchase intention, and the brand authenticity and green purchase intention.

Beauty has traditionally been related to skin whitening and fairness products, as well as standards highly influenced by global cultural norms in Pakistan. However, with the global rise of social media influence, coupled with ease of information dissemination, there appears to be a pendulum shift toward an integrated definition of beauty that would encapsulate self-care, natural ingredients, and environmental responsibility. Conscious of what they do to the planet, Pakistani consumers are increasingly seeking brands that echo their values and provide them with efficacy combined with sustainability (Rasheed et al., 2024). Indeed, it is easier said than done in practice, where the brands promising to weave a convincing tale of being genuinely committed to sustainability are leading the charge. The risk of greenwashing is relevant to markets such as Pakistan, where notions about green products remain rather underdeveloped and the regulatory environment is not as strong as elsewhere (Bhutto et al., 2023). This makes the task of gaining genuine trust from consumers even more critical for brands, especially for those who are becoming increasingly sensitized by global standards on sustainability.

The study, in the context of the Pakistani market, contributes not only to boosting existing literature on sustainable consumer behavior but also provides actionable insight for brands on how they can align themselves with modern consumers who value this aspect. With the ever-increasing demand for green products, this knowledge becomes quite essential for brands that want to stay current and competitive in the face of changing dynamics within the beauty and cosmetics industry (Ghazali et al., 2017). While the beauty and cosmetics market in Pakistan is attracting a large number, the opportunity not only to tap into an emerging segment of environmentally conscious consumers but also to address the factors that influence green consumer behavior becomes increasingly available.

Literature Review

Social Influence Theory

Social Influence Theory is an explanation for the way behaviors, beliefs, and attitudes of people are influenced by the social environment they find themselves in. Key constructs of the theory include social norms, conformity, and compliance. For example, consumers use others, more so those whom they can identify with or admire, as a mirror to reflect on what would be considered a purchasing-related acceptable behavior (Purohit & Arora, 2022). For instance, according to the study by Lee et al. (2022), brand recall and credibility increase with the use of celebrity endorsers, which in turn positively affects purchase intentions. This was supported by Halder et al. (2021), who established that celebrities positively impact consumer attitudes toward buying eco-friendly products and eventually motivate purchasing behavior. Celebrities can play a major role in

effectively endorsing green products through various means. One of these factors is the congruence between the celebrity's image and the environmental cause. For instance, a celebrity known to live a green lifestyle may find his green product getting more endorsement power than would a product endorsed by a celebrity with no such affiliation. Moreover, the authenticity of the endorsement and perceived sincerity of the celebrity's commitment towards sustainability act as important antecedents capable of shaping consumer attitude and behavior.

Celebrity Endorsement and Brand Authenticity

The phenomenon of celebrity endorsement has traditionally been regarded as an effective marketing tool since the outcomes of the endorsement can create customer intentions and product perceptions (Waqas et al., 2020). As it is a strategy that has gained much importance in recent years, the use of celebrities in advertising is a tool that has gained interest in the promotion of environmentally friendly products, or rather, 'green' products. This paper reviews former research on consumer interest and purchase intentions towards green products, focusing on the effectiveness with which a celebrity could be used (Lili et al., 2022). Different studies have found that celebrity endorsements have a great impact on consumer attitudes and intentions toward the endorsed product (Li et al., 2022). To most of these people, therefore, celebrities would act as credible and trustworthy information bearers, thus arguing that their endorsement would raise levels of perceived quality and desirability of the product being endorsed (Ho et al., 2022). In addition, such an association tends to influence a consumer's attitude toward a brand and his readiness to support the socially responsible activities of that brand (Cespedes-Dominguez et al., 2021).

Several researchers reviewed the role of celebrities' endorsement in raising consciousness for environmental issues and the citizens' pro-environmental intentions. Consciousness campaigns assume a much more serious nature when conducted by celebrity activists, who through their fame can create a huge media splash in terms of public discourse on matters regarding environmental conservation and sustainability. Agnihotri et al. (2023) reveal in their study that when a celebrity successfully communicates an environmental message to a large group of mass media followers, this later translates into a positive environmental attitude. Although celebrities help to sell everything from products to causes, do they help to sell green products? Indeed, some studies suggested that the influence on attitudes toward green products and purchase intentions can be positive through celebrity endorsements. For example, green product endorsements by environment-friendly celebrities increase credibility and authentic perception of the consumers, and thus consumer trust and purchase intention increase (Tseng & Wang, 2023).

Celebrity Endorsement and Green Product Knowledge

Celebrity endorsement has widely been acknowledged as an influential marketing tool, especially in consumer product promotion. In regard to green product knowledge, the impact of celebrity endorsement is considered in an even deeper perspective, as consumers are increasingly becoming more conscious about issues on sustainability and the environment (Putro et al., 2024). Green product knowledge refers to the degree at which consumers are informed about green or eco-friendly products on their environmental benefits, attributes, and value in totality. The interaction between celebrity endorsement and knowledge of green products can thereby lead to a well-designed consumer behavior whereby celebrities can act as strong communicators; this increases consciousness of green products and affects buying behavior through their credibility and charisma (Borah et al., 2023). It was observed that celebrity endorsement can facilitate an improvement in the consciousness and knowledge of green product consumers by primarily matching ecofriendly celebrities with green brands.

Furthermore, it is indicated that increased knowledge of perceptions about green products highly relies on perceived celebrity expertise and trustworthiness. Generally, the effectiveness of celebrity endorsement is based on three dimensions of overall evaluation: expertise, trustworthiness, and attractiveness. Celebrities perceived to possess expertise on environmental issues; for instance, being involved in pro-environmental activism or advocacy—are more likely to impart their influence on consumer perceptions about green products. It has also been ascertained that the endorsements by credible and knowledgeable celebrities will drive consumers not only to trust the product but also to enhance knowledge of the green attributes. For example, in the study conducted by Lili et al. (2022), celebrity endorsement by eco-conscious public figures greatly improved the consumers' knowledge and attitude toward green products enhanced brand engagement and purchase intention. Besides that, congruence from the green product itself and the image of the celebrity is also an issue to promote knowledge among the consumers.

Brand Authenticity and Green Purchase Intention

Brand authenticity has gained considerable interest among marketing literatures, since it's an indication of a more personal, believable, and transparent relationship with the consumers (Li et al., 2024). In this perspective, dimensions, antecedents, and consequences of perceived authenticity are taken into consideration in order to conceptualize a role of authenticity in shaping consumer attitudes and intentions. Authenticity could be conceptualized as symmetrical balance between brand identity, values, and behavior and their perception by consumers in an international framework. Brands perceived as authentic are seen to be honest, reliable, and true to promise; therefore, they command trust and loyalty among the consumers (Yu et al., 2024). At the same time, authentic brands are viewed to be more credible and will have a competitive advantage with more resilience to adverse conditions in the market (Chatzopoulou & Navazhylava, 2022).

The effects of brand authenticity go beyond perceptions, and the factor of outcomes include such aspects as brand loyalty, equity, and purchase intention. Authentic brands build stronger emotional connections with consumers, leading to more trusting, loyal, and active consumers. Chua et al. (2024) explain consumer behavior, especially in ecofriendly markets. Therefore, brand authenticity and green purchase intention can be appropriately linked with each other. Green purchase intention, on one hand, is the degree to which a consumer depicts a green purchase attitude. This development in intention would depend on various aspects that include personal values, the level of consciousness about one's environment, and perceived brand authenticity. Osorio et al. (2023) indicated that brand authenticity significantly influences green purchase intention.

Green Product Knowledge and Green Purchase Intention

Green product knowledge is an allied and major factor of consumer intention and sustainability for a person's perception of environmentally friendly products and their attributes (Simanjuntak et al., 2023). Consciousness, comprehension, and perceptions about green products have been driven by several studies in order to bring forth sustainable consumption. For example, such major influences are environmental education programs, eco-labeling schemes, and marketing communications. Eco-labels such as energy star and organic certification labels may be used to communicate the environmental attributes of a given product to buyers, who, in turn, make an educated purchase choice. Marketing communications revolving around the environmental bottom line increase consciousness and knowledge of the alternatives that green options bring about (Borah et al., 2023).

Green product knowledge attitude and intention relationships of consumers have been found. It is indicated that consumers who possess a high level of green product knowledge will view such products as credible and effective; therefore, they will have a higher intention to buy the product at a premium price compared to the less knowledgeable buyer. In the case of intentions regarding environmental aspects such as recycling, saving energy, and consuming in a manner that minimizes harm, green product knowledge has been found to relate well (Wang et al., 2022).

Celebrity Endorsement, Brand Authenticity, and Green Purchase Intention

The celebrity endorsement positively influences consumer intention on brand authenticity. Celebrities have been at the core of the organizations to develop and implement cause-related marketing to people; thus, it shapes the evolving nature of this relationship (Lili et al., 2022). Proof is available from the study that the application of celebrities in brand endorsement will lead to positivity in determining authenticity based on the fact that there is correlation between endorsements through celebrities and increased authenticity (Tseng & Wang, 2023). The above discussion illustrates how celebrity endorsement helps authenticate a brand in the eyes of consumers. Understanding such roles is important for stakeholders in designing appropriate strategies that encourage sustainability intentions.

At this point, the current research takes up such a premise and emphasizes the complex relationship existing between celebrity endorsement and consumers' understanding of authentic green products. It recognizes celebrities as influential agents in promoting environmental education (Putri & Haryanto, 2023). Research indicates that well-known faces supporting sustainability improve consumer knowledge of and perception of authentic brands (Calvo-Porral et al., 2021; Putro et al., 2024). This necessarily showcases the celebrity's credibility, where he would need to educate the consumers pertaining to the company's green product offerings (Cespedes-Dominguez et al., 2021; Waqas et al., 2020). This current view reconciles the traditional and the rising platform and points out the consistent power of influential individuals in the thoughts of customers when it involves brand authenticity.

The interrelationship that exists among the consumers' knowledge of the green products greatly contributes to the development of brand authenticity. Celebrities' promotion of the brand and their continued communication of knowledge about substitutes that are eco-friendly show their commitment to sustainable knowledge in shaping ecologically conscious consumers (Schartel Dunn & Nisbett, 2023). This is a means of building trust among the consumers towards the brand, thereby developing its authenticity. This authenticity will further facilitate an increase in green purchase intention through sustainable choices. Organizations that realize the trend of the green products will align to meet the changing preference and further affiliate brand authenticity with eco-product purchasing in modern consumer societies (Cespedes-Dominguez et al., 2021; Tseng & Wang, 2023). Therefore, from the discussion above, the study hypothesizes that:

H₁: Brand authenticity significantly mediates the relationship between celebrity endorsement and green purchase intention.

Celebrity Endorsement, Green Product Knowledge, and Green Purchase Intention

A very important element in sustainable consumer research is how the knowledge of green products influences the intention to purchase the product. It is quite evident that consumer perception of green products plays a very major role in shaping their preference for greener

alternatives; this calls for the need to circulate information and educate the market to be more ecologically conscious (Simanjuntak et al., 2023). Wang et al. (2020) articulate how environmental consciousness and knowledge of green products mediates the influence of celebrity endorsement toward green purchase intention and hence gave a holistic view about sustainable consumer's intention. Celebrities play a significant role in the social power of sustainability causes and shaping the face of the relationship (Borah et al., 2023). It has been proven that celebrity endorsement gains brand authenticity; hence, the link of such endorsements with authenticity (Abbas & Sağsan, 2019; Zhou et al., 2020). This interface outlines the impact of celebrity endorsement in making brands authentic to customers. Therefore, this paper is important in the development of strategies that promote sustainable motives.

The study by Wang et al. (2020) explains how environmental consciousness and knowledge about green products mediate the effect of celebrity endorsement on green purchase intention, therefore giving a comprehensive perspective on sustainable consumer intention. Celebrities are important in the social power of sustainability causes and shaping the face of this relationship (Borah et al., 2023). Research has demonstrated that celebrity endorsement gains brand authenticity, hence linking such endorsements with authenticity (Abbas & Sağsan, 2019; Zhou et al., 2020). This interface outlines the impact of celebrity endorsement in making brands authentic to customers. Therefore, understanding the impact of these factors is significant to the development of strategies that promote sustainable motives.

Understanding by consumers about eco-friendly products becomes important to shape brand authenticity. Celebrities endorsing the brand help communicate information to the consumer on environmentally friendly alternatives, which fosters sustainability, credibility of brand authenticity, and the education of the 21st-century sustainable consumer (Osorio et al., 2023). This authenticity affects consumer green purchase intention, increasing their preference for green products. As organizations understand that the trend toward green products themselves affect authenticity, they must adapt their products to align with changing preferences, thus reinforcing the relationship between brand authenticity and purchases of eco-friendly products in contemporary societies (Lili et al., 2022). Therefore, based on the abovementioned discussion, the following hypothesis is forwarded for this study:

H₂: Green product knowledge significantly mediates the relationship between celebrity endorsement and green purchase intention.

The moderating role of environmental consciousness

Environmental consciousness seems to represent one of the main features in contemporary social life, reflecting the tendency of the world to take more consideration of environmental issues and the practice of sustainability. Environmental consciousness study refers to certain factors relating to individual perceptions, attitudes, and intentions pertaining to the environment. Indeed, several individual-level drivers of environmental concern have also been identified in various empirical studies, including education, media exposure, personal experiences, and socio-cultural factors (Ali et al., 2023; Krissanya et al., 2023).

Environmental concern is multidimensional and includes the cognitive dimensions related to the knowledge of problems, concern about the problems, and intention or willingness to engage in activities that offer protection to the environment (Isac et al., 2024). One study proposed that people who have a higher strength of disposition toward being environmentally conscious were

more inclined to green or eco-friendly behavior, such as recycling, energy conservation, or sustainable consumption (Parashar et al., 2023). However, mere consciousness cannot always be translated into action, as individuals face limitations such as a lack of resources, social norms, and competition with other priorities. The literature confirms the authenticity of the brand in relation to consumer preference for green products. Mainly, this relationship would explain that consumers would tend to believe in those brands which seem to be transparent and ethical in their practices and show goals related to sustainability (Parashar et al., 2023). Some studies have identified that the relationship between a high brand authenticity and green purchase intention will be positively moderated by environmental consciousness (Alzghoul et al., 2024; Haj-Salem et al., 2022; Sasaki & Ravasi, 2024).

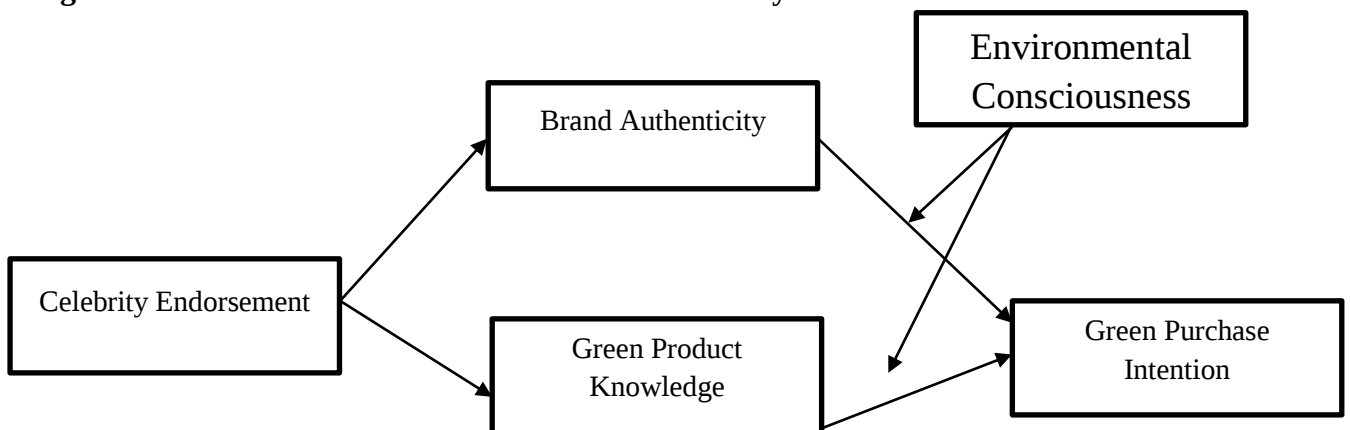
Studies have proven that the positive relation between green purchase intention and knowledge of green products is moderated by the level of environmental consciousness (Alhamad et al., 2023; Darvishmotevali & Altinay, 2022). It has been noted that with a higher degree of environmental consciousness in green product knowledge, increasing green product knowledge tends to enhance the choices of purchasers. In other words, the eco-more-oriented consumer is the one who, in view of his level of consciousness relating to eco-friendly products, either will reconsider or adjust a purchasing decision accordingly. The conceptualization of environmental consciousness as a moderator represents a way in which its dynamics can be explored. Intense environmental consciousness raises the salience of green product knowledge but also influences the translation to real intention by infusing a greater personal feeling of responsibility and commitment toward sustainable buying.

For instance, in studies such as Alhamad et al. (2023) and Darvishmotevali & Altinay (2022), the positive relation of green purchase intention with knowledge about green products has been proved to be moderated by the degree of environmental consciousness. It has been observed that with a higher extent of environmental consciousness in green product knowledge, the rise in green product knowledge tends to enhance the decisions of buyers. That is to say, highly eco-more-oriented consumers are those who, from their level of consciousness about eco-friendly products, would either rethink or change a purchasing decision (Yang & Liu, 2023). Moreover, conceptualizing environmental consciousness as a moderator represents a means through which its dynamics can be explored. Intense environmental consciousness raises the salience of green product knowledge but also affects translation into actual intention by infusing a greater personal feeling of responsibility and commitment towards sustainable buying (Candrianto et al., 2023). From the perspective of conservation-conscious consumers, an authentic brand would wield more impact on their purchase behaviour, which would fall in line with what they value and like. Thus, the hypothesis can be stated as:

H₃: Environmental Consciousness significantly moderates the relationship between brand authenticity and green purchase intention. This relationship becomes stronger when environmental consciousness is higher.

H₄: Environmental consciousness significantly moderates the relationship between green product knowledge and green purchase intention. This relationship becomes stronger when environmental consciousness is higher.

Figure 1: shows the theoretical framework of this study



Methodology

Research Design

This study uses a quantitative research design, studying relationships of consumer behaviors in the cosmetic and beauty field to evaluate variables that are explicitly identifiable. The quantitative approach would be ideal for this research study since the findings are numerical and can, therefore, be analyzed statistically to comprehend the size and direction of the relationships among the variables (Yang et al., 2022). The study uses a cross-sectional survey method whereby, in this case, data is collected from the respondents at one point in time (Savitz & Wellenius, 2023). It helps in viewing current consumer behaviors and perceptions, particularly attitudes towards green cosmetics. The research study focuses on cosmopolitan women of Lahore, Pakistan, who are either aware or interested in cosmetic products. Women are majorly chosen for the segment study due to their major role as primary consumers in both the cosmetic and skincare industries. Consequently, their choices and buying behavior determine the market trends and dynamics of the industries.

Sampling and Data Collection Procedure

The target population in this study includes the eco-centric consumer segment of the cosmetic and beauty industry. The population includes almost all kinds of age groups, education levels, and economic classes and thus highlights the significant portion of beauty and cosmetic consumers in Pakistan. The sample size for this research has been calculated using Nunnally's IRT to ensure the validity of the results (Nunnally, 1994). It is based on the principles of IRT, where the number of the respondents has to be ten times that of the number of items on the survey questionnaire (Bortolotti et al., 2013). Thus, with 22 items included on this present questionnaire, the sample required at least 220 participants to enable sensitive measurement and appropriate representation of the targeted population. According to the study by Salkind (2010), in the social and management sciences, whenever a non-probability sampling is used, the sample size should be multiplied by three to compensate for the low response rate in order to achieve an effective response rate. The minimum effective response rate should be at least one-third of the distributed questionnaires. Thus, a total of 660 (220*3) questionnaires were distributed, and 413 responses were received. After eliminating incomplete questionnaires, 397 responses were retained, resulting in an effective response rate of 40.5%.

The data was collected from a structured and pre-coded survey questionnaire developed based on validated scales in the previous literature. Both physical and online questionnaires were distributed for data collection. Physical questionnaires were distributed at spots such as beauty salons and shopping malls; a digital questionnaire was spread online to reach a larger audience. Prior to actual data collection, a pilot study was conducted to examine the clarity of the questionnaires and relevance and reliability. Data collection was done through questionnaires, which were both physical and online. The physical questionnaires were distributed in places like beauty salons and shopping malls. A digital questionnaire was spread online for a wider reach. A pilot study was conducted prior to the actual collection of data, with the aim of examining the clarity of the questionnaires and the relevance and reliability of the questionnaires.

Measures

The data collection approach has been very simple and stressless for the respondents in making them comfortable in participation and the giving of opinion without any kind of bias; through convenience sampling, the structured questionnaire ensured effective data collection was obtained from the target population within the shortest time period. All variables within the study will be measured with the 7-point Likert scale; therefore, respondents show agreement to statements from ratings such as 1 = Strongly Disagree to 7 = Strongly Agree. The scales that have been adapted for assessing the effect of celebrity endorsement on the consumers are founded in the study by Ghazali et al. This study proposes an 8-item measure to discern the influence of celebrity endorsements on consumers' perceptions and behaviors related to cosmetic products. The complete questionnaire items are shown in Appendix A. The scale by Al Mamun et al. (2020) assesses environmental consciousness on three items in the case of skincare products. In fact, the scale by Chen et al. (2022) has been adopted to test respondents' knowledge on green skincare products that cut across health benefits, the ability to choose green products, and the understanding of green symbols on labels or packaging. This three-item scale is about the degree of consumer knowledge and consciousness concerning eco-friendly skincare options and their implications in the decisions of purchase. The scale for green product purchasing intention has been adopted from Al Mamun et al. (2020). Its five items are indicators of consumers in respect of the buying intentions of customers in the future and preferences for sustainable skincare options. For brand authenticity, a three item scale has been adopted from the research by Hernandez-Fernandez and Lewis (2019) which covers multidimensional measures to capture consumers' perceptions of brand authenticity emanating from celebrity endorser partners. These three items together seek to capture consumer perceptions of honesty, credibility, and integrity of the brand in cosmetic products.

Common Method Bias

Survey design and Harman's single factor test were preferable to choose the two appropriate methods for pursuing the current research because it is not possible to obtain the criterion and predictor variables indicator factors from different sources; hence, our study randomly put the questions in diverse sections, after which the survey questionnaire was mailed to two participants (Rehman et al., 2023). Once data is gathered from the various respondents in a firm, the potentially consistent respondent goes down to some extent. Similarly, with the Harman's single-factor test in consideration, which records a huge degree of common method variance, the first factor variance, if greater than half of the total variance, means more than 50% (Podsakoff et al., 2003).

Data Analysis

SmartPLS 4.0 software was used for this purpose because it is highly appropriate to carry on PLS-SEM. The software allows going deeper into the analysis of the measurement model and the structural model. In the measurement model, it analyzes the reliability and validity of the constructs used in the study, while in the structural model, it assesses the relationship of the constructs to extract the strength of each and the significance of the proposed hypotheses.

Measurement Model

Reliability and validity analysis provide essential insight into the measurement properties of the variables undertaken in this study. The assessment of each construct was carried out based on three criteria, and it included: Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) as shown in Table 1. Construct reliability and validity assessment is an important activity in research that measurement scales depict the underlying theoretical concepts conclusively. Cronbach's Alpha defines internal consistency among items. Values less than 0.60 represent poor reliability, while values from 0.70 to 0.90 represent good reliability. The alpha value of all the variables is greater than 0.70, indication that the scales are reliable and internally consistent. CR provides a more subtle view of internal consistency, considering the items that variably contribute to the same benchmark value and should be greater than 0.70 (Kristensen & Eskildsen, 2010). For this study, all the constructs have CR value of higher than 0.70, ensuring internal consistency of the item scales selected. AVE calculates the ratio of the variance in its overall indicators explained by a construct for values below 0.50, which is an attestation of poor convergent validity. Since all the variables AVEs are above 0.50, this shows that they have good convergent validity.

Table 1: Construct Reliability and Validity

	Cronbach's alpha	Composite reliability (CR)	Average variance extracted (AVE)	Outer Loadings	VIF
BA	0.780	0.867	0.686	0.773-0.878	1.456-1.784
CE	0.884	0.908	0.552	0.666-0.781	1.635-2.168
EC	0.800	0.875	0.701	0.767-0.930	1.481-2.257
GPI	0.818	0.870	0.573	0.690-0.811	1.535-1.858
GPK	0.839	0.902	0.755	0.848-0.896	1.834-2.158

BA: Brand Authenticity; GPI: Green Purchase Intention; CE: Celebrity Endorsement; GPK: Green Product Knowledge; EC: Environmental Consciousness

The loadings of each indicator for its respective latent variable in the structural equation model. The outer loadings represent the amount of correlation between a particular observable variable, known as an indicator, with its underlying latent variable. A high outer loading indicates that the measures will be good representations of their respective latent variables, therefore providing convergent validity in the measurement model. Normally, a loading above 0.65 is acceptable. The outer loadings for all the variables are above the threshold value of 0.65 thus contributing well to the constructs. Besides, VIF analysis points out the problem of multicollinearity across the constructs or independent variables that a measurement model might have, which can inflate the results of regression analyses. Generally speaking, there is no serious problem of multicollinearity

if the VIF value falls below 5 according to Bayonne et al., 2020. The VIF values for all the constructs are below 0.5, showing that this study can be free from multicollinearity issues.

Table 2: Heterotrait-monotrait ratio (HTMT) - Matrix

	BA	CE	EC	GPI	GPK
BA					
CE	0.390				
EC	0.094	0.239			
GPI	0.277	0.278	0.236		
GPK	0.375	0.324	0.203	0.395	

The discriminant validity shows that a certain construct is distinct from other constructs within any measurement model. This is done through ensuring the measured constructs reflect different concepts and do not overlap via the Heterotrait-Monotrait ratio and Fornell-Larker Criterion (Cheung et al., 2024). A common tool for establishing discriminant validity is the HTMT ratio; normally, a less than 0.85 ratio indicates acceptable discriminant validity, and in table 2, our variables show such a phenomenon; hence, discriminant validity is established.

Table 3: Fornell-Larcker Criterion

	BA	CE	EC	GPI	GPK
BA	0.828				
CE	0.355	0.743			
EC	0.027	0.224	0.837		
GPI	0.234	0.253	0.218	0.757	
GPK	0.338	0.293	0.191	0.351	0.869

As a matter of fact, the Fornell-Larcker matrix in Table 3 represents the diagonal elements to be the square root of each construct's AVE. For example, the square root of the AVE for BA is 0.828, while the correlations with CE (0.355), EC (0.027), GPI (.234), and GPK (0.338) are all below 0.828. This very same phenomenon can visibly be seen for the other constructs. For example, the square root of AVE for the EC is 0.837, which is greater than the correlations at the BA, 0.027; GPI, 0.218; and GPK, 0.191. The Fornell-Larcker criterion results show that the measurement model constructs exhibit sufficient discriminant validity because the square root of AVE for every construct is consistently greater than the inter-construct correlations. This strong evidence of discriminant validity enhances the credibility of the measurement model, which ascertains that each construct measures different dimensions of the theoretical framework being investigated.

Structure model

Direct paths

It is important to have the existence of direct paths in the structural model in terms of understanding the relationship that exists between the constructs under consideration. Each path suggests a relationship hypothesized, and results give the strength with which one variable influences another. T statistics and p-values stand for benchmark values for the significance of

these paths. Normally speaking, a T statistic more than 1.96 (at 0.05 level of significance) and a p-value less than 0.05 infers a statistical effect (Azhar et al., 2024).

Table 4: Path Coefficients

	Original sample (O)/ Beta Value	T statistics	P values
BA -> GPI	0.156	2.851	0.005
CE -> BA	0.355	7.646	0.000
CE -> GPK	0.293	5.976	0.000
EC -> GPI	0.225	5.250	0.000
GPK -> GPI	0.247	4.111	0.000

In Table 4, BA to GPI has a value of an original sample or beta of 0.156, T statistics of 2.851, and p-value of 0.005 in this analysis; therefore, brand authenticity significantly influences Green Purchase Intention positively. Similarly, it impacts Brand Authenticity with a coefficient of 0.355, T-statistic of 7.646, a p-value of 0.000, which proves it as a vital influencer in building brand authenticity. The path value from CE to GPK is 0.293 when the T-statistic is 5.976, and the p-value is 0.000 therefore, celebrity endorsement also proves as fruitful in enhancing green product knowledge significantly. EC significantly influences Green Purchase Intention with a coefficient of 0.225, T statistic of 5.250, and a p-value of 0.000, underscoring its importance in promoting sustainable purchasing behavior. Furthermore, the path from Green Product Knowledge to Green Purchase Intention shows a coefficient of 0.247, with a T statistic of 4.111 and a p-value of 0.000, reinforcing the idea that consumers with higher Green Product Knowledge are more likely to have positive Green Purchase Intention..

Mediation analysis

In table 5, the mediation effects of Celebrity Endorsement on Green Purchase Intention through Brand Authenticity and Green Product Knowledge are assessed

Table 5: Specific Indirect Effects

	Original sample (O)	T statistics (O/STDEV)	P values
CE -> BA -> GPI	0.055	2.513	0.012
CE -> GPK -> GPI	0.072	3.484	0.001

For the mediation pathway CE -> BA -> GPI, the original sample (O) value is 0.055, with a T statistic of 2.513 and a P value of 0.012. Since the P value is less than the significance threshold of 0.05, we conclude that this mediation effect is significant. This indicates that Brand Authenticity significantly mediates the relationship between Celebrity Endorsement and Green Purchase Intention. Similarly, for the mediation pathway CE -> GPK -> GPI, the original sample (O) value is 0.072, with a T statistic of 3.484 and a P value of 0.001. Again, the P value is below 0.05, confirming that this mediation effect is also significant. Thus, Green Product Knowledge significantly mediates the relationship between Celebrity Endorsement and Green Purchase Intention.

Moderation Analysis

The analysis of the moderating effects for hypotheses H3 and H4 in table 6 provides significant insights into the dynamics between the constructs involved.

Table 6: Moderating Effects

	Original sample (O)	T statistics	P values
EC x GPK -> GPI	-0.202	3.272	0.001
EC x BA -> GPI	0.219	4.335	0.000

For H3, which posits that EC moderates the relationship between GPK and GPI, the results reveal an original sample (O) value of -0.202. This negative value, combined with a T statistic of 3.272 and a P value of 0.001, indicates a significant moderating effect. The negative coefficient suggests that higher levels of Environmental Consciousness weaken the positive impact of Green Product Knowledge on Green Purchase Intention. This finding is statistically significant, confirming that Environmental Consciousness serves as an important moderating variable in this relationship.

For H4, which posits that EC moderates the relationship between BA and Green Purchase GPI, the results show an original sample (O) value of 0.219, a T statistic of 4.335, and a P value of 0.000. This positive coefficient indicates that Environmental Consciousness strengthens the positive relationship between Brand Authenticity and Green Purchase Intention. The significance of this finding underscores the importance of Environmental Consciousness in enhancing the effectiveness of Brand Authenticity on Green Purchase Intention. Overall, both hypotheses demonstrate statistically significant moderating effects, with H3 indicating a weakening influence and H4 revealing a strengthening influence of Environmental Consciousness on the respective relationships. Figure 2 shows the structural model of this study.

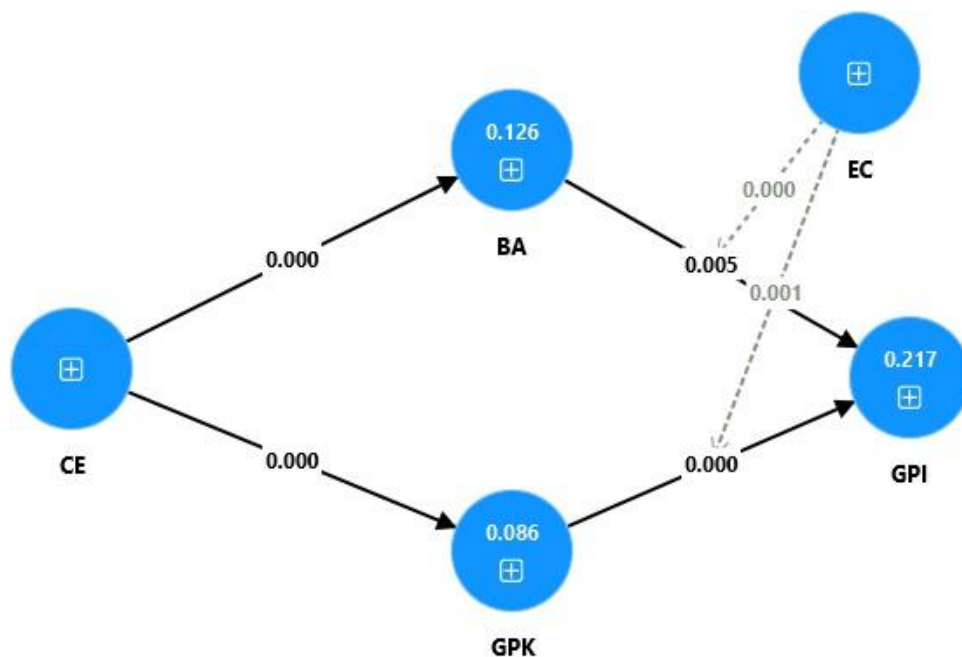


Figure 2: Structural Model

Model Fitness

The Q^2 values in table 7 show the predictive relevance of each of the endogenous constructs in the model and are used to assess the overall goodness of fit. These values show the extent to which the model can predict each construct. If the Q^2 value is zero or negative, it lacks predictive relevance, meaning that the model is unable to predict that particular variable's outcome (Li, 1955; Rehman et al., 2023). The Q^2 values for all the variables is greater than 0, indicating, that the model is good fitted for this study.

Table 7: Crossvalidated Redundancy

	SSO	SSE	$Q^2 (=1-SSE/SSO)$
CE	1700.000	803.330	0.527
BA	1360.000	593.602	0.564
GPK	2380.000	1256.899	0.472
EC	1360.000	868.694	0.361
GPI	1360.000	682.453	0.498

Discussion and Conclusion

The findings from the hypothesis testing reveal significant insights into the relationships between the constructs under investigation, particularly in the context of brand authenticity (BA), celebrity endorsement (CE), green product knowledge (GPK), environmental consciousness (EC), and green purchase intention (GPI). In fact, the direct paths from CE to BA, CE to GPK, EC to GPI, and GPK to GPI were all below the conventional threshold of 0.05; thus, they were all statistically significant. Therefore, celebrity endorsement has a positive effect on BA and GPK, and this may turn on to higher GPI. More specifically, the critical positive path from the CE to BA was $\beta = 0.355$; it also verified previous literature that celebrity endorsement has an essential role in affecting consumer perceptions of brand authenticity. The above-mentioned relationship signifies that endorsement develops a sense of credibility and trust, which is essential for establishing loyalty among customers and also for improving brand reputation. The results are consistent with studies by (Cespedes-Dominguez et al., 2021; Putri & Haryanto, 2023; Tseng & Wang, 2023).

The moderating effects of EC on the relationships between GPK and GPI and BA and GPI were also found to be significant. The negative moderating effect of EC on the relationship between GPK and GPI ($\beta = -0.202$) suggests that though GPK generally leads to increased green purchase intention, higher levels of environmental consciousness may alter the relation, which adds novelty to our study. This could mean that consumers who are more environmentally conscious may evaluate critically the efficacy and actual environmental benefits derived from the products toward cautious purchasing behavior (Haj-Salem et al., 2022), especially in the context of Pakistan. This nuance is coherent with those studies that argue that a more ecologically conscious consumer may also be more exigent, and thus brands have to persuasively and transparently communicate their motives, sustainability efforts, and product benefits (Kusumawati et al., 2022; Parashar et al., 2023). The positive interaction effect of EC on the relation between BA and GPI ($\beta = 0.219$) further indicates that the higher the environmental consciousness level is, the stronger is the positive effect of brand authenticity on green purchase intention. This concurs with the findings of research that indicate how consumers who are ecologically conscious are likely to be attracted to

brands perceived as most genuine and socially responsible (Kerber et al., 2023; Mishra et al., 2023). Thus, for the credibility and loyalty of consumers in the industry of beauty and cosmetics, a brand has to be consistent with its various messages and actions. The most salient outcome of this is the strong positive relation of celebrity endorsement with brand authenticity: $\beta = 0.355$. It is a relation pointing to the immense value celebrity endorsement plays in the Pakistani market, as consumers believe so strongly in celebrities for trend setting. This emotional connection that consumers create with these personas can pedestal their perceived notion of a brand's authenticity by a long shot. This holds more relevance in the context of the beauty and cosmetic industry since people look toward celebrities for suggestions about beauty products and trends. Effective endorsements result in brand loyalty, which again can be converted into a purchase of endorsed products.

In a nutshell, the results show that customers with knowledge of eco-friendly products are willing to make purchasing decisions that are sustainable. Therefore, this means that in the field of beauty and cosmetics, where there are two major concerns about the ingredients in the products and the environmental impact, education on green products needs to be widely shared. The growing consumer education on the benefits accruable from green products would, therefore, necessitate an investment by brands in informational campaigns that talk to their greening qualities. Brands that educate consumers effectively can leverage this knowledge to drive purchasing behavior, thus positioning themselves favorably in a competitive marketplace.

Implications

The study reinforces the theoretical foundation of celebrity endorsement as a critical driver of brand authenticity and consumer behavior. The significant positive relationship between celebrity endorsement and brand authenticity aligns with previous literature suggesting that celebrities can enhance brand image and credibility through their associations. This influence of the beauty and cosmetic sector lends itself to mainstream marketing strategies targeting eco-friendly products in general, with regard to consumer perception of brand authenticity. Additionally, the mediation effects have demonstrated a subtler position of brand authenticity within the celebrity endorsement model. The findings in this study, showing that brand authenticity mediates between celebrity endorsement and green purchase intention, stress how brands need to manage authentic relationships with consumers. By doing so, we advance existing theoretical models of celebrity endorsement by proposing considerations related to brand authenticity and the potential moderating role for consumer cynicism in explaining how endorsements influence their behavior.

The findings of this study present several useful practical implications for marketers, brand managers, and policymakers, particularly in Pakistan's beauty and cosmetic industry. First, the positive relationship between celebrity endorsement and brand authenticity highlights the strategic importance of selecting celebrities who resonate with the target audience. Marketers should focus on influencers who align with brand values and sustainability initiatives, enhancing consumer perceptions of authenticity. Moreover, the mediating role of brand authenticity between celebrity endorsement and green purchase intention underscores the necessity for brands to cultivate authenticity in messaging and practices. Transparent communication about sustainability efforts and meaningful consumer engagement can foster trust. This might involve sharing stories of ethical sourcing, production, and community initiatives. By enhancing brand authenticity, companies can create stronger emotional connections with consumers, leading to greater loyalty and increased green purchase intentions. The study also highlights the positive impact of

environmental consciousness on green purchase intention, indicating that brands should prioritize education and consciousness campaigns. Marketers can increase consumer knowledge about the environmental benefits of products and the importance of sustainable consumption. Initiatives such as workshops, online content, or community activities can help consumers make informed decisions and reinforce their commitment to sustainability.

Limitations and Recommendations for Future Research

This study has a number of limitations that need to be considered for any future research. First, this research has been context-specific; it refers to the beauty and cosmetic industry within Pakistan. Second, the sample design is cross-sectional; therefore, the data were captured at one single point in time. A design of this nature has inherent limitations while trying to ascertain the prevailing causal relationships among the constructs. Last this study was based on quantitative data collection which may lead to biases.

Future directions may expand the scope of inquiry to include other constructs relevant to sustainable consumption, such as corporate social responsibility initiatives, customer trust, and brand loyalty. Longitudinal studies may have additional depth on how brand authenticity, celebrity endorsement, and environmental consciousness evolving over time will affect purchase behaviors. Last, qualitative studies might complement the quantitative results by probing consumers for their perceptions and attitudes toward brand authenticity and sponsoring celebrities in greater depth.

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Appendix A

Questionnaire

Celebrity Endorsement

1. Celebrity in an advertisement encourages to buy the product
2. Celebrities make difference to the image of the brand
3. Celebrities use the product they endorse
4. People purchase celebrity endorsed brands to improve social status
5. Celebrity has the power to change my perceptions
6. Celebrity conveys all the true features of a product
7. Celebrity holds the viewer's attention
8. Refrain from the product because I don't like the celebrity who endorses it

Environmental Consciousness

1. I use green skincare products because I strive to contribute to a healthy environment
2. I pursue natural ingredients when purchasing green skincare products
3. I have enough environmental awareness and knowledge about green skincare products

Green Product Knowledge

1. I am very knowledgeable about green product that protects human health from various diseases
2. I know how to select green products
3. I understand the green symbols on product packages

Green Purchase Intention

1. I intend to purchase green skincare products in future
2. I probably switch to using green skincare products in future
3. I prefer purchasing green skincare products than conventional skincare products
4. I plan to purchase green skincare products because of their positive environmental contribution
5. I would like to practice environment-friendly consumption

Brand Authenticity

1. Brands endorsed by celebrities possess a clear philosophy which guides the brand promise
2. Brands endorsed by celebrities know exactly what it stands for and does not promise anything which contradicts its essence and character
3. Considering the brand promise, the Brands endorsed by celebrities do not pretend to be someone else