

Exploring Green Purchasing Behaviour among College Students in a Developing Economy

Takawira Munyaradzi Ndofirepi
<https://orcid.org/0000-0001-7409-2241>
Central University of Technology
Free State
takandofirepi@gmail.com

Simbarashe Cowen Matema
<https://orcid.org/0000-0002-0516-187X>
Kwekwe Polytechnic
Zimbabwe
simbacmatema@gmail.com

Abstract

This study explores the relationships between environmental attitude, green product knowledge, attitude towards purchasing green products, green product purchasing intention, and green purchasing behaviour. Using a cross-sectional survey approach, a random sample of 284 undergraduate students in a Zimbabwean polytechnic completed a self-administered questionnaire. Structural equation modelling (maximum likelihood estimation) was used to analyse the data. The findings indicate that there are positive associations between the following pairs of variables: environmental attitude and attitude towards green purchasing; green product knowledge and green purchasing intention; green product knowledge and green purchasing behaviour; attitude towards green purchasing and green purchasing intention; green purchasing intention and green purchasing behaviour; as well as a non-significant relationship between green product knowledge and attitude towards green. The findings reported that the Theory of Reasoned Action fully supported the students' intention to buy green products, which then affects their green purchase behaviour. The inclusion of additional constructs to the proposed model was partially supported. The study results highlight the importance of considering product knowledge and other attitudinal factors—specifically environmental attitude and attitude towards green purchasing—when marketing environmentally-friendly products to college-level students.

Keywords: attitude; green purchasing intention; green purchasing behaviour; theory of reasoned action; Zimbabwe



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Introduction

Green consumerism is one of the topical issues in contemporary marketing discourse and practice to an extent that it informs the strategic orientations of numerous business entities across the world (Thongplew, Spaargaren, and Van Koppen 2017; Zhu and Sarkis 2016). The pervasive fixation with this phenomenon demonstrates an emerging scepticism about the sovereignty of human consumer needs and wants, and an increasing interest in a marketing philosophy which emphasises the virtue of all elements of the natural environment (Charter 2017; Dangelico and Vocalelli 2017). To a large extent, this evolution is attributable to the Brundtland Report of 1987, which challenged conventional marketing practices and made the most compelling case for increased consumption of ecologically-friendly products (Brundtland 1987). The report accentuated the alarming rate of environmental deterioration as a result of environmentally destructive consumption patterns and the ripple effects of industrialisation. Accordingly, a sizeable body of environmentally-conscious consumers has emerged over the years (Sachdeva, Jordan, and Mazar 2015; Watkins, Aitken, and Mather 2016; Zaharia and Zaharia 2015).

Results from some previous studies reveal that, although eco-friendly products continue to proliferate on the markets, the growth is not complemented by a parallel progression in the magnitude of consumption of such products (Barbarossa and Pastore 2015; Cherian and Jacob 2012; Johnstone and Tan 2015; Moser 2015; Van Doorn and Verhoef 2015). This state of affairs is more evident in developing nations, with relatively lower levels of consumer knowledge and information about green (environmentally-friendly) products in the said contexts often being blamed (Hwang et al. 2015; Joshi and Rahman 2015; Ritter et al. 2015). Against this background, green marketing advocates seek to increase the degree of green products consumption, as well as the number of pro-environment consumers. Certainly, an in-depth understanding of the subtleties which inspire the green habits of consumers would be invaluable to such an endeavour.

Numerous studies have explored the green-products purchasing intention and behaviour of consumers across the globe (Hsu, Chang, and Yansritakul 2017; Joshi and Rahman 2015; Paul, Modi, and Patel 2016; Zhao et al. 2014). To the researchers' knowledge, however, the academic discussion of the aforementioned among young adult consumers at college-level is a relatively new development. Moreover, the body of literature on this topic, particularly in relation to low-income countries on the African continent, is still very thin. Hence, this dearth of research, together with the conspicuously augmented concern for environmentally-sustainable consumption, strengthens the case for more research to be carried out, mainly in the less considered contexts. The current study seeks to contribute towards narrowing this research hiatus by applying a version of Ajzen and Fishbein's (1977) Theory of Reasoned Action (TRA) to understand some of the factors which influence green purchasing intentions and actual purchasing behaviour of college students in Zimbabwe. The selection of a sample of college students as respondents is informed by two key factors. Firstly, students are thought of

as rich sources of information about green products in view of some evidence which suggests their heightened awareness and concern for environmental issues, pursuit of environmentally-sustainable lifestyles, knowledge and consumption of eco-friendly products (Bong Ko and Jin 2017; Danish and Naved 2016; Wang and Hazen, 2016; Yadav and Pathak, 2016). Secondly, students are often perceived as opinion leaders and change agents in many communities (Daneri, Trencher, and Petersen 2015). As a result, their preferences for the consumption of environmentally friendly products are worth studying further. The overall objective of this study is:

To determine the extent to which the green product knowledge and some selected attitudinal variables explain the variations in green purchasing intention and actual green purchasing behaviour of students.

The findings of this study serve as a milestone by showing how college level students in a low-income country contribute towards environmentally-friendly consumption habits. Moreover, the results shed some light on the green buying habits of young consumers, and are an integral guide to environmental questions in consumer psychology and consumer behaviour in the said context.

The remainder of the paper is structured as follows: First, it reviews the extant literature relevant to green purchasing intention and behaviour. This is followed by a presentation of the hypotheses for the study, research methodology used and analysis of data. Next, the findings are discussed and summarised. The paper concludes with a discussion of theoretical and managerial implications, limitations of the research and suggestions for further research.

Literature review

The Theory of Reasoned Action

The current study is informed by Ajzen and Fishbein's (1977, 881) Theory of Reasoned Action (TRA), which posits that human action and behaviour are a result of prior thought processes. Hence, human action is pre-planned, and, therefore, intentional. The theory suggests that behavioural intention is subject to the influence of the following antecedents: attitude towards behaviour (feelings about the outcome of behaviour) and subjective norms (social considerations). In light of this, it can be argued that individuals who feel that their behaviour and actions will produce good and intended results for themselves, and have society's approval, tend to repeat the behaviour in the future.

A survey of literature reveals that numerous previous studies on green consumption behaviour in different temporal and spatial contexts have used the TRA as a guiding theoretical framework, achieving credible outcomes (Bang et al. 2000; Hsu et al. 2017; Mishra, Akman, and Mishra 2014; Paul et al. 2016; Vermeir and Verbeke 2006). Notably, findings from all the preceding studies support positive relations between the

attitudinal and behavioural variables. For instance, findings from the study by Mishra et al. (2014) confirm that positive attitudes positively correlate to green information technology acceptance. In addition, the outcome from Vermeir and Verbeke's study (2006), which was carried out on Belgian higher education students in the 19 to 22 age group, revealed that attitude towards buying sustainable dairy products correlates strongly with intention to buy.

Despite the conspicuous manifestation of the TRA in the sustainable consumption behaviour literature in high- and medium-income countries, studies that focus on emerging low-income circumstances—such as those of Zimbabwe's college-level students—are yet to emerge. At the same time, it may be inappropriate to transpose research findings from studies designed in developed countries into developing contexts without sufficient adaptation and rigorous scrutiny of their applicability and relevance to such situations. Against this background, we adopt the same theoretical framework for the current study in order to test its applicability in a previously unexplored environment. However, the focus is on how the knowledge of green products variable affects attitudinal antecedents, green purchasing intention and actual green purchasing behaviour.

College Students and Green Purchasing Behaviour (GPB)

It is widely held that students make conscious decisions to buy certain product categories (Savelli et al. 2017). In the case of green products, this belief is founded on the results of previous studies which suggest that young adults exhibit knowledge and concern for environmental sustainability and welfare (Lai and Cheng 2016; Vermeir and Verbeke 2008). As a result of the wish to reduce environmental damage, they develop a preference and inclination to buy eco-labelled products (Anvar and Venter 2014; Göçer and Oflaç 2017; Verma and Chandra 2018). In fact, Uddin and Khan (2016) argued that youths who show concern and engage in environmental welfare issues tended to buy green products because of emotional attachment rather than rationale. These views are cemented by findings from studies conducted in India and Turkey, which inferred that environmental concern and a positive attitude towards the aforesaid was a positive predictor of green purchasing behaviour (Göçer and Oflaç 2017; Sharma and Bansal 2013; Yadav and Pathak 2016). The bottom-line is that young adults and college students consciously considered environmental implications like preserving and renewing natural resources in their purchasing decisions. Moreover, they developed positive attitudes towards green products by choice, out of a genuine concern for the environment. The study of Savelli et al. (2017) of the buying habits of young Italian university students found that this consumer group yearned for more information before buying, and were attracted by healthy foodstuffs that are natural and harmless to the environment. Thus, the perceived health benefits and environmental friendliness of a product influenced millennials' GPB (Lu, Bock, and Joseph 2013).

Nevertheless, Lu et al.'s (2013) study unravelled that a sample of college students (millennials) in the USA found green products too expensive to buy. This had a negative impact on the students' GPB, as this discouraged them from buying green products. Moreover, Lu et al. (2013) observed that young consumers had problems trusting the producers of green products, and could not distinguish between green and non-green products when they exercised their buying decisions. The same study revealed that some young consumers had no concern for the environment, regarded the search for eco-friendly products burdensome, and felt that pursuing green products limited their consumption choices.

The preceding discussion reveals the considerable ambiguity regarding the green purchasing behaviour of college students and, therefore, calls for further research, with special emphasis on previously uncharted contexts. The study responds to calls in literature for further studies which unravel the various psychological mechanisms that impact on green purchasing behaviour (Joshi and Rahman 2016; Ok Park and Sohn 2018; Suki 2016). Such processes are professed to illuminate the intricacy of introducing and subsequent acceptance of environmentally-friendly products in resource-constrained and previously untested markets. Hence, notwithstanding previous research findings which are indicative of the positive relationships between consumer attitudes and green purchasing behaviour, what remains underexplored in literature is the explicit mechanism through which knowledge of green products and consumer attitude towards these relate to green purchasing behaviour, especially across specific market segments. In line with the main research objective, the overarching research question in the current study, therefore, is about how consumer knowledge about green products and consumer attitudes affect the green purchasing intention and actual purchasing behaviour of students?

Hypotheses and Conceptual Model

Effect of Environmental Attitude on Attitude towards Purchasing Green

Products

Literature from social psychology suggests that attitude is a key influence on human behavioural intention and actual behaviour (Ajzen 1991; Ajzen and Fishbein 1977). Moreover, extant marketing literature reveals that consumers who demonstrate pro-environmental attitudes tend to have positive attitudes towards purchasing environmentally-friendly products (Basha et al. 2015; Panzone et al. 2016; Paul et al. 2016; Thøgersen et al. 2015 Yadav and Pathak 2016). However, these findings contradict those of Chen and Chai (2010), whose study found that consumer attitudes towards environmental issues were not significantly related to consumer attitudes on the green purchase. Against this background of contradictions, we hypothesise that:

H1: Environmental attitude has a positive relationship attitude towards purchasing green products.

Effect of Green Product Knowledge on Attitude towards Purchasing Green Products

A study of psychology theories reveals suggestions that individuals form an attitude towards objects or subjects through social learning (Rosenthal and Zimmerman 2014). Such learning occurs either cognitively or through classical conditioning; the end result being the accumulation of knowledge by the individual (Chen and Sharma 2015). In the context of green marketing, there are findings from previous studies which suggest that consumers' knowledge about green products is positively related to attitude towards buying green products (Aman, Harun, and Hussein 2012; Suki 2016). The suggestion is that consumers acquire and share information about eco-friendly products with their acquaintances (Khare 2014). The outcome of this learning process is that consumers will be more enlightened and, therefore, able to evaluate the merits or demerits of green products. The end results are that the consumers will develop positive outlooks towards environmentally-friendly products (Cegarra-Navarro and Martinez 2010). Based on the aforementioned discussion, we hypothesise that:

H2: Green product knowledge has a positive association with the attitude towards purchasing green products.

Effect of Attitude towards Green Purchasing on Green Purchasing Intention

Consumer attitude towards green purchasing denotes the feelings expressed by consumers toward eco-friendly products (Chen and Chai 2010). Findings from past studies suggest that the more favourable the attitude towards green products is, the stronger the feeling and intention to buy green products (Akbar et al. 2014; Mobrezi and Khoshtinat 2016).

For instance, a study of Indian consumers by Jaiswal and Kant (2018) discovered that consumers' attitude towards green products could be used as a reliable predictor of green purchasing intention. In the same vein, Cheng and Tung's (2014) study, which was carried out in Taiwan, found that consumers' attitude towards green hotels significantly influenced their intention to deal with hotels that embraced environmentally-friendly practices, such as waste management. Hence, they concluded that a positive attitude for green hotels increased the chances of customers visiting and staying in such eco-friendly hotels.

In relation to young consumers, Anvar and Venter (2014) examined the relationship between the green attitude and behaviour of generation Y consumers in Johannesburg (South Africa). The study findings revealed a positive predictive relationship between the variables. Thus, the scholars concluded that positive attitudes toward green products favourably influenced the green purchasing intention of generation Y consumers. This view is corroborated by Ferraz et al. (2017), whose study of the green purchasing habits of Canadian students revealed that the respondents were willing to pay a higher price

for green products. This finding is in agreement with Mostafa's (2007) findings, which showed that environmental knowledge, concern and attitude affected the green purchasing behaviour of selected Egyptian university students. The effect was much stronger for males than females. However, Joshi and Rahman (2015) argued that favourable consumer attitudes towards green products did not necessarily result in buying action, even though positive attitudes increase the intention and willingness to. Against this background, we propose the following:

H3: Consumer attitude towards green purchase positively influences green purchasing intention.

Effect of Knowledge of Green Products on Green Purchasing Intention (GPI)

There is evidence from previous research which suggests that consumers are increasingly realising the effect of their actions on the environment, and are developing an affinity towards purchasing green products (Anvar and Venter 2014; Akbar et al. 2014). Barker et al. (2012) attribute this transformation to increased consumer awareness of environmental issues. According to Mobrezi and Khoshtinat (2016), enhanced public awareness and concern about the environment and green products will influence purchases. Hence, numerous businesses are producing green products, and more consumers exhibit a willingness to buy these green products (Joshi and Rahman 2015). From the preceding, it can then be concluded that consumer awareness and knowledge of green products impact on consumer intention to buy green products.

An important aspect to note is the influence of consumer product knowledge on repeat purchases. Moser (2015) posited that consumers who were aware of green product characteristics and features demonstrated strong intentions to purchase green products. According to the scholar, recognition tended to strengthen the intention to re-purchase environmentally-friendly products. Thus, consumers who previously bought green products and were satisfied by them, are most likely to repeat the purchase in future (Agyeman 2014; Kanonuhwa and Chimucheka 2014). Given this discussion, it is hypothesised that:

H4: There is a positive relationship between knowledge of green products and purchasing intention

Effect of Green Purchasing Intention on Green Purchasing Behaviour

Green purchasing intention relates to the willingness of consumers to buy environmentally-friendly products (Ali and Ahmad 2012). Hence, the concept reflects the readiness of consumers to buy products that are safe for the environment and community (Akbar et al. 2014). To a large extent, green purchasing intention positively influences current and future green purchasing behaviour (Akbar et al. 2014; Bhatt and Bhatt 2015; Chen 2013; Tan 2013). Hence, stronger green purchasing intention tends to

increase the likelihood of green purchasing behaviour (Ali and Ahmed 2012; Chen 2013; Hasan, Harun, and Hock 2015; Tan 2013). Therefore, we hypothesise that:

H5: Green purchasing intention positively influences green purchasing behaviour.

Effect of Green Product Knowledge on Green Purchasing Behaviour

Product knowledge influences consumers' thinking and decision-making processes. Consumer trust in green products is enhanced when they become familiar with and accumulate more information on them. This, in turn, impacts on consumers' rational thinking and positively influences their behaviour towards green products (Cheng and Deng 2016; Gleim et al. 2013; Huang and Yang 2014). Green product knowledge enables consumers to assess the effectiveness and value of green products. Such knowledge then motivates them to buy such products, as they would be in a more informed position to evaluate the nature of the green product (Liu, Segev, and Villar 2017).

According to Barker et al. (2012), increasing consumer awareness of environmental issues has transformed consumer behaviour and practices. Thus, consumers are beginning to change their behaviour towards purchasing green products in a positive way as they continue to discover the negative effect of their actions on the environment (Anvar and Venter 2014).

Some findings from previous studies suggest that a high knowledge of green products entrenched a positive attitude towards the said product (Chen and Deng 2016; Gleim et al. 2013). There is, also, some empirical evidence to suggest that consumers have increasingly shown a willingness to buy green products as they get exposure to and become aware of new varieties of green products (Akbar et al. 2014; Joshi and Rahman 2016; Mobrezi and Khoshtinat 2016). Joshi and Rahman's (2016) study of educated consumers with ages ranging from 15 to 30 in India revealed that green purchasing behaviour of consumers constantly varied, depending on the experiences and knowledge obtained from the last purchase. These factors, together with the green values and knowledge, influenced the future purchase behaviour of the respondents. In addition, Wang and Hazen (2016) posited that knowledge of green remanufactured products influenced the value which consumers attached to green products, which, in turn, determined green purchasing behaviour. Furthermore, the study of Zhao et al. (2018) revealed that better educated and environmentally-conscious Chinese consumers tended to buy carbon-labelled products due to strongly-held green values. However, this contradicts findings from Joshi and Rahman's (2016) study of young educated consumers in Delhi, which suggested that eco-labelling had a non-significant influence on consumer green purchasing behaviour, since some consumers did not even trust the eco-labels. Similarly, Momberg, Jacobs, and Sonnenberg's (2012) qualitative study of the role of environmental knowledge in young female consumers' evaluation and selection of apparel in South Africa, revealed that participants did not deliberately

incorporate environmental knowledge in their apparel decision making. This was notwithstanding the fact that they had shown that they cared about the environment. In view of the preceding discussion, it is hypothesised that:

H6: There is a positive relationship between green product knowledge and green purchasing behaviour.

The resultant proposed model from the preceding hypotheses is presented in Figure 1.

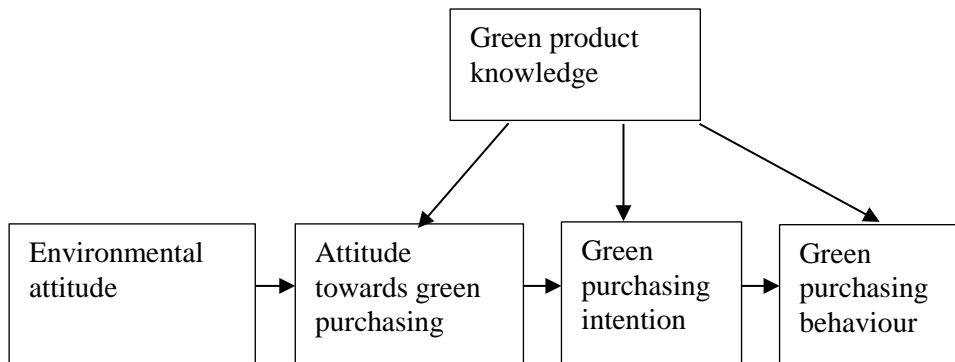


Figure 1: Conceptual framework developed by the authors based on Ajzen and Fishbein’s (1977, 882) Theory of Reasoned Action

Research Method

Sample

A cross-sectional survey of 284 randomly sampled undergraduate students from a Zimbabwean polytechnic college was carried out. Class lists of students from the following academic divisions were used as sampling frames: Engineering, Applied Sciences, and Business Studies. The distribution of the demographic characteristics of the respondents was such that the most frequently observed category of: (i) “Gender” was “Female” ($n = 173, 61\%$); (ii) “Age” was “21–30 years” ($n = 170, 60\%$); and (iii) the most frequently observed category of “Marital Status” was “Not married” ($n = 245, 86\%$). Frequencies and percentages are presented in Table 1.

Table 1: Demographic details of respondents

Variable	<i>n</i>	%
Gender		
- Female	173	60.92
- Male	111	39.08
Age		
- Below 21 years	92	32.39
- 21–30 years	170	59.86
- 31–40 years	22	7.75
Marital status		
- Not married	245	86.27
- Married	39	13.73

Note. Due to rounding errors, percentages may not equal 100%.

Source: Authors' own work

Procedure

The students' participation in the study was voluntary, with no incentives or rewards being promised to them. In line with research ethics expectations, they were assured of the anonymity, confidentiality and privacy of their contributions. The data collection instrument was a self-completion questionnaire with closed-ended items relating to demographic characteristics, environmental attitude, attitude towards green purchasing, green products knowledge, green purchasing intention and green purchasing behaviour. All the questionnaires were distributed to respondents for completion by one of the co-authors during his classes. The respondents were asked to drop the questionnaires in a dedicated box outside the lecturer's office after completion. All the items on the questionnaire were in the English language.

Measures

Demographic Characteristics

The questionnaire contained items intended to determine a respondent's age, gender and marital status. These were designed by the authors.

Environmental Attitude

A five-point Likert scale was used to measure environmental attitude, a uni-dimensional variable. All the scale points were numbered ranging from 1 ("Strongly disagree") to 5 ("Strongly agree"). This consisted of five measuring items, two of which were adapted

from Banerjee and McKeage (1994). The other three measuring items were developed by the authors from literature. The inclusion of additional measuring items was intended to enhance the completeness of the measuring scale by incorporating the unique attributes of the study context. A high score reflected positive environmental attitudes, and vice-versa.

Attitudes toward Green Purchasing

Attitudes towards green purchasing were measured using four measuring items on a five-point Likert scale with scale points which ranged from 1 (“Strongly disagree”) to 5 (“Strongly agree”). Three of the four measuring items were adapted from Taylor and Todd (1995); the remainder was developed by the authors from the literature and incorporated into the study to reflect the new context of study. A high score reflected positive attitudes towards green purchasing and vice versa.

Green Products Knowledge

Four measuring items were used to assess respondents’ green products knowledge. This aforementioned variable is single dimensional. All items of the scale were measured on a five-point Likert scale with scale points ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”). All the measuring items were developed by the authors from the literature. A high score reflected higher green products knowledge, and vice-versa.

Green Purchasing Intention

Green purchasing intention was measured using a five-point Likert scale in which each measuring item assessed the perceived likelihood of an individual to buy an environmentally-friendly product in the near future. This scale considered two dimensions: i) respondents’ intentions of purchasing environmentally-friendly products; and ii) their readiness to shift from presently used products to their green varieties. Two of the measuring items were adapted from Liu et al. (2017), while three items were designed by the authors, so as to bring out the “readiness to switch brands” dimension. A high score demonstrated higher green purchasing intention, and vice-versa.

Green Purchasing Behaviour

In this study, we used a five-point Likert scale to measure the respondents’ green purchasing behaviour. The aforementioned variable is uni-dimensional. The scale points were also categorised extending from 1 (“Strongly disagree”) to 5 (“Strongly agree”). Higher scores reflected high green purchasing behaviour. The five measuring items used were adapted from Kim and Choi (2005) and Lee (2008). A high score meant higher green purchasing behaviour.

Results

Data were analysed following Anderson and Gerbing's (1988) two-phase structural equation modelling (SEM) procedure. The first phase involved a confirmatory factor analysis (CFA) to ascertain the reliability and validity of the measurement model. The second phase tested the overall structural model fit and the relationships which were hypothesised in the conceptual model. Both the measurement and structural models fit were assessed using the following goodness-of-fit criteria: root mean square error of approximation (RMSEA) < 0.08 ; comparative fit index (CFI) > 0.90 ; and Tucker-Lewis index (TLI) > 0.90 . The current study utilised IBM Amos 23 software to run the stated tests.

Measurement Model Results

Based on the earlier stated criteria, the following modification fit indices were derived: TLI, 0.906; CFI=0.922; RMSEA=0.056. Viewed against the suggested criteria, these statistics confirmed the proposed model as a good fit.

Reliability and Convergent Validity

The reliability of measuring items for each construct was evaluated using composite reliability and Cronbach alpha indicators. A rule of thumb is that a value of 0.6 or higher reflects adequate levels of the reliability of construct measures (George and Mallery 2016). Based on this criterion, Table 2 shows that all five constructs measured in the current study were adequately reliable.

The convergent validity of a measuring scale can be assessed using a combination of item factor loadings, average variance extracted and composite reliability indicators. A rule of thumb for adequate convergent validity is a minimum AVE of 0.5 (Hair et al. 2009) and a composite reliability value larger than 0.6. In the case of AVE, Anderson and Gerbing (1988) suggest that a minimum threshold of 0.4 can be conditionally accepted.

The results of these tests in the current study are presented in Table 2. As can be seen from the table, most of the AVE figures are below the minimum threshold of 0.5, which was suggested by Hair et al. (2009). However, Fornell and Larcker (1981) suggested that convergent validity is adequate if AVE is less than 0.5, but the composite reliability is greater than 0.6 and factor loadings for individual measuring items are greater than 0.5. Hence, the constructs used for the current study had satisfactory convergent validity. One construct, environmental attitude, had an AVE value below 0.4. However, it was retained in the current study because of its satisfactory reliability and sufficiently high factor loadings, which suggest convergent validity.

Table 2: Average variance extracted, composite reliability and the Cronbach alpha values

Research construct	Factor loading	AVE	Composite reliability	Cronbach α
Environmental attitude				
ea1	0.514			
ea2	0.474			
ea3	0.598			
ea4	0.586			
ea5	0.596	0.309	0.689	0.68
Green product brands knowledge				
gbk1	0.678			
gbk2	0.794			
gbk3	0.529			
gbk4	0.66	0.451	0.763	0.82
Attitude towards purchasing green products				
att1	0.731			
att2	0.687			
att3	0.626			
att4	0.512	0.415	0.736	0.73
Green products purchases intention				
gpi1	0.702			
gpi2	0.706			
gpi3	0.578			
gpi4	0.67	0.444	0.760	0.76
Green products purchasing behaviour				
Gpb1	0.601			
Gpb2	0.614			
Gpb3	0.685			
Gpb4	0.69			
Gpb5	0.708	0.436	0.794	0.79

Source: Authors' own work

Discriminant Validity

Discriminant validity, which measures the degree to which a construct differs from others, was evaluated using the Fornell-Lacker criterion. This method suggests that discriminant validity exists when the square root of the AVE of each construct is greater than the correlation of the particular construct with any of the other constructs. Tables 3a and 3b present correlation coefficients of the constructs as well as the square roots of the AVE for each construct, respectively. As can be seen from the two tables, the

square roots of the AVE for each construct were larger than correlations of the various pairs of constructs. Hence, the constructs used in this study satisfied the conditions for discriminant validity.

Table 3a: Spearman’s correlation matrix for the study constructs

Variable	1	2	3	4	5
1. Environmental attitude	-				
2. Attitude towards green purchasing	0.49	-			
3. Knowledge of green products	0.34	0.37	-		
4. Green purchasing intention	0.40	0.41	0.47	-	
5. Green purchasing behaviour	0.39	0.41	0.48	0.48	-

Note: The critical values are 0.12, 0.15, and 0.19 for significance levels 0.05, 0.01, and 0.001, respectively.

Table 3b: Square roots of AVE for the study constructs

Construct	AVE	Square root of AVE
Environmental attitude	0.309	0.556
Attitude towards green purchasing	0.451	0.672
Knowledge of green products	0.415	0.644
Green purchasing intention	0.444	0.666
Green purchasing behaviour	0.437	0.661

Source: Authors’ own work

Structural Model

The study applied the maximum likelihood estimation to evaluate the proposed model. The following goodness-of-fit statistics were derived: TLI, 0.906; CFI=0.922; RMSEA=0.056. The outcomes of the structural analysis demonstrated that the proposed model has a good fit as values fall within the standard limits. Consequently, from the above analytical results, it can be inferred that the proposed hypothetical model indicates a decent overall data fit for measuring college students’ green purchasing intention and behaviour.

Hypothesis Testing Results

The abridged results for the hypotheses testing, demonstrating the significances of all the hypothesised relationships, are presented in Table 4.

Table 4: Relationship test analysis results

Hypothesis	Path			Path coefficient	<i>p</i> -value	Remark
H1	ATT	<---	EA	0.785	***	supported
H2	ATT	<---	GPK	0.078	0.36	not supported
H3	GPI	<---	ATT	0.413	***	supported
H4	GPI	<---	GPK	0.419	***	supported
H5	GPB	<---	GPI	0.531	***	supported
H6	GPB	<---	GPK	0.264	0.005	supported

Source: Authors' own work

ATT= Attitude towards purchasing green products, EA=environmental attitude, GPK=green product knowledge, GPI=green purchasing intention, GPB=green purchasing behaviour

Green product knowledge was found to have a significant relationship with green purchasing intention (estimate: 0.419, *p*-value <0.00) and green purchasing behaviour (estimate: 0.264, *p*-value <0.005). Hence, H4 and H6 were supported. However, a non-significant relationship between green product knowledge and attitude towards purchasing green products (estimate: 0.078, *p*-value =0.36) was unravelled. This means that H2 was not supported. In addition, the path from environmental attitude to attitude towards purchasing green products was found to be significant (estimate: 0.785, *p*-value <0.00), supporting H1. Furthermore, attitude towards purchasing green products significantly predicted green purchases intention (estimate: 0.413, *p*-value <0.00), and green purchases intention had a significant relationship with green purchasing behaviour (estimate: 0.531, *p*-value <0.00). Therefore, H3 and H5 were confirmed.

Discussion

The increasing importance of green consumerism and green marketing impresses upon marketers to re-think their value propositions and consider the needs of their environmentally-concerned consumers, particularly the young and educated who are regarded as opinion leaders in many communities. Against this background, providing all the best quality products or services without paying attention to their environmental effects, is no longer good enough. Instead, satisfying customers' desire for ecologically-friendly products has become increasingly important in the contemporary marketing environment. However, this goal is only achievable when marketers fully comprehend the green habits of their customers. Hence, this study tested a number of relationships in connection with green purchasing intention and behaviour in the context of a sample of college students in Zimbabwe. The research contributes to marketing literature by demonstrating the importance of green product knowledge and attitudinal factors in

shaping the green consumption intention and actual purchasing behaviour of young and educated adults in a low-income economic setting.

The first hypothesis tested whether the respondents' environmental attitude was positively associated with their attitude towards purchasing green products. Consistent with previous studies, the results indicate that environmental attitude significantly predicted attitude towards purchasing green products (Anvar and Venter 2014; Joshi and Rahman 2015; Mobrez and Khoshtinat 2016). In other words, pro-environment attitudes positively predisposed consumers towards deliberately planning to purchase environmentally friendly products. This finding implies that in buying situations where consumers have room to exercise product choice, affective factors can hinder or expedite the conversion of plans into actual behaviours.

Contrary to expectations, this study did not find a significant association between green products knowledge and attitude towards purchasing green products. This finding is in sharp contrast to numerous others which have previously studied the same relationship (Akbar et al. 2014; Chen and Deng 2016; Gleim et al. 2013; Huang and Yang 2013; Joshi and Rahman 2016; Liu et al. 2017). It is difficult to explain this result, but it suggests that the individual's knowledge about green brands has a lesser effect on attitude formation compared to its influence on actual buying behaviour. The practical implication is that in as much as informational campaigns, which encourage the consumption of green products for purposes of improving environmental sustainability may help to create pro-environment attitudes, the messages from the same campaigns do not have a similar degree of impact on the consumers' emotional predisposition towards making actual purchases.

The results also confirmed that consumers' attitude towards purchasing green products influenced their green products' purchasing intention. These results match those observed in earlier studies (Anvar and Venter 2014; Cheng and Tung 2014; Wang and Hazen 2016; Zhao et al. 2018). Moreover, our study empirically validated the said relationship in a low-income sub-Saharan African country. The previous empirical research was primarily conducted in other international contexts.

As expected, green product knowledge was a highly significant predictor of green products purchasing intention. The results are in agreement with previous green product knowledge and purchasing intention research (Agyeman 2014; Barker et al. 2012; Kanonhuwa and Chimucheka 2014; Moser 2015). Similarly, it emerged from the study that green product knowledge significantly predicted green products purchasing behaviour. The results concur with those of Chen and Deng (2016), Wang and Hazen (2016) and Zhao et al. (2018), who also studied the same relationship, albeit in different settings.

Finally, our study empirically validated the relationship between green products purchasing intention to green product purchasing behaviour. We observed that green

products purchasing intention significantly predicted green products purchasing behaviour. This is in line with previous studies postulating that high green products purchasing intention was associated with high green purchasing behaviour, and vice versa (Bhatt and Bhatt 2015; Chen 2013; Hassan et al. 2015; Tan 2013). It disputes, however, the findings of those studies which cite a disconnect between what consumers suggest they want to do, and what they actually do. Perhaps this reflects the influence of context with consumers in low-income economies acting according to their word. However, with a small sample size from a single institution, caution must be applied in interpreting this result, as the findings might not be transferable to the national context. Moreover, the study used one single questionnaire to measure all constructs included. As a result, the strength of the associations between these variables may be to some extent exaggerated. Our results reveal that 51.3 per cent of the variation in green products purchasing behaviour was explained by green products purchasing intention. Consequently, researchers should be wary of the fact that, while the intention is often regarded as the most important predictor of actual behaviour, it partially explains the variance in green purchasing behaviour. For that reason, it seems that a broad spectrum of variables influences the purchasing of green products and services.

Implications for Managers

The study findings are particularly important for managers and marketers of environmentally-friendly products. These findings reveal that college students and young adults have positive environmental attitudes, and constitute an important market segment of consumers of environmentally-friendly products. Consequently, managers and marketers of such products should focus more of their attention at developing and implementing solid marketing relationships with this target market because of its importance as a consumer group, as well as its status as opinion leaders and trendsetters in communities. In addition, they should market green products in such a way that they are conveniently available at affordable prices to reduce the number of obstacles which may discourage their consumption.

To encourage environmentally-friendly purchasing behaviour among consumers, marketers should design their promotional messages to college-level consumers in such a way that they effectively communicate their green value propositions. The current study proved that the extent of one's green product knowledge directly influenced green purchasing intention and behaviour. Thus, it can be argued that comprehensive marketing messages will provide the necessary information to enhance product awareness and knowledge, which, in turn, is expected to positively impact on the intention to purchase and the actual purchasing of eco-friendly products by students.

In line with the TRA, the attitudinal variables were observed to be significant positive predictors of green products purchasing intention. In the face of this, the marketers should skilfully tailor their communications, stressing the environmental welfare

compatibility of the products. The resulting attitudes may positively sway the individual intention towards buying green products.

Taken together, the findings of this paper suggest that, where environmental attitudes are positive and knowledge about green products is high, green purchasing intention and green purchasing behaviour also tend to be high. Therefore, marketers of green products need to understand the behavioural architecture of green consumers in order for them to respond effectively to green consumerism, which provides clear evidence that an understanding of green consumer profiles and behaviour can enable organisations to respond better to new management challenges.

Limitations and Directions for Future Research

Firstly, the results of this study are limited by design issues. The mere fact that the study was cross-sectional and based on respondents' self-reports, raises concerns about common method variance (CMV). Where data about both the dependent and independent variables are sourced from the same respondent, "CMV creates a false internal consistency, that is, an apparent correlation among variables generated by their common source" (Chang, Van Witteloostuijn and Eden 2010, 178). For a more credible outcome, future studies on a similar topic should implement *ex ante* and *ex post* measures to reduce the effects of CMV.

The current study has only examined the influence of product knowledge and other attitudinal antecedents on green purchasing intention and purchasing behaviour. Hence, it omits some important variables, such as the influence of psychological factors, for example, personality and value-orientation, as well as other situational factors. Future work should examine other potential factors that might influence green purchasing.

The study is also limited by its sample. The sample of respondents for the current study was drawn from one higher education institute in one region of Zimbabwe. Therefore, its views were not nationally representative. Future studies pursuing the same topic should incorporate respondents from different tertiary education institutions in the country. Another limitation is that the study used a cross-sectional survey approach to test causal relationships. Yet, authentic causality tests measure constructs at different intervals. In addition, the current study did not test for reverse causal effects. As a result, future studies should apply more robust research designs if more credible results are to be derived.

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