

Article

Antecedents of Consumers' Green Beauty Product Brand Purchase Intentions: An Extended Theory of Planned Behavior Approach

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Abstract: Societies across the globe are growing increasingly environmentally aware, resulting in more and more consumers demanding eco-friendly product alternatives. This phenomenon is also evident in the beauty industry, with many beauty brands striving to add green beauty products to their range and new green beauty product brands continuously emerging in markets. Despite the increased popularity of green beauty products, there is a paucity of published research concerning the antecedents of consumers' green beauty product brand purchase intentions. As such, the goal of this study was to apply an extended version of the theory of planned behavior to ascertain the factors that predict consumers' green beauty product brand purchase intentions. Following an explanatory research design, data were gathered from 500 consumers in South Africa. Data analysis comprised structural equation modeling. Confirmatory factor analysis revealed a reliable and valid seven-factor measurement model with good model fit. The path analysis results indicate that collectively perceived environmental knowledge, perceived behavior control, green beauty product ethicality beliefs, green beauty product attitudes, socio-altruistic values, and subjective norms account for 77 percent of the variance in consumers' purchase intentions toward green beauty product brands. The findings of this study provide a comprehensive view of the antecedents of consumers' green beauty product brand purchase intentions, which will be of significant value to beauty product marketers in or seeking to enter the green product market. In addition, the psychometric properties and strong predictive power of this model reflect a research instrument that can be used in future research into consumers' purchase intentions toward green beauty products.

Keywords: green beauty product brands; theory of planned behavior; behavioral intentions; South Africa



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1. Introduction

Societies globally are growing increasingly environmentally conscious, leading to a rise in demand among consumers for eco-friendly product alternatives [1,2]. Overzealous product consumption has created major environmental health concerns among consumers [3,4]. Consequently, traditional purchase behavior has manifested into 'green product' consumption, with the intent to reduce environmental impact through consumer purchase power [2]. This contributed to the creation of the circular economy, which supports the United Nations' 12th sustainable development goal of sustainable product production and consumption within business practices [5]. Driven by growing environmental awareness, consumers have compelled organizations to adopt green or environmental policies into their business

practices. This phenomenon is also evident in the beauty industry, with many major beauty brands adding green beauty products to their offerings or adding green beauty product campaigns into their marketing strategies [6,7]. For instance, major beauty corporations such as Clarins, Weleda, Lush, and Beauty Kitchen, among others, have incorporated some form of environmentally friendly practice into their business models [8]. Limbu et al. [9] add that the global demand for green beauty products is on the rise. Beauty products comprise any externally applied product used to condition, care for, or enhance people's physical appearance, and include toiletries, makeup, skincare products, haircare products, nail care products, fragrances, and beauty tools [10]. In contrast, green beauty products refer to beauty products produced and packaged with ethically and sustainably sourced natural, organic, and eco-friendly ingredients [11].

The Green Revolution has created opportunities for organizations to capitalize on changing consumer preferences, and research has since focused on green consumer purchase behaviors [12]. The current literature exhibits a plethora of research exploring the factors affecting pro-environment consumption in general [12–15]. It may be implied that the major divisions or powerhouses of the green economy belong to energy-saving products, organic foodstuffs, or resource conservation techniques in business practices that primarily focus on minimizing natural resources (sustainable farming) [16]. This area of research primarily centers around the factors influencing the purchase intentions and behaviors in these environmentally friendly product categories. Various works include pro-environmental behavior in the workplace [14], eco-labeling and plastic packaging [15,17], electronic vehicle adoption [18–20], organic food products [1,21,22], green hotel visit intentions [23–26], and general pro-environment behavior [27–29]. It is necessary to shift consumer purchase behavior from traditional purchases to greener alternatives to protect the environment and highlight the importance of personal health preservation [30]. The use of synthetic chemicals in beauty products is becoming a talking point among consumers [31]. Consumer health concerns, coupled with the call for ethical and sustainable production practices, have fueled the global demand for green cosmetics [6,32]. However, there remains a notable gap in the literature concerning behavioral intentions toward green beauty products [6,30,33,34], especially in the case of emerging market economies [32], such as South Africa.

Globally, the beauty product market is expected to generate US\$673.70 billion in revenue in 2025, with a projected annual increase of 3.35% [35], whilst the global green beauty product market was valued at US\$36.91 billion in 2024, which is forecasted to reach US\$60.22 billion by 2030 [36]. South Africa is the leading beauty product market in Africa, with the cosmetics and beauty care sector producing US\$3.2 billion in revenue in 2018 [37]. Since then, it has been projected that this product category will increase to US\$4.3 billion in 2024 [38]. The size of the beauty product industry, both globally and in South Africa, together with its projected growth rate in the near future, is cause for concern given the negative environmental impact of traditional beauty products. Despite this growing environmental problem, there is a dearth of published studies focused on green beauty product consumption behavior. This is of particular concern from an emerging market perspective, especially of African countries, whose citizens are among those in the world worst affected by the environmental crisis [39]. This translates into an urgent need to develop an understanding of the factors that influence consumers' purchase intentions toward green beauty products, in order to develop marketing strategies to foster their transition from conventional beauty products to green beauty product alternatives.

Therefore, the primary goal of this study was to ascertain the antecedents of consumers' green beauty product brand purchase intentions in the South African context by applying an extended version of the theory of planned behavior. This entailed performing

a confirmatory factor analysis on a seven-factor measurement model comprising perceived environmental knowledge, green beauty product ethicality beliefs, socio-altruistic values, perceived behavioral control, green beauty product attitudes, subjective norms, and purchase intentions toward green beauty product brands. Thereafter, path analysis was conducted on a structural model, hypothesizing that consumers' perceived environmental knowledge influences their perceived behavioral control, their green beauty product ethicality beliefs influence their attitudes toward green beauty products, their socio-altruistic values influence their subjective norms, and their perceived behavioral control, attitudes, and subjective norms, together with their predictors, predict their purchase intentions toward green beauty product brands.

The following section provides a review of the literature that guided the development of the study's hypotheses. This is followed by a description of the research methodology followed in the study, the results section, a discussion of the results, the theoretical and practical contributions of the study, and the limitations of the study.

2. Literature Review

When any product is deemed 'green' or as possessing green attributes, the general characteristic of that product is that it satisfies consumers' needs whilst impacting the environment minimally or less than the counterpart product [2,40]. Naturally, green beauty products fall into this classification. Green beauty products may include a large variety of personal care products that contain natural ingredients free from harmful chemicals and sourced, produced, and packaged in an ethical and sustainable manner to lessen their environmental impact on the planet [3,9].

Projected to reach 9 billion people by 2037, the demands on the natural environment of earth's population are palpable, to say the least [41]. Earth's product consumption has risen significantly over the past few years, and consumers have witnessed the effect this mass consumption has had on the physical environment [2,42]. Moreover, the beauty industry has often been in the spotlight for ill business practices such as animal cruelty and placing toxic chemicals into beauty products [32,43]. As a result, consumers have been seeking brands that incorporate ethical and sustainable business practices into their business strategies [6,32].

2.1. Theoretical Background

The theory of planned behavior is the chosen theoretical basis for this study. The theory of planned behavior has become the foundation of many studies in the social sciences for scientists seeking to explain the intentional behavior of consumers. The theory of planned behavior is an adaptation of the theory of reasoned action [44]. The theory of planned behavior states that certain socio-cognitive variables, namely social norms, attitudes, and perceived behavior control, influence a consumer's behavioral intention to act [3,45]. To overcome the oversimplification of the theory of reasoned action, perceived behavior control was added to the theory of reasoned action model, creating the more robust theory of planned behavior model [46]. According to the theory of planned behavior, attitude is "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question", subjective norms are "the perceived social pressure to perform or not to perform the behavior", and perceived behavioral control is "the perceived ease or difficulty of performing the behavior" by a consumer or individual [44]. When these socio-cognitive factors are found to be positive in consumers, purchase intentions are expected to be high as well [45].

A multitude of prior studies have successfully used the theory of planned behavior in various fields and applications to explain the purchase intention behavior of consumers.

She et al. [47] used the theory of planned behavior to predict the purchase intentions of financial behavior amongst young adults, while Duong [48] used the theory to predict the digital intentions toward using a generative artificial intelligence chatbot amongst entrepreneurs. Other uses of the theory of planned behavior include second-hand product adoption [27], healthy food choice intentions [46], virtual reality adoption amongst teachers [49], organic food purchases [1,22] and the implementation of the circular economy in construction [50]. Similarly, the theory of planned behavior has been used to predict the intentions of consumers' pro-environment behavior [22]. Pro-environment topics are wide in nature and range from general environmental awareness and concerns [21] to various contexts, such as ethical product consumption [51], electronic vehicle adoption [20], and green food purchase intentions [21], to name but a few. The same can be said for green beauty products [2–4,9,40,42,45], which will be elaborated upon in more detail in the proceeding sections.

Though a well-renowned theory, the theory of planned behavior still has limitations and criticisms. The main drawback of the theory of planned behavior is that it excludes important belief-, value-, and knowledge-based elements underlying the attitude, subjective norm, and perceived behavioral control constructs [52,53]. However, Ajzen [44,54] argues that the theory of planned behavior constantly evolves and is open to exploring other variables within the model. In addition, the theory of planned behavior model is likely to be specific to the context of each study [44]. Thus, this study has extended the theory of planned behavior to include the following precursor independent variables in the theory's independent variables, namely perceived environmental knowledge, green beauty product ethicality beliefs, and socio-altruistic values.

2.2. Perceived Environmental Knowledge

Djafarova and Foots [51] assert that the likelihood of purchasing a product vastly increases if an individual is knowledgeable about the product. The same argument can be applied to green or environmentally friendly product adoption. Saari et al. [28] concur, and state that environmental awareness or possessing knowledge of environmental issues has a profound influence on the outcome of pro-environment behavior. Environmental knowledge refers to the extent to which a consumer has knowledge and/or awareness of natural environmental problems [55]. When an individual possesses adequate information or knowledge about green products, they are more likely to distinguish between environmentally friendly or green products and conventional ones [30]. This acquisition of knowledge may motivate consumers to develop pro-environment purchase intentions [42]. This assumption is advocated by Limbu et al. [9], who found that young females' environmental knowledge positively influenced their perceived behavioral control and, ultimately, their purchase intentions toward green products. Moreover, Liobikienė and Poškus [55] found environmental knowledge to impact pro-environment behavior positively in a personal capacity, and Saari et al. [28] found that environmental knowledge was the most important variable that predicted sustainable consumption behavior.

In relation to green beauty products, environmental knowledge is a major predictor of green product purchase intentions [9]. The more a consumer is knowledgeable of the harmful effects that non-green beauty products have on the environment, the higher the purchase intent that consumer will have toward green beauty products [30,56]. Knowledge of green beauty products is being rapidly acquired from social media sources, creating product awareness, which serves to increase consumers' willingness to purchase green beauty products [9]. In European countries, it was found that environmental knowledge influenced sustainable consumption behavior [28]. A study in Vietnam found that environmental knowledge had a direct positive influence on perceived behavior control in female

consumers [9]. Salimi [57] found environmental knowledge to be a significant predictor of consumers' perceived behavioral control related to green purchase intentions in Tehran. Ali et al. [58] also report environmental knowledge to be a significant predictor of perceived behavioral control in relation to recycling. In a similar manner, Galván-Mendoza et al. [59] report environmental knowledge as a significant positive determinant of female employees' perceived behavioral control concerning green behavior within small and medium-sized enterprises in the USA. Therefore, it can be argued that consumers with more knowledge of environmental problems and those with higher environmental concerns are more prone to purchasing green beauty products [2,30]. Overall, individuals with environmental knowledge are better equipped to understand environmental challenges and, thus, know how to promote pro-conservation efforts. Grounded by the literature presented above, we suggest that environmental knowledge significantly influences consumers' perceived behavioral control concerning their adoption of green beauty products. Therefore, this study contends the following:

Hypothesis (H1). *Consumers' perceived environmental knowledge has a positive influence on their perceived behavioral control concerning their consumption of green beauty product brands.*

2.3. Green Beauty Product Ethicality Beliefs

In terms of the theory of planned behavior, behavior is theorized as being a product of prominent beliefs and information that are relevant to that behavior, with behavioral beliefs being the primary determinant of attitudes toward behavior [44]. Beliefs represent the information an individual possesses about an object, which links the object to a certain attribute or attributes [60]. That is, individuals form behavioral beliefs about certain objects by connecting them with certain attributes [44]. In this study, beliefs are operationalized as consumers' beliefs in the ethicality of green beauty products. Ellen et al. [61] indicate that people who believe that the purchase of a specific category of green products will actually mitigate environmental destruction will be more likely to form a positive attitude toward the purchase of that green product category.

The product ethicality beliefs of an individual are based upon perceptions pertaining to the sustainability, social responsibility, and morality norms of brands [62] and, in the case of green beauty products, relate to the consumers' trust in the ethicality of green beauty product brands. Khan et al. [22] found that an individual's environmental beliefs are major factors in purchasing organic food products. Yusliza et al. [29] concur and found that students' environmental beliefs shaped their attitudes toward pro-environment behavioral practices. Dhir et al. [63] found that belief in the manufacturers who implement green practices in their operations leads to consumers purchasing eco-apparel. Amoako et al. [64] found consumers' ethicality beliefs to be a significant determinant of their brand loyalty toward green product brands. Kamalanon et al. [65] report that consumers' beliefs in a company's ethicality are significant positive predictors of their green purchase intentions. Caniels et al. [66] also found brand ethicality beliefs to be significant determinants of young consumers' green purchasing attitudes. Likewise, Nguyen-Viet and Nguyen [67] report consumers' trust in the ethicality and authenticity of green beauty products to be a significant determinant of their attitudes toward green beauty product brands. In accordance with these reported findings, this study contends the following:

Hypothesis (H2). *Consumers' green beauty product ethicality beliefs have a positive influence on their attitudes toward green beauty product brands.*

2.4. Socio-Altruistic Values

According to the theory of planned behavior, normative beliefs or values are salient underlying determinants of subjective norms, dictating the motivational strength that the opinions of relevant others has on individuals' behavioral intentions [44]. Whilst normative values concerning an object depend on the object in question, socio-altruistic values are closely aligned with pro-environment behavior [68]. Socio-altruistic values are an individual's emotional concerns for other people's personal well-being and the world around them [26,69,70]. These values promote selfless behavior rather than acts of self-interest toward others and create the desire to improve society [69]. These values take form at various levels, from giving up your seat on the bus to the elderly to becoming a human rights activist. When individuals engage in altruistic behaviors, they feel gratification and manifest positive feelings toward the notion of collectivism [71].

Altruism manifests as an important psychographic variable in predicting consumers' pro-environment behavior. Empirical evidence shows that individuals with higher levels of altruistic values are more concerned with environmental issues and, thus, may be more likely to engage in pro-environment behavior [72]. This is evident, as socio-altruistic values can translate into pro-environment purchase behavior. If individuals hold strong altruistic values, they could be more prone to switch their purchasing habits to organizations that promote and/or prioritize environmental conservation efforts [69]. Costa Pinto et al. [70] concur and state that individuals who possess altruistic characteristics can drive or be advocates of different types of environmentally friendly behaviors, such as recycling, conserving water, or practicing sustainable product purchasing. According to Obrenovic et al. [71], individuals with high altruistic values are sympathetic and seek guidance from relevant others; as such, these individuals fulfill the criteria of existing subjective or social norms.

Studies show that altruistic values significantly affect individuals' subjective norms [26]. For instance, Wang et al. [72] and Eid et al. [73] found subjective norms to be positively influenced by altruistic values when choosing green hotels, while Yraola III et al. [74] concluded the same for green air travel. Similarly, Saleem et al. [75] found altruism to moderate students' subjective norms regarding their intentions to adopt eco-preneurship. Konalingam et al. [76] found altruism to predict pro-environment behaviors significantly in the emerging nation of Sri Lanka. Boobalan et al. [77] also conclude that altruistic motives exert a significant influence on subjective norms pertaining to the consumption of organic foods in both the USA and India. In South Africa, Fatoki [78] found altruistic values to influence university students' subjective norms in a study regarding green purchase behaviors. In accordance with these reported findings, this study contends the following:

Hypothesis (H3). *Consumers' socio-altruistic values have a positive influence on their subjective norms concerning green beauty product brands.*

2.5. Perceived Behavioral Control

The theory of planned behavior circulates around the extension of the theory of reasoned action, in which perceived behavioral control was included as an extension of the theory of reasoned action to account for an individual's volitional control to act [44]. Furthermore, Ali et al. [30] state that the perceived behavioral control construct was included to predict individuals' purchase intentions more accurately. Perceived behavioral control relates to perceived self-efficacy and refers to an individual's confidence in their ability to perform the necessary actions required to deal with particular situations [44]. In terms of environmentalism, this implies that people who are confident in their ability to influence environmental sustainability positively through their individual actions are more likely to

act in a pro-environment manner. Ajzen [44] adds that one caveat to this situation is the availability of the resources required to carry out those actions.

In the case of green beauty products, this means that people knowledgeable about environmental issues who are confident in their individual capacity to influence environmental sustainability positively through their purchase actions, and who have access to green beauty brands and the necessary financial resources to acquire those brands, are more likely to opt for such brands over traditional beauty brands [30,32]. This premise was found in the case of various green beauty product-based studies, where perceived behavioral control was found to influence purchase intentions positively [3,30,31,45,79–82]. For instance, Lupindo et al. [3] found a positive relationship between South African millennials' perceived behavioral control and purchase intentions of organic personal care products. Similarly, Khan et al. [45] found that perceived behavioral control positively influenced young females' purchase intentions of online cosmetic products in India. Likewise, in Vietnam, perceived behavioral control had a significant positive influence on intentions to purchase vegan cosmetics [81]. These findings confirm that perceived behavioral control influences the purchase intentions of the individual. Thus, this study contends the following:

Hypothesis (H4). *Consumers' perceived behavioral control has a positive influence on their purchase intentions toward green beauty product brands.*

2.6. Attitudes Toward Green Beauty Products

In the psychology literature, consumer attitudes have been considered the foundation of predicting intentions and behaviors [21,40]. According to the theory of planned behavior, an individual's attitude toward a behavior is based on the degree to which the individual shows a "favorable or unfavorable evaluation" of the target behavior [44]. Ngo-Thi-Ngoc et al. [81] posit that the more favorable an attitude is, the greater the likelihood that a consumer will generate pro intentions. In pro-environment literature, attitude is regarded as the leading or most prominent predictor of environmental purchase intentions and behavior [9,31,63,79,81]. Saari et al. [28] concur and state that positive attitudes can greatly influence environmental behavioral intentions. Favorable attitudes toward green beauty products occur when consumers believe that these products are beneficial to the environment and/or to their own personal health [2,3,29], thus creating pro-intention behaviors. The positive impact that attitudes have on intentions can be seen in various fields of the green product spectrum.

In the green cosmetic industry, several authors [4,30,32,42,45,79,83] have found attitude to predict consumers' intentions to purchase environmentally friendly cosmetics significantly. Several studies on organic food products, which are closely linked to health awareness and sustainable farming practices, also report positive attitudes to influence purchase intent significantly [1,21,22,33,34]. Studies on the adoption of electronic vehicles also found a significant positive relationship between attitudes and purchase intentions [18–20,84]. The tourism industry has capitalized on creating hotels that are 'greener' and implementing eco-friendly business practices, and studies show that tourists with favorable attitudes toward these hotels display a higher intent to visit these establishments [23–25,85]. Consumer attitude is thus a consistent prevailing factor when attempting to predict behavior of a green or pro-environment nature. Additionally, studies have asserted that the association between attitude and intent is so prevalent that some consumers may even be willing to pay premium prices for green and environmentally friendly products [3,33,86]. As such, this study contends the following hypothesis:

Hypothesis (H5). *Consumers' attitudes toward green beauty products have a positive influence on their purchase intentions toward green beauty product brands.*

2.7. Subjective Norms

Similar to attitudes, subjective norms are regarded to be quite influential in shaping behavioral intentions within consumer behavior studies [20,42,87]. An important component in the theory of planned behavior, a subjective norm is the social pressure an individual experiences from loved ones and/or significant others to perform a specific behavior [21]. This pressure varies based on the extent to which the individual thinks the behavior is accepted or rejected by their significant others (friends, colleagues, and families, etc.) [3,81]. Ngo-Thi-Ngoc et al. [81] state that the impact of subjective norms on an individual's purchase decisions relies on the severity of the importance that the individual places on their significant others' opinions. The authors elaborate, claiming that mass media and social media may also affect the development of subjective norms. Subjective norms imply that an individual's behavior is motivated in accordance with social referents [44].

Various studies have confirmed that subjective norms and purchase intentions are closely associated. This sentiment holds true for green consumer behavior research as well [42]. Subjective norms have been found to be highly influential in shaping purchase intentions in the various fields of the green beauty industry. Positive connections between subjective norms and purchase intentions were found in the green cosmetic industry [4,30,32,42,45,79], the green tourism industry [23,24], organic food market industry [1,21,22], and the green automobile industry [18–20], among various others. In accordance with these reported findings, this study contends the following:

Hypothesis (H6). *Consumers' subjective norms have a positive influence on their purchase intentions toward green beauty product brands.*

These hypothesized causal relationships are presented visually in Figure 1.

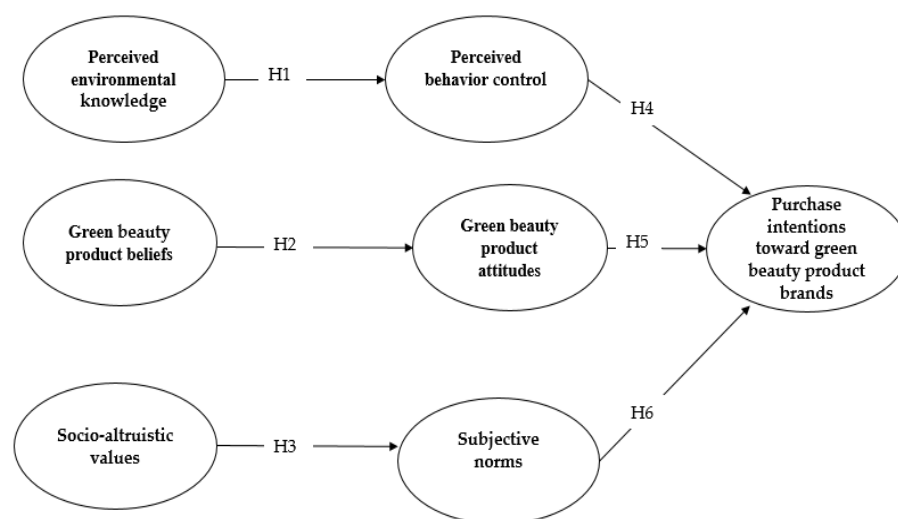


Figure 1. Hypothesized model.

3. Materials and Methods

The study was explanatory in nature and included a cross-sectional sample.

3.1. Sampling

The study's target population was defined as individuals of 18 years of age or older, residing in South Africa. The services of a professional marketing research company were employed to gather data from a panel sample. The program used by this marketing research company prevents respondents from moving to the next question in a questionnaire unless they have answered the previous question, thereby mitigating the problem of incomplete questionnaires. Using the model complexity criterion, a sample size of 500 was selected, as advised by Hair et al. [88] for models including seven or more latent factors, such as was the case in this study. The research company hosted an online survey and employed convenience sampling to recruit respondents who fit the target population description. The questionnaire remained active online for five days. Within that specified five-day window, 500 respondents voluntarily completed the questionnaire.

3.2. Measurement Instrument

A structured electronic questionnaire was developed to collect the necessary data during the online survey. The questionnaire encompassed an introductory letter detailing the purpose of the study and providing assurances of respondents' anonymity, together with questions designed to gather certain demographic information. The questionnaire also contained adapted scaled-response items from previously validated published scales. These adapted scales included perceived environmental knowledge (five items) [89], perceived behavioral control (four items) [90], green beauty product ethicality beliefs (five items) [62], green beauty product attitudes (four items) [91], socio-altruistic values (three items) [68], subjective norms (four items) [92], and purchase intentions toward green beauty product brands (four items) [91]. Responses to all scaled-response items were quantified using a six-point Likert scale, from one (strongly disagree) to six (strongly agree).

3.3. Data Analysis

The data were analyzed using SPSS 29 and AMOS 29. Data computations included frequencies and percentages for the sample description, descriptive statistics, a common method bias test, tests of data normality, Pearson's bivariate correlation analysis and collinearity diagnostics for testing nomological validity and ruling out serious multicollinearity issues, and confirmatory factor analysis and path analysis using the maximum likelihood approach.

4. Results

The fieldwork yielded 500 completed questionnaires. Table 1 contains a description of the sample.

The biographical data in Table 1 show that the 24–29-year-old age bracket (23%) was the most heavily represented in the sample, followed by the 30–35-year-old bracket (19%) and the 36–41-year-old bracket (15%). Most of the respondents resided in Gauteng (42%), followed by the Western Cape (19%). There was a relatively even split between males (49%) and females (51%), with three individuals identifying as non-binary. The majority of the respondents indicated residing in an urban area (87%).

The descriptive statistics, namely the means and standard deviations (SD), were computed for the seven factors in the hypothesized model. These, together with the scaled-response items, are presented in Table 2.

Table 1. Sample demographics.

Age	Frequency	Percent (%)	Province	Frequency	Percent (%)
18–23	60	12	Eastern Cape	35	7.0
24–29	117	23.4	Free State	14	2.8
30–35	93	18.6	Gauteng	208	41.6
36–41	73	14.6	KwaZulu Natal	86	17.2
42–47	66	13.2	Limpopo	26	5.2
48–53	43	8.6	Mpumalanga	23	4.6
54–59	31	6.2	Northern Cape	4	0.8
60–65	17	3.4	North West	10	2.0
			Western Cape	94	18.8
Gender	Frequency	Percent (%)	Region	Frequency	Percent (%)
Male	243	48.6	Urban	437	87.4
Female	254	50.8	Rural	63	12.6
Non-binary	3	0.006			

Table 2. Scaled-response items and descriptive statistics.

Scaled-Response Items	Means	SD
Environmental knowledge (F1)	4.51	0.97
“I know that I purchase products and packages that are environmentally safe”.		
“I know more about recycling than the average person”.		
“I know how to select products and packages that reduce the amount of waste ending up in rubbish dumps”.		
“I understand the environmental phrases and symbols on product packages”.		
“I know a lot about environmental issues”.		
Perceived behavior control (F2)	4.92	0.87
“I feel I can help solve natural resource problems by conserving water and energy”.		
“I can protect the environment by purchasing products that are friendly to the environment”.		
“There is a lot I can do about the environment”.		
“I feel capable of helping to solve environmental problems”.		
Green beauty product beliefs (F3)	4.51	0.85
“Green beauty products respect moral norms”.		
“Green beauty products always adhere to the law”.		
“Green beauty products are socially responsible”.		
“Green beauty products avoid damaging behavior at all costs”.		
Green beauty product attitudes (F4)	4.64	1.04
“I think using green beauty products is a good thing to do”.		
“Using green beauty products is valuable to me”.		
“Using green beauty products is beneficial to me”.		
“I think using green beauty products is a necessary thing to do”.		
Socio-altruistic values (F5)	5.24	0.99
“Being helpful to others is important to me”.		
“Protecting the environment is an important part of my everyday life”.		
“Being considerate of other people is important to me”.		
Subjective norms (F6)	4.45	1.13
“People who influence my behavior would approve of me purchasing green beauty products”.		
“People who are important in my life would approve of me purchasing green beauty products”.		
“People who influence my behavior would encourage me to purchase green beauty products”.		
“People who are important in my life would encourage me to purchase green beauty products”.		

Table 2. *Cont.*

Scaled-Response Items	Means	SD
Purchase intentions (F7)	4.75	1.04
“I will consider switching to green beauty products for environmental reasons”.		
“I will consider purchasing green beauty products that are environmentally friendly”.		
“I will buy more green beauty products in the future”.		
“I will make a special effort to purchase green beauty products that are environmentally friendly”.		

As indicated in Section 3.2, the scaled-response items were measured on a six-point Likert scale; hence, the means reported in Table 2 are all high and definitively in the agreement area of the scale. The highest mean was recorded on the socio-altruistic values factor (mean = 5.24), suggesting that consumers perceive themselves as being selfless concerning the welfare of others and the environment. The next highest mean was recorded on perceived behavioral control (mean = 4.92), followed by purchase intentions toward green beauty products (mean = 4.75), attitudes (mean = 4.64), perceived environmental knowledge (mean = 4.51), green beauty product beliefs (mean = 4.51), and subjective norms (mean = 4.45). Taken together, these results suggest that consumers in South Africa are favorably disposed toward purchasing from green beauty product brands.

Common method bias was assessed using Harman’s one-factor test, whereby a single factor was extracted using principal axis factoring. That factor explained 48.90 percent of the total variance, which, being below 50 percent [93], indicates no undue common method bias issues. AMOS was used to assess the normality of the data set. All skewness values were between -2 and $+2$, ranging from -1.907 to -0.485 , and all kurtosis values were less than an absolute value of 7, ranging from -273 to 5.136 ; hence, there is univariate normality [94]. However, with a significant Mardia’s normalized estimate of multivariate kurtosis of 432.854, multivariate normality was identified as a problem, which prompted the bootstrapping of the path analysis results [95]. The nomological validity of the measurement model was assessed by running Pearson’s product–moment correlation analysis, whilst potential multi-collinearity was assessed by running collinearity diagnostics (tolerance values and variance inflation factors (VIFs)). The results of these two tests are reported in Table 3.

Table 3. Correlation analysis and collinearity diagnostic results.

Factors	F1	F2	F3	F4	F5	F6	Tolerance Values	VIFs
Environmental knowledge (F1)							0.481	2.082
Perceived behavior control (F2)	0.624 *						0.447	2.268
Green beauty product beliefs (F3)	0.642 *	0.591 *					0.317	3.176
Green beauty product attitudes (F4)	0.552 *	0.517 *	0.749 *				0.392	3.566
Socio-altruistic values (F5)	0.448 *	0.602 *	0.424 *	0.441 *			0.611	1.659
Subjective norms (F6)	0.549 *	0.494 *	0.686 *	0.648 *	0.386 *		0.473	2.202
Purchase intentions (F7)	0.567 *	0.571 *	0.708 *	0.808 *	0.487 *	0.662 *	0.481	3.480

* Significant at $p \leq 0.01$.

The results in Table 3 indicate that the correlation coefficients between each of the pairs of latent factors in the measurement model are statistically significant ($p \leq 0.01$) and positive, which aligns with the theory and provides evidence of nomological validity [88]. There also does not appear to be any serious multi-collinearity issues, as all tolerance values are above 0.10 and all VIFs are below 10 [96].

Confirmatory factor analysis was then performed on the measurement model to test psychometric properties. The estimates computed included standardized loadings, squared multiple correlations (R^2), Cronbach alphas (α), composite reliability (CR) values, average variance extracted (AVE) values, correlation coefficients, heterotrait–monotrait (HTMT) ratios, and model fit indices. These are reported in Table 4.

Table 4. Measurement model results.

Factors		Standardized Loadings	R^2	α	CR	AVE
Environmental knowledge (F1)		0.753	0.568	0.903	0.904	0.653
		0.773	0.598			
		0.850	0.723			
		0.830	0.689			
		0.830	0.688			
Perceived behavior control (F2)		0.729	0.532	0.879	0.880	0.647
		0.810	0.656			
		0.837	0.700			
		0.836	0.699			
Green beauty product beliefs (F3)		0.830	0.688	0.921	0.921	0.700
		0.855	0.731			
		0.844	0.712			
		0.811	0.658			
		0.843	0.711			
Green beauty product attitudes (F4)		0.815	0.664	0.915	0.915	0.730
		0.879	0.773			
		0.876	0.767			
		0.847	0.718			
Socio-altruistic values (F5)		0.807	0.651	0.831	0.833	0.624
		0.775	0.601			
		0.788	0.620			
Subjective norms (F6)		0.799	0.638	0.917	0.917	0.735
		0.871	0.758			
		0.856	0.733			
		0.900	0.810			
Purchase intentions (F7)		0.866	0.749	0.929	0.929	0.767
		0.865	0.748			
		0.881	0.777			
		0.890	0.793			
Correlations	F1 ↔ F2:	F1 ↔ F3:	F1 ↔ F4:	F1 ↔ F5:	F1 ↔ F6:	F1 ↔ F7:
	0.710	0.702	0.612	0.506	0.599	0.617
	F2 ↔ F3:	F2 ↔ F4:	F2 ↔ F5:	F2 ↔ F6:	F2 ↔ F7:	F3 ↔ F4:
	0.656	0.565	0.680	0.559	0.629	0.817
	F3 ↔ F5:	F3 ↔ F6:	F3 ↔ F7:	F4 ↔ F5:	F4 ↔ F6:	F4 ↔ F7:
	0.477	0.748	0.763	0.487	0.713	0.870
HTMT	F5 ↔ F6:	F5 ↔ F7:	F6 ↔ F7:			
	0.437	0.545	0.725			
	F1 ↔ F2:	F1 ↔ F3:	F1 ↔ F4:	F1 ↔ F5:	F1 ↔ F6:	F1 ↔ F7:
	0.624	0.644	0.552	0.444	0.550	0.567
	F2 ↔ F3:	F2 ↔ F4:	F2 ↔ F5:	F2 ↔ F6:	F2 ↔ F7:	F3 ↔ F4:
Model fit	0.591	0.518	0.598	0.494	0.571	0.750
	F3 ↔ F5:	F3 ↔ F6:	F3 ↔ F7:	F4 ↔ F5:	F4 ↔ F6:	F4 ↔ F7:
	0.421	0.687	0.709	0.440	0.649	0.809
	F5 ↔ F6:	F5 ↔ F7:	F6 ↔ F7:			
	0.383	0.484	0.663			
Model fit		CFI: 0.954	TLI: 0.947	IFI: 0.954	NFI: 0.927	RMSEA: 0.056

The standardized loadings and AVE values reported in Table 4 all exceed 0.50, thus confirming the convergent validity of the measurement model [97]. None of the HTMT ratios exceed the recommended threshold of 0.85 [98], which confirms the discriminant validity of the model. The α and CR values all exceed 0.70, which provides evidence of both the internal consistency and composite validity of the model [88]. With CFI, TLI, IFI, and NFI fit indices above 0.90, and a RMSEA index below 0.08, there is also good model fit [94].

Based on the validated measurement model, the six hypotheses formulated in the study were tested. Owing to the identified departure from multivariate normality, bootstrapping was performed on 5000 samples, using the maximum likelihood estimator to establish bias-corrected confidence intervals for each of the parameter bootstrap estimates at the 95 percent confidence level. The standardized beta (β), lower limit confidence interval (LLCI), upper limit confidence interval (ULCI), and coefficient of determination (R^2) values are shown in Table 5.

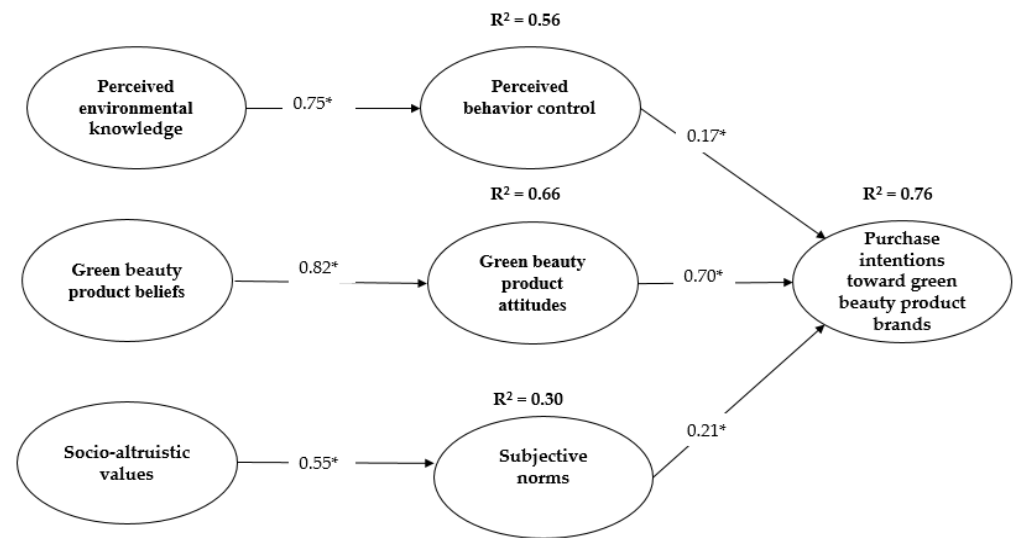
Table 5. Path analysis results.

Hypothesized Paths	β	Sig.	LLCI	ULCI	R^2
Hypothesis (H1): Environmental knowledge $\rightarrow$ Perceived behavior control	0.75	0.000	0.66	0.81	
Hypothesis (H2): Green beauty product beliefs $\rightarrow$ Green beauty product attitudes	0.82	0.000	0.77	0.87	
Hypothesis (H3): Socio-altruistic values $\rightarrow$ Subjective norms	0.55	0.000	0.41	0.72	
Hypothesis (H4): Perceived behavior control $\rightarrow$ Purchase intentions	0.17	0.000	0.08	0.28	
Hypothesis (H5): Green beauty product attitudes $\rightarrow$ Purchase intentions	0.70	0.000	0.58	0.81	
Hypothesis (H6): Subjective norms $\rightarrow$ Purchase intentions	0.21	0.000	0.09	0.33	
Endogenous Factors					
Perceived behavior control					0.558
Green beauty product attitudes					0.678
Subjective norms					0.299
Purchase intentions					0.765

Each of the hypothesized paths reported in Table 5 are statistically significant at $p \leq 0.01$. Moreover, the 95 percent bias-corrected confidence intervals (CIs) returned by AMOS across 5000 bootstrap samples all differ definitively from zero. Consumers' perceived environmental knowledge ($\beta = 0.75$, $p \leq 0.01$, CI (0.66, 0.81)) is a statistically significant positive predictor of their perceived behavioral control concerning their consumption of green beauty product brands. Similarly, consumers' green product ethicality beliefs ($\beta = 0.82$, $p \leq 0.01$, CI (0.77, 0.87)) are a statistically significant predictor of their attitudes toward green beauty product brands. Likewise, consumers' socio-altruistic values ($\beta = 0.55$, $p \leq 0.01$, CI (0.41, 0.72)) are a statistically significant predictor of their subjective norms pertaining to green beauty product brands. Therefore, Hypotheses (H1)–(H3) are accepted. In turn, perceived behavior control ($\beta = 0.17$, $p \leq 0.01$, CI (0.08, 0.28)), green beauty product attitudes ($\beta = 0.70$, $p \leq 0.01$, CI (0.58, 0.81)), and subjective norms ($\beta = 0.21$, $p \leq 0.01$, CI (0.09, 0.33)) are all statistically significant predictors of consumers' purchase intentions toward green beauty product brands, with attitudes being the strongest predictor thereof. Hence, Hypotheses (H4)–(H6) are accepted.

According to Hair et al. [99], the coefficient of determination values of 0.75, 0.50, and 0.25 in a path diagram can be described as having a substantial, moderate, or small effect, respectively. In terms of the coefficients of determination computed in this study, perceived environmental knowledge accounted for 56% (moderate effect) of the variance in perceived behavioral control, green product ethicality beliefs for 68% (moderate to substantial effect) of the variance in green product attitudes, and socio-altruistic values for 30% (small to moderate effect) of the variance in subjective norms. Collectively, perceived behavioral control, green product attitudes, and subjective norms, together with their predictors,

explain 77% (substantial effect) of the variance in consumers' purchase intentions toward green beauty product brands. These results are depicted visually in Figure 2.



* $p \leq 0.01$

Figure 2. Path diagram results.

As advised by Collier [93], in order to address the issue of potential endogeneity bias, the path analysis was rerun with two control variables, namely gender and age. The choice of these two variables as control variables was based on the fact that both are known to affect environmental perceptions [100]. Table 6 contains the information on this analysis.

Table 6. Path analysis results with control variables.

Paths	β	Sig.	LLCI	ULCI	R^2
Hypothesis (H1): Environmental knowledge $\rightarrow$ Perceived behavior control	0.76	0.000	0.68	0.83	
Hypothesis (H2): Green beauty product beliefs $\rightarrow$ Green beauty product attitudes	0.82	0.000	0.77	0.87	
Hypothesis (H3): Socio-altruistic values $\rightarrow$ Subjective norms	0.57	0.000	0.43	0.78	
Hypothesis (H4): Perceived behavior control $\rightarrow$ Purchase intentions	0.17	0.000	0.08	0.27	
Hypothesis (H5): Green beauty product attitudes $\rightarrow$ Purchase intentions	0.70	0.000	0.58	0.81	
Hypothesis (H6): Subjective norms $\rightarrow$ Purchase intentions	0.21	0.000	0.10	0.34	
Control variables					
Gender $\rightarrow$ Perceived behavior control	0.02	0.606	−0.05	0.09	
Gender $\rightarrow$ Green beauty product attitudes	−0.00	0.952	−0.07	0.07	
Gender $\rightarrow$ Subjective norms	−0.01	0.802	−0.12	0.09	
Gender $\rightarrow$ Purchase intentions	−0.00	0.904	−0.06	0.06	
Age $\rightarrow$ Perceived behavior control	0.14	0.000	0.07	0.22	
Age $\rightarrow$ Green beauty product attitudes	0.02	0.602	−0.05	0.08	
Age $\rightarrow$ Subjective norms	−0.16	0.000	−0.25	−0.06	
Age $\rightarrow$ Purchase intentions	0.03	0.217	−0.02	0.09	
Endogenous Factors					
Perceived behavior control					0.576
Green beauty product attitudes					0.679
Subjective norms					0.328
Purchase intentions					0.767

The results in Table 6 indicate that all hypothesized paths remained statistically significant at $p \leq 0.01$. Gender had a non-significant influence on each of the endogenous factors. Interestingly, age had a significant influence on perceived behavioral control ($\beta = 0.14$,

$p \leq 0.01$, CI [0.07, 0.22]) and subjective norms ($\beta = -0.16$, $p \leq 0.01$, CI [−0.25, −0.06]). This suggests that in comparison to younger consumers, older consumers experience a greater sense of perceived behavioral control regarding the effect their green behavior has on the environment and are less concerned about the opinions of significant others regarding their decision to opt for green beauty brands. Both of these outcomes may be attributed to the greater confidence that comes with age. However, overall, the results remained largely unchanged, with the coefficients of determination strengthening only marginally.

5. Discussion

The purpose of this study was to ascertain the antecedents of consumers' green beauty product brand purchase intentions in South Africa's emerging market economy by applying an extended version of the theory of planned behavior. This entailed appraising a proposed seven-factor measurement model that included perceived environmental knowledge, perceived behavioral control, green beauty product ethicality beliefs, green beauty product attitudes, socio-altruistic values, subjective norms, and purchase intentions toward green beauty product brands. The results of the descriptive statistics analysis alluded to consumers in South Africa having a favorable inclination toward the adoption of green beauty product brands, which bodes well for the environment. The confirmatory factor analysis testing of the measurement model established a seven-factor structure that exhibited strong psychometric properties in terms of construct validity, internal consistency and composite reliability, and model fit.

The results of the path analysis indicate a robust model, with the six predictor latent factors accounting for a substantive 77% of the variance in consumers' purchase intentions toward green beauty product brands.

Similar to the results reported in several previous studies [9,57–59], this study found environmental knowledge to be a significant strong positive predictor of consumers' perceived behavioral control, accounting for a moderate 56% of the variance therein. Consequently, there was sufficient evidence to support Hypothesis (H1). This suggests that consumers who understand environmental issues and what constitutes pro-environment behavior have a heightened sense of how their individual efforts contribute positively to environmental sustainability. Therefore, consumers with greater environmental knowledge are more confident in their ability to enact positive environmental changes.

Ajzen [44] asserts that beliefs are important predictors of attitudes toward behavior and the results of this study bear testament to that assertion, with green beauty product ethicality beliefs explaining a moderate to substantial 68% of the variance in consumers' green beauty product attitudes. Accordingly, Hypothesis (H2) is supported. This finding mirrors those of several other pro-environment consumption studies [65–67]. This indicates that consumers' ethicality beliefs about green beauty products contribute to them developing a favorable attitude toward such brands.

Echoing the findings of previous studies [71–73,75,77], the results of this study indicate that socio-altruistic values are a significant strong positive predictor of green beauty product subjective norms, accounting for a small to moderate 30% of the variance therein. As such, Hypothesis (H3) is supported. This finding suggests that individuals with strong socio-altruistic values are more considerate of the needs of others, including the needs of society as a whole, and this outward orientation makes them more likely to value and comply with the opinions of relevant others. As such, socio-altruistic individuals are more likely to select green beauty product brands over traditional beauty product brands when their relevant others support that choice.

Perceived behavioral control, attitudes, and subjective norms were all statistically significant positive predictors of consumers' purchase intentions toward green beauty

product brands in the South African market. Consequently, Hypotheses (H4)–(H6) are supported. Of the three, the green beauty product attitudes latent factor was the strongest predictor. This finding resonates with that of Kamalanon et al. [65], who also conclude that the green product attitudes latent factor is the strongest predictor of green product purchase intentions, as well as Ali et al. [30], who found it to be the strongest predictor of male consumers' purchase intentions toward green cosmetics. The next strongest contributor to consumers' purchase intentions toward green beauty product brands was subjective norms, followed by perceived behavioral control. The significant positive association between subjective norms and purchase intention is echoed in several studies focused on the green beauty product industry [4,30,32,42,45,79]. Likewise, the association between perceived behavioral control and purchase intentions is also evident in other previous green beauty product-related studies [3,30,31,45,79–82]. The results of this study suggest that consumers with favorable green beauty product attitudes, who have a sense of perceived behavioral control concerning their impact on environmental sustainability and whose relevant others are agreeable to the use of green beauty products, will exhibit purchase intentions toward green beauty product brands, where their attitude, subjective norms, and perceived behavior control are functions of their ethicality beliefs, socio-altruistic values, and environmental knowledge.

6. Theoretical and Practical Contributions

6.1. Theoretical Contributions

The findings emanating from this study make a number of noteworthy theoretical and practical contributions. While the theory of planned behavior has proven to be an excellent theoretical framework for exploring and predicting green purchase behavior and other pro-environment behaviors across a range of environmental issues, many of these studies are restricted in that they only explore the influence of perceived behavioral control, attitudes, and subjective norms on green behavioral intentions. By adding the variables of environmental knowledge, ethicality beliefs, and socio-altruistic values to the model, this study offers a more robust theory for understanding green purchase intentions. This robustness is evident from the substantive predictive power of the model, where only 23% of the variance in consumers' purchase intentions toward green beauty product brands was unaccounted for. This strong predictive power, coupled with the solid psychometric properties of the measurement model, mean that the model may be replicated to study green beauty product purchase intentions in other markets and, possibly, even in other green consumption product categories. Furthermore, the study adds to the literature on pro-environment consumption, as well as to the literature on beauty product brand management. The existential environmental crisis means that there is an urgent need to develop a clear understanding of the factors that contribute to consumers engaging in pro-environment behavior, including green consumption behavior, so that knowledge may be applied to develop marketing communication and branding strategies to foster pro-environment behavior as a social norm. The results reported in this study contribute to creating that understanding and, hence, contribute to the literature on green marketing and green branding strategies.

6.2. Practical Contributions

In practical terms, the importance of environmental knowledge in creating a sense of perceived behavioral control over environmental sustainability actions highlights the salience of ongoing marketing campaigns geared at creating awareness of environmental issues and educating consumers on the ways in which they can adjust their consumption behavior to limit their negative influence on the environment. Such campaigns may include

explaining the negative environmental impact of toxic chemicals, plastic pollutants, aerosol containers, and non-biodegradable packaging typically associated with traditional beauty products, as well as the cruelty of animal testing. While perceived behavior control made a significant contribution to green beauty product purchase intentions, the effect size was somewhat small. This suggests that these campaigns should also carry a clear message as to how a single person's pro-environment actions, such as changing to green beauty product brands and engaging in recycling, can mitigate environmental harm. This is especially important to communicate to younger consumers who, according to the results of this study, appear to lack confidence in the ability of their individual actions to make a difference.

The study found that the ethicality beliefs pertaining to green beauty product brands made a significant contribution to consumers developing a positive attitude toward green beauty product brands. Given the prominent role that attitudes play in fostering purchasing intentions toward green beauty product brands, it is crucial that brand managers of such products nurture this belief. This finding highlights the importance of building a brand image that exudes sustainability, morality, and social responsibility. Naturally, such claims need to be authentic. As indicated by Nguyen-Viet and Nguyen [67], if consumers mistrust or are skeptical concerning the sustainability claims made by companies, they are hardly likely to form positive attitudes toward the consumption of such products. Both traditional marketing communication methods and social media platforms should be used to communicate this message. To this end, partnerships with social media influencers may be of value given that they are generally perceived as being more authentic than traditional marketing sources [101].

Socio-altruistic values had a strong significant effect on the significance that consumers attached to relevant others' opinions concerning the use of green beauty product brands. In turn, these positive subjective norms made a significant but small contribution to consumers' purchase intentions toward green beauty product brands. The more consumers understand the virtues of opting for green product alternatives, including green beauty product alternatives, the more pro-environment consumption behavior will become the new social norm, and the more it becomes a social norm, the more the pro-environment opinions of relevant others will reinforce consumers' green beauty product brand decisions. Fostering a pro-environment consumption social norm necessitates extensive educational environmental campaigns, not only geared at creating greater environmental awareness, but also at educating consumers on how they can protect the environment. This is especially important for younger consumers who, according to the findings of this study, appear to be susceptible to the opinions of relevant others. Hence, the more relevant others buy into the social norm of green consumption, the more likely younger consumers are to develop green beauty product purchase intentions. Campaigns that inform of the dangers posed by environmental destruction to human life may also prompt what Obrenovic et al. [71] term as "evolutionary self-preservation", whereby individuals are morally motivated to act in the interest of society at large. Persuasive communication messages linking the use of green beauty product brands with the emotional appeal of the psychological well-being of being altruistic may also strengthen socio-altruistic values.

7. Limitations and Future Research Directions

Whilst this study made several important theoretical and practical contributions, it does have a few limitations that need to be considered when interpreting the findings of the study. Firstly, the study was restricted to one country, namely South Africa. Cultural differences in other countries may strengthen or weaken the causal relationships in the model tested in this study. Studies replicating this study in other countries would add value to the global understanding of the determinants of green beauty product purchase

intentions, particularly studies in African countries, whose citizens are among the worst-affected by the environmental crisis in the world. Secondly, the study was cross-sectional in design. Longitudinal studies would help to understand the phenomenon of green beauty product purchase intentions better. Thirdly, the study made use of non-probability convenience sampling, which limits the extent to which the results can be generalized. Future studies employing probability random sampling are advised. Lastly, despite the strong predictive power of the model, 23% of the variance in green beauty product brand purchase intentions was unaccounted for, which suggests that there is room for testing additional predictive variables. Possible variables to consider include the perceived price and quality of green beauty product brands, as well as their availability at convenient retail outlets.

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Informed Consent Statement: Informed consent was obtained from all respondents involved in the study, who were provided with assurances of their anonymity.

Data Availability Statement: In accordance with South Africa's data privacy regulations and the North-West University's Economic and Management Sciences Research Ethics Committee's (EMS-REC) data access restrictions, the data set used in this study is not publicly available. However, the corresponding author is able to provide the relevant data upon reasonable request, in compliance with the applicable legal and ethical guidelines.

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