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Validating a Measurement Model for Assessing Green Beauty Product Purchase Intentions in South Africa

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Abstract
The escalating crisis of climate change, pollution, excess waste, and other environmental problems has intensified the scrutiny of many consumers on the mass production of goods. In recent years research has started to focus on the importance of ethical consumption as environmentally friendly consumption. This is also true of the consumers of green beauty products. However, cultural values and aspects have a great influence on the consumption of green beauty products in the South African context. This paper seeks to find the correlation between these various cultural aspects, namely, materialism, self-enhancement, and self-transcendence, and how it affects influence consumer attitudes towards green beauty products, and their purchasing intentions. The proposed model met all requirements for reliability, validity, and adequate model fit. As such, the proposed model is suitable to perform structural equation modelling to investigate the green beauty product purchase intentions.

Keywords
Green beauty products; materialism; self-enhancement; self-transcendence; purchase intention; South Africa.

Introduction

Growing concern about climate change and other environmental issues, such as pollution, deforestation, and resource depletion, has created an expanding consumer base more focused on protecting and conserving the natural environment (Suphasomboon & Vassanadumrongdee, 2022, p. 231; Kim, 2011, p. 72). Consumers are more aware of the affect that the mass production of goods has on the environment than ever before, and consumers are convinced that it is part of their ethical duty to lower their carbon emissions and limit their impact on the environment as much as possible (Liobikiene & Bernatoniene, 2017, p. 110). However, the scale and fervour with which consumers view their obligations to the cause of conserving and protecting the environment fluctuates from country to country and oscillates from one culture to another (de Mooij & Hofstede, 2011, p. 182). De Mooij and Hofstede (2011, p. 182) argue that there is a noticeable difference in the motivations of consumers from individualistic cultures and collective cultures. This sentiment and drive towards more ethical purchases of mass-produced products is also relevant for beauty products. The increasing trend to purchase environmentally friendly, or 'green', beauty products has

created a growing target market in both individualistic and collectivistic cultures (Mai, 2019:247). Within the South African context, the need for green beauty products is also emerging and rapidly becoming a potential target market for the producers of green beauty products (Shimul, Cheah, & Khan, 2022, p. 37). However, recent studies show that although these emerging consumer markets in South Africa indicate a growing concern for environmentally green products, it does not necessarily translate into effective purchasing behaviour (Shimul et al., 2022, p. 37). Consequently, more research needs to be done on the attitudes and purchasing intentions of these emerging markets for green beauty products in South Africa.

This paper investigates the purchasing trends and aspects within individualistic and collectivistic cultures and the effect it has on the consumption of green beauty products in the South African context. The South African context is a unique setting that includes characteristics of both collectivistic and individualistic consumer culture. This paper aims to shed light on the cross-cultural aspects of South African consumer culture and how they relate to attitudes and purchase intentions toward green beauty products. Specifically, this paper identifies the constructs of materialism, self-enhancement, and self-transcendence, consumers' attitudes towards green beauty products, and consumers' purchase intentions. The significance of this study will be highlighted in three ways. Firstly, this paper pays attention to the measurability of the relationship between the following constructs, namely, materialism, self-enchantment, self-transcendence, consumer attitudes towards green beauty products, and the purchase intentions of these consumers. Secondly, this paper focused on the South African consumer and the potential for a growing market of green beauty products in South Africa. Finally, this paper introduces the potential for future research that explores the extent to which the aspects of materialism, self-enhancement, and self-transcendence within individualistic and collectivistic cultures consumer attitudes towards green beauty products, as well as its influence on consumers' purchasing intentions of green beauty products.

Literature review and problem statement

Due to the growing climate and environmental crisis consumers actively seek out environmentally friendly alternatives that contribute to the protection of the environment and enhance personal health benefits (Singh et al., 2016:468). The fashion and beauty industry has often been associated with animal cruelty and the use of toxic chemicals in their products (Suphasomboon & Vassanadumrongdee, 2022, p. 231). Consequently, the ethical and environmentally friendly consumer are actively seeking out companies that produce ethical and sustainable practices (Beneke et al., 2010, p.478). The emerging market for environmentally friendly beauty products is also growing in South Africa and warrants further investigation. The main purpose of this study is to investigate the relationship between the following constructs of materialism, self-enhancement, and self-transcendence, consumers' attitudes towards green beauty products, and consumers' purchase intentions. Furthermore, this study aims to validate a green beauty product measurement model, which would be used to predict the purchase intentions of the South African consumer.

Materialism

Materialism is a significant factor when exploring and analysing the purchasing attitudes and intensions of environmentally friendly products. More specifically, materialism has been referred to in previous studies as a characteristic or consumer value (Belk, 1985, p. 270; Richins & Dawson, 1992, p. 308). According to Richins and Dawson (1992, p. 308), materialism mainly focuses on the importance of material wealth and perceived affluence. Materialism might be closely associated with more individualistic countries since it focuses mainly on the accusation of material wealth, self-interest, and personal benefit (Mai, 2019, p. 250). Consequently, consumers in individualist countries that emphasize materialism might not be as interested in environmentally friendly consumer practices due to a lack of consideration for the common good (Mai, 2019, p. 250). However, studies suggest that there is a considerable market for environmentally friendly products in more individualistic countries that emphasise materialism since these products often cost more to produce and are perceived as economic and social status symbols (Hartmann et al., 2012, p. 1256).

Using green beauty products without harsh, toxic chemicals might indicate greater care for personal beauty and health (Nijkamp et al., 2015, p. 9). Consumers who are more focused on maintaining a youthful appearance may prefer green beauty products for the perceived long-term benefits (Kim & Chung, 2011, p. 40). Moreover, studies also suggest that materialism exists in both affluent and developing countries that are traditionally associated with more collectivistic or mixed economic approaches (Segev et al., 2015, p. 85). Within more collectivistic cultures, materialism still plays a significant symbolic role in the purchasing of environmentally friendly products. Consumers perceive products that explicitly showcase environmentally friendly production as altruistic and caring behavior. However, the fact that consumers actively seek out these products that explicitly showcase praised societal behaviours indicates some materialistic elements, such as perceived higher social status (Mai, 2019, p. 51). Within collectivistic cultures, emphasizing the minimal environmental impact of green beauty products and the lack of animal cruelty is the main driver of consumers' purchasing intentions (Suphasomboon & Vassanadumrongdee, 2022, p. 231). South Africa is a developing country with a mixed economic approach. This means that there are elements of both individualistic cultures and collectivistic cultures in the emerging green consumer market (Shimul et al., 2022, pp. 38-40).

Self-enhancement

According to Kim (2011, p. 68) the concept of self-enhancement is closely associated with individualistic cultures, since individualistic cultures emphasize personal benefit above collective benefit or common good. As mentioned in the previous section, consumers within individualistic cultures are often focused on the benefits of long-term health and maintaining a youthful appearance (Nijkamp et al, 2015, p. 9). Therefore, within individualist cultures there is a greater emphasis on the self and any product that is perceived to enhance or benefit the self would interest more individualistic consumers. These consumers are focused on individual goals and perceived success in terms of material wealth and affluence (Kim, 2011, p. 73). The emphasis on individual prestige and wealth might have a negative impact on environmentally green practices since these practices focus on collective goals and

collective efforts to achieve those goals (Kim, 2011, pp. 72-73). However, the emphasis on perceived social and economic status associated with purchasing green products would be the main indicator of the consumer's attitude towards green beauty products and their intention to purchase them. Furthermore, other aspects, such as perceived social and economic status, would also be a good indicator of the consumer's attitude towards green beauty products and would show a positive correlation with their purchase intention (Hartmann et al., 2012, p. 1256). South Africa's emerging market of environmentally conscious consumers show that elements of individualism, specifically elements of self-enhancement. These elements will play a significant role in consumers' attitudes and purchase intentions for green beauty products.

Self-transcendence

The concept of self-transcendence is generally associated with collectivist cultures since collective goals and attaining those goals that require the individual to transcend their self-interest (Kim, 2011, pp. 72-73). Collectivist cultures showcase positive behaviours to protect the environment and emphasize collective efforts such as recycling (Kim, 2011, pp. 72-73). Therefore, one could assume that collectivistic cultures would be more receptive to green purchasing behaviors and more prone to buy environmentally friendly products that emphasize transparency in the production process (Suphasomboon & Vassanadumrongdee, 2022, p. 231). Concerning green beauty products, collectivistic cultures would react more positively to products that emphasize relationship building (de Mooij & Hofstede, 2011, p. 182). Moreover, consumers within collectivistic cultures are more likely to base their purchasing decisions on the recommendations of friends, family, and other close members within their community (Chan & Lau, 2002, pp. 15, 16, 32). Consumers in collectivistic cultures are also more concerned about how their purchasing decisions might affect others in their community. Therefore, green beauty products that focus on minimal damage to the environment, avoid animal testing, or animal cruelty would be the most likely to attract these consumers. As mentioned before, South Africa's emerging market of environmentally conscious consumers shows elements of collectivism, specifically aspects of self-transcendence. Green beauty products that highlight collective goals and minimal damaging effects on the natural environment will play a pivotal role in consumers' attitudes and purchase intentions of products within the emerging South African consumer market.

Green beauty product attitude

According to Padel and Foster (2005, p. 615) attitudinal aspects are better predictors to environmentally friendly purchasing behaviour when compared to other variables. Attitudinal aspects also directly relate to the purchasing intentions of consumers (Baker & Ozaki, 2008:287). In relation to green beauty products, Paul *et al.* (2016, p. 125) affirmed this by arguing that attitudes toward green beauty products are the best predictors of purchasing intentions. This study specifically aims to identify how aspects of individualistic and collectivistic cultures affect consumers' attitudes towards green beauty products and, consequently, what affects it has on consumers' purchasing intentions. Previous cross-cultural studies within emerging green consumer markets showed a positive correlation between attitude and purchasing intention for green beauty products (Mostafa, 2006, p. 80; Nguyen et al., 2016, p. 100). Similarly, Hsu *et al.* (2017, p. 147) found that the country of origin played a pivotal role in a consumer's

attitude and purchase intention. The more aware consumers in individualistic cultures become of the personal benefits of using green beauty products, the more positive their attitude will be towards those products. Therefore, the greater the perceived personal benefits there are for the consumer to purchase green beauty products, the more positive their attitude will be towards those products and the more likely it is that they will buy the green beauty product (Chan & Lau, 2000, p. 340). However, within collectivistic cultures, the emphasis on environmental awareness and animal protection reveals a greater positive attitude towards green beauty products when compared to non-green competitors (Shimul et al., 2022, p. 49). Therefore, the better a consumer understands the need or the necessity to purchase environmentally friendly products, the more likely they are to have a positive attitude towards the product (Shimul et al., 2022, p. 49). This study hopes the shed light on the significant correlation between cultural aspects, such as materialism, self-enhancement and self-transcendence, consumer attitudes towards green beauty products within the South African context.

Purchase intentions

The concept of purchase intention refers to the possibility that consumers might buy a product or service in the future (Alzubaidi et al, 2021, p. 688). There are many factors that influence a consumer's intention to buy a product in the future or might indicate a possible switch in products. Some of these factors include the perceived consequences that are linked to the purchase of the product. These perceived consequences are usually arrived at through a risk and benefit analysis of the consumer (Erdil, 2015, p. 197). This study specifically aims to determine whether aspects such as environmental concern affect a consumer's purchasing intentions as well as determine whether consumers intend to switch to green beauty products in the future due to their aforementioned concern for the environment. These perceived risks and benefits are greatly determined by the cultural context in which the risk-benefit analysis is made. For example, within individualistic cultures, the perceived personal benefits of using a product might outweigh the collective outcomes (Chan & Lau, 2002, pp. 15, 16, 32). Contrarywise, the perceived collective benefits of purchases might outweigh the personal risks or consequences. Therefore, in more individualistic cultures, consumers might reflect a higher purchase intention for green beauty products if the product promises better long-term personal benefits when compared to a competing product that contains harmful chemicals (Kim & Chung, 2011, p. 41). Moreover, in collectivistic cultures, purchasing intentions will increase if, for example, a green beauty product has less impact on natural life and minimizes environmental damage when compared to its non-green competitor (Kim & Chung, 2011, p. 41). In this study, the authors hope to gain more insight into the effect that these cultural differences have on the purchasing intentions of green beauty products in South Africa.

Based on the literature review, the following hypothesis was formulated:

H1: Green beauty product purchase intentions is a five-factor model comprising materialism, self-enhancement, self-transcendence, attitude towards beauty products and purchase intentions.

Figure 1 below depicts the proposed theoretical model for the study.

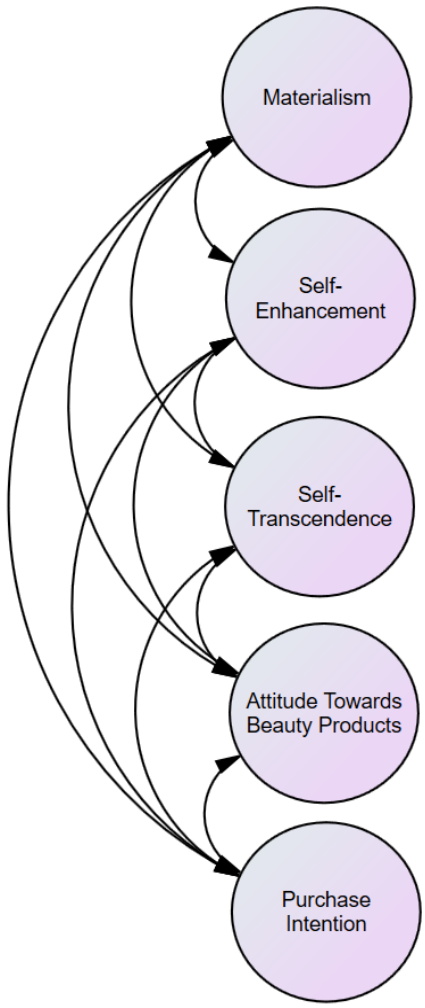

Figure 1. Proposed theoretical model
(Source: Authors' work)

The preceding section outlines the research methodology undertaken for the study.

Research methodology

Research design

This study employed a descriptive research design, using a single cross-sectional method to collect the required data. A single cross-sectional study entails collecting data at one point in time as opposed to a longitudinal study that collects data at multiple point over specified period of time (Hair, Black, Babin, & Anderson, 2014; Shukla, 2008, p. 38).

Target population

The South African consumer aged between 18 and 65 years was the chosen target population for this study, as motivated by the theory in the literature review. The target population parameters were as follows:

- Element: South African consumers
- Sampling unit: IPSOS panel
- Extent: South Africa
- Period: 2022

Sampling technique and data collection

A convenience sampling method was used via a research data collecting company. Internationally renowned company IPSOS was employed to assist in collecting the data for the study. IPSOS South Africa possesses a panelist pool of roughly 40,000 consumers from around the country. Owing to the sheer size of the participant pool, it is not unfamiliar for the response rate to be 100 percent of the researcher's desired sample size. The data collection parameters for IPSOS were set for any South African citizen aged between 18 and 65, with a collection time of three days only in 2022. Despite participants receiving incentives such as shopping vouchers, the results are free of bias, as IPSOS strictly adheres to ethical research practices and the POPI Act of South Africa.

Sample size

Regarding the sample size for this study, a look at prior similar studies was conducted. These studies included the following sample sizes: Lavuri, Jabbour, Grebinevych, and Roubaud, 2022 (sample size: 398), Shimul et al. (2022) (sample size: 408), and Yang (2017) (sample size: 568). Based on this, a sample size of 500 was deemed viable for conducting structural equation modelling and the purpose of the study.

Measuring instrument and data collection technique

The data-collecting research company IPSOS makes use of its FastFacts analysis to collect the required data. The FastFacts program utilizes an online self-administered structured questionnaire given to each respondent. The studies' measuring instrument comprised constructs from previously validated research, similar in nature to this study. The questionnaire was divided into two sections. The first section (Section A) collected respondents' demographic data, whilst the second section (Section B) measured consumers' intention factors regarding beauty products in South Africa. To determine the level of South African consumers' materialism, self-enhancement, and self-transcendence, attitude towards beauty products, and purchase intention, the following validated scales were used from Richins (2004), Kim (2011), Urien and Kilbourne (2010), Kim (2011), Song *et al*. (2014), and Mostafa (2007), respectively. The questionnaire collected participant responses using a six-point Likert scale. The scale ranged from strongly agree (6) to strongly disagree (1). Each participant was shown a cover letter before answering any questions. The cover letter aimed to explain the nature of the study, assured that no personal information was required from respondents, guaranteed anonymity, and displayed the contact details of the

researchers. Furthermore, the respondents were informed that the responses would only be used in a statistical manner.

The FastFacts program is designed to not allow respondents to move between or to the next section unless all questions within the current section have been answered. The actual data collection had two parameters: first, the questionnaire was made available to respondents for a period of three days. Second, a maximum of 500 questionnaires was set. The questionnaire was closed if the 500 responses were recorded before the three-day limit or if the 500-response limit was not reached within the three days. Given the restrictions set on answering the questionnaire, response rates are often 100 percent of the researchers' request as was the case for this research study.

Findings

The researchers made use of IBM's Statistical Package for Social Sciences (SPSS), version 29, to analyze the captured data. SPSS made use of various statistical techniques to address the research objectives, that being to validate a measurement model. The following techniques were used: outlier statistics, internal-consistency reliability, descriptive statistics, correlation analysis, and structural equation modelling.

The 500-questionnaire response limit was hit well ahead of the three-day time limit, indicating a 100 percent response rate. However, a 100 percent workable data set is a feat seldom achieved in any research area. As such, this data set was subjected to outlier detection statistics. The purpose of this statistical technique is to detect if the data set contained any cases (responses) that were either above or below the general population's opinion (Pallant, 2016; Hair et al., 2014). The Mahalanobis statistic was chosen as the method for outlier detection in this study. This study comprised five variable constructs; as such, any Mahalanobis statistic greater than 20.515 (chi-square value for a=01 at 5 df) was considered an outlier. The data sets case numbers were set as a dummy dependent variable whilst the measuring constructs were set as independent variables. The highest Mahalanobis statistics are depicted in Table 1 below:

Table 1. Outlier statistics (Authors' work)

		Original data set	
		Case number	*Statistic*
Mah. distance	**1**	**473**	54.94
	2	**452**	53.34
	3	**238**	39.84
	4	**412**	36.80
	5	**98**	36.14
	6	**472**	29.80
	7	**352**	25.83
	8	**156**	23.65
	9	**59**	23.01
	10	**477**	22.76
	11	**57**	21.91
	12	**102**	19.52
Note: Bold cases were deleted			

Table 1 showcases the greatest Mahalanobis statistic values, of which 11 were greater than the recommended cut-off value of 20.515 (chi-square value for a=0.001 at 5 df). Therefore, these 11 cases were seen as outliers in the data set and as a result, were deleted from the data set. Deleting the high Mahalanobis values left 489 viable case responses for statistical analysis.

Descriptive statistics and internal consistency reliability

The data set's characteristics were outlined using descriptive statistics. The responses were captured using a six-point Likert scale, where values above 3.0 indicate a positive association. The internal-consistency reliability of the measuring scale was evaluated using the Cronbach alpha statistic. These values range from 0.70 – 0.80 (indicating good reliability) and 0.80 – 0.99, which represents excellent reliability. Cronbach alpha values below 0.50 are deemed unacceptable (Malhotra, 2020). Table 2, outlines the results of both the descriptive statistics and the internal-consistency reliability.

Table 2. Reliability and descriptive statistics (Authors' work)

Constructs	Items	Mean	SD	Items (n)	Cronbach alpha
Materialism	489	4.48	1.04	5	0.89
Self-enhancement	489	4.21	1.21	4	0.86
Self-transcendence	489	5.33	0.72	4	0.84
Attitude towards beauty products	489	4.69	0.97	4	0.90
Purchase intention	489	4.79	0.97	4	0.92

The descriptive analysis provided means above 4.00 for each construct. These findings indicate that South African consumers show favorable inclinations towards adopting green beauty products.

The internal-consistency values of the measuring constructs achieved Cronbach alpha values above 0.80. This indicates that the measuring scale is indeed reliable. Therefore, it may be concluded that the proposed measuring instrument's constructs have excellent internal-consistency reliability.

Correlation analysis

In order to determine if any multicollinearity was present between the measuring constructs and if the data set had nomological validity, the Pearson product-moment correlation was computed. The results can be seen in Table 3.

Table 3. Correlation matrix (Authors' work)

Constructs	1	2	3	4	5
1. Materialism	1				
2. Self-enhancement	0.524**	1			
3. Self-transcendence	0.357**	0.204**	1		
4. Attitude towards beauty products	0.754**	0.302**	0.457**	1	
5. Purchase intention	0.726**	0.341**	0.501**	0.826**	1
**Correlation is significant at the 0.01 level (2-tailed)					

Table 3 highlights the correlations among the measurement constructs, with statistically significant positive correlations at the p = 0.01 level. These results suggest that the data set has nomological validity. (Malhotra, 2020). Furthermore, no correlation coefficients exceeded 0.90, meaning no multicollinearity exists between the measuring variables of the data set. With no evidence of multicollinearity and the presence of internal-consistency reliability and nomological validity, it may be safe to assert that the proposed beauty product intention adoption model may be tested using structural equation modelling.

Structural equation modelling

Measurement model analysis

The proposed five-factor measurement model was specified with the following factors: materialism (F1 – five indicators), self-enhancement (F2 – four indicators), self-transcendence (F3 - four indicators), attitude towards beauty products (F4 - four indicators), and purchase intention (F5 - four indicators). For model identification purposes, the first loading of each factor was fixed at 1.0. As such, 252 sample moments with 73 parameters were left for estimation, which meant 179 degrees of freedom (df) outlined the over-identified model. A significant chi-square of 677.73 was recorded with a probability level equal to 0.000. Table 4 below, depicts the results of the measurement model.

Table 4. Estimates for proposed measurement model (Authors' work)

Latent factors	Std. loading estimates	Err variance est.	CR	AVE	√AVE
Materialism (F1)	0.79 0.84 0.83 0.78 0.73	0.49 0.41 0.52 0.58 0.91	0.87	0.64	0.80
Self-enhancement (F2)	0.67 0.83 0.85 0.78	0.99 0.67 0.63 0.27	0.86	0.62	0.78
Self-transcendence (F3)	0.73 0.81 0.71 0.79	0.22 0.51 0.33 0.37	0.85	0.57	0.76
Attitude towards beauty products (F4)	0.80 0.88 0.86 0.83	0.30 0.33 0.42 0.33	0.91	0.71	0.84
Purchase intention (F5)	0.85 0.85 0.88 0.88	0.29 0.26 0.87 0.28	0.92	0.75	0.87
Correlations	F1↔F2: 0.52	F2↔F4: 0.32	F1↔F3:0.36		
	F2↔F3:0.20	F1↔F4: 0.75	F3↔F4: 0.46		

As shown in Table 4, the proposed model produced no problematic estimates, as all items had standardized regression weights above 0.50. Furthermore, no Heywood cases were seen within the error variance estimates. Regarding, reliability of the model, all five latent factors recorded composite reliability values above the 0.70 threshold, indicating that the model is reliable. Convergent validity for the model was established through the AVE, each construct achieved an AVE value above 0.50 (Malhotra, 2010:734). Furthermore, the √AVE values of each factor are greater than their corresponding correlation coefficients. To establish discriminant validity for the model, the HTMT ratio values were computed and are reported in Table 5 below:

Table 5. Heterotrait-Monotrait ratio values (HTMT) (Authors' work)

Constructs	1	2	3	4	5
Materialism (F1)	1				
Self-enhancement (F2)	0.521	1			
Self-transcendence (F3)	0.351	0.199	1		
Attitude towards beauty products (F4)	0.756	0.303	0.453	1	
Purchase intention (F5)	0.729	0.343	0.494	0.826	1

Table 5 shows that the proposed model has discriminant validity as all the HTMT values range from 0.343 to 0.826; these values are all below the cut-off range of 0.85 (Voorhees et al., 2016; Fornell & Larcker, 1981). As both reliability and validity were established for the proposed model, the next step was to examine the model fit of the proposed model. Owing to a significant chi-square ($\chi 2$ = 677.73, p=0.000), various incremental fit indices were computed to assess if the proposed model had adequate fit. The following indices were recorded: RMSEA = 0.076, SRMR = 0.065, NFI = 0.912, IFI = 0.934, TLI = 0.922 and CFI = 0.934. Both the RMSEA and SRMR were below 0.08, whilst the incremental fit indices were all above the recommended 0.90 cut off level (Hair et al., 2014:631; Malhotra, 2010:732). From these results, it is evident that the proposed measurement model achieved good model fit. The results show that the proposed beauty product intention measurement model is a five-factor structure consisting of materialism, self-enhancement, self-transcendence, attitudes towards green beauty products, and purchase intentions. Therefore, H1 is accepted, and it can be established that a structural model may be implemented for analysis with the aforementioned constructs.

Conclusion

The escalating crisis of climate change, pollution, excess waste, and other environmental problems has intensified the scrutiny of many consumers on the mass production of goods. In recent years, research has focused on the importance of ethical consumption as environmentally friendly consumption. This is also true of the consumers of green beauty products. However, cultural values and aspects have a great influence on the consumption of green beauty products in the South African context. The purpose of this paper seeks to find the correlation between these various cultural aspects, namely, materialism, self-enhancement, and self-transcendence, and how it affects influence consumer attitudes towards green beauty products, and their purchasing intentions.

Furthermore, this paper aims to investigate whether the mentioned constructs are a five-factor model valid for structural equation modelling. The model met all the requirements in terms of reliability, validity, and adequate model fit. As such, the proposed model is suitable for performing structural equation modelling. The structural model will examine the influence of independent factors on the green beauty product purchase intentions of South African consumers. This future research will aid marketers in effectively targeting a new market within the beauty product sector in South Africa.

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