


# Gender-based dichotomies in various psychographic attributes for environmentally friendly products

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**Orientation:** Environmentally friendly consumption behaviour is one of the topical issues in contemporary marketing discourse. However, this subject has received considerable research attention mostly in middle- and high-income markets at the expense of developing world contexts.

**Research purpose:** The purpose of this study was to explore if there is a dichotomy between gender groups on the following consumer attributes: green attitude, green personality, green values and green purchasing intention. Producers and retailers of environmentally friendly products need to understand the profile of their customers if they are to effectively segment and target them.

**Motivation for the study:** The study is motivated by a need to understand any potential differences in customer attributes in green markets. An appreciation of such differences will supply marketers of environmentally products with critical information which can help them to design and position their value propositions.

**Research design, approach and method:** An exploratory and cross-sectional survey design was used. Data were collected from a total of 284 respondents using a self-administered, structured questionnaire. The student's *t*-test and multiple regression analyses were used for data analysis.

**Main findings:** The study unveiled significant gender-based disparities in social altruistic values, but none in green personality, green attitude and green purchasing intention. Moreover, it was discovered that green attitude, green values and green personality had different levels of influence on the green purchasing intention of different gender groups, with a stronger impact observed among the sample of male respondents. The implication is that marketers of green products should consider gender-informed disparities in various psychographic attributes of consumers of environmentally friendly products.

**Practical/managerial implications:** The findings of this study can assist producers and marketers of environmentally friendly products to develop value propositions that are appropriate for young consumers who belong to different gender groups.

**Contribution/value-add:** Very little research in the Zimbabwean context exists with specific reference to how gender affects the green attributes of young, college-level consumers. This article adds value by unravelling some of the factors that influence the green purchasing intention of college students in Zimbabwe.

**Keywords:** green attitude; green purchasing intention; green personality; green values; students.

## Introduction

Green consumerism, a concept linked to environmentally friendly consumption behaviour, is attracting considerable research attention mostly in middle- and high-income markets. Equally significant, this notion has influenced numerous firms from across the world to make substantial investments in green production and marketing in an attempt to meet the needs of this category of customers (Hardner & Rice 2002; Pedersen & Neergaard 2005; Zaharia & Zaharia 2015; Zhu & Sarkis 2016). The reasons for this fascination are varied, ranging from, *inter alia*, political (Wirt 2017), psychological (Johnstone & Tan 2015; Lin & Hsu 2015), moralistic (Caruana, Carrington & Chatzidakis 2016; De Groot, Schubert & Thøgersen 2016; Sachdeva, Jordan & Mazar 2015) to economic (Vergragt, Akenji & Dewick 2015).

Although environmentally friendly consumption practices in developed countries have been explored extensively, such activities have not received a fair share of attention in low-income

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countries (Aykol & Leonidou 2015; Paul, Modi & Patel 2016; Yadav & Pathak 2016a). Yet the issue of environmentally friendly consumption behaviour as manifested in, among other things, effective waste disposal, using clean energy sources, reducing carbon emissions, using biodegradable packaging and recycling matters is a universal concern regardless of differences in levels of economic development (Mont & Plepys 2008). Essentially, existing literature recommends resolute research on sustainable consumption behaviour from less explored regions (Kumar, Manrai & Manrai 2017; Maichum, Parichatnon & Peng 2016). The examination of the green consumption behaviour of consumers in low-income markets is crucial to an in-depth understanding of the assorted desires of consumers in different market segments. From a marketer's perspective, the knowledge of such information is integral to the process of designing and positioning their value propositions, as well as facilitating the effective segmentation and targeting of green consumers. Cruz and Katz-Gerro (2016) and Wymer and Polonsky (2015) stated that sustainable consumption in any setting is too important to be marginalised, and research conversations about green consumption are fundamental to address some environmental pressures that are triggered by wanton consumer deeds.

Keeping in view the above discussion, a closer analysis of the extant literature on green consumerism in developing countries reveals a discernible research focus on environmentally concerned customers as a cluster and understates nuanced dichotomies in environmental consumption inclinations. Perhaps this tendency to bunch is partially explained by the reality that green customers' sub-categories have not yet evolved into distinct and stable sub-markets (Do Paco & Raposo 2009), and thus researchers are naturally inclined to group them. In addition, some scholars discourage any attempt to segment markets for environmentally friendly products on the sole basis that green markets are unique, and therefore, it is inappropriate to apply orthodox marketing assumptions to them (Straughan & Roberts 1999). Yet, the increasing number of firms entering the market for green products, as well as the concomitant proliferation of green markets, signals a need for effective targeting of unique customer categories (Delafrooz & Moghaddam 2017; Yıldırım & Candan 2015). Arguably, this would be an impossible task without adequate information and a proper understanding of a specific market's attributes.

An interesting area that has not been fully explored in the aforementioned regional context relates to the gender variations in green behaviour and attributes of young consumers (Lee 2009; Pudaruth, Juwaheer & Seewoo 2015). Note that in the current study, gender is defined on the basis of male and female biological characteristics. Men and women tend to exhibit different interests, goals, lifestyles, behaviours and predispositions because of biological polarities and disparities in social circumstances and roles (Costa Pinto et al. 2014; Martens & Casey 2016). Some previous studies have shown that women are favourably inclined towards ecologically friendly products because of

an entrenched concern for environmental preservation, as compared to their male counterparts (Gifford & Nilsson 2014; Goebel et al. 2015). In addition, others portray women as more philanthropic (Betzig 2018) and acting in a socially responsible manner (Rand et al. 2016). In contrast, men are observed as being egocentric, self-indulgent and extravagant (Meyers-Levey & Loken 2015; Nguyen, Lobo & Greenland 2017), demonstrating apathy about the consequences of their consumption habits. Against a background of limited research on the gender disparities in green (environmentally related) consumption practices of young people in low-income economies, this study explored the link between gender and the following psychographic characteristics of students in Zimbabwe: green attitude, personality, values and purchasing intention. More specifically, the study sought to:

- ascertain whether male and female respondents significantly differed in their green attitude, personality, values and purchasing intention
- determine the predictive effect of age, marital status, green attitude, green personality and green values on green purchasing intention.

Students were targeted for this study because of their perceived awareness of environmental issues and knowledge about environmentally friendly products (Bong Ko & Jin 2017). In addition, they are considered as opinion leaders on many issues in society (Daneri, Trencher & Petersen 2015) and, therefore, their views on environmental concerns are critical in understanding the consumption of green products in the Zimbabwean context. More importantly, college students are on the verge of gainful employment and, therefore, are potential consumers of green products in the future.

The remainder of this article is organised as follows: firstly, the extant literature on green attitude, personality, values and intention is appraised, followed by a description of the research design and methodology applied in the study; the study findings are then presented and discussed; finally, the implications, limitations and areas of further research are presented.

## Theoretical underpinnings

This section reviews the literature on the key variables in the study. These are dealt with in the ensuing subsections. Furthermore, the hypotheses to be tested in the current study are presented.

### Green attitude

Green attitude refers to consumers' disposition towards environmentally friendly products (Kim & Rha 2014). According to consumer behaviour theory, attitudes are learnt, consistent, product or object-directed, and can be favourable or unfavourable (Schiffman & Kanuk 2007). More importantly, attitude is not equivalent to but can be deduced from behaviour. Recent studies have suggested that consumer attitude is a key predictor of green purchasing

intention (Hsu, Chang & Yansritakul 2017; Joshi & Rahman 2015; Moser 2015; Paul et al. 2016; Yadav & Pathak 2016b). A noteworthy trend in contemporary research is the quest to understand gender dichotomies in attitudes towards green products. This interest is motivated by the desire to gain deep insight into the cognitive and affective character of different categories of green consumers. Conceivably, the outcomes of such studies are integral for effective segmentation of markets for environmentally friendly products.

A survey of the results from the studies that explored gender-based differences in green attitudes reveals mixed results. For instance, Mostafa's (2006) study carried out in Egypt revealed that there were significant differences between men and women in terms of green purchase attitudes. The results suggested that male respondents had a more positive attitude compared to female respondents. In addition, Lee's (2009) study on the green attitudes of adolescents in Hong Kong revealed that female respondents were more positive compared to their male counterparts. Lastly, Gunnarsson et al.'s (2017) survey of people living near six distinct green spaces in Gothenburg (Sweden) found that female respondents showed a greater appreciation of the aesthetic value of green spaces when compared to their male counterparts. Against a background of such inconclusive findings, the following hypotheses are posited:

**H1a:** Men and women significantly differ in their attitude towards green products.

**H1b:** Green attitude predicts the green purchasing intention of different gender categories.

## Green personality

Personality is one of the key and stable psychographic attributes that influence human behaviour. It is collectively manifested through one's thinking patterns, actions, feelings and motivation, the outcome of which is a unique human being (Rothe 2017). An examination of social psychology literature reveals differences of opinion regarding the factors which influence personality, with three major perspectives emerging. The first perspective regards personality as an upshot of biological characteristics, like genes (Eysenck 2017; Larsen et al. 2017). Concomitant to this approach are the trait theories of personality. The second perspective presents personality as nurtured. Thus, it is shaped through learning or other life experiences. The third standpoint treats personality as a function of both nature and nurture. An example of a prominent theory under this school of thought is Sigmund Freud's psychodynamic theory.

Recent developments in environmentalism and green consumerism have led to a renewed interest in the influence of personality traits on green purchasing propensities (Pavalache-Ilie & Cazan 2017). An examination of previous research shows that John and Strivastava's (1999) Big Five Personality Traits model is one of the key theories which is often connected to environmentalism and green purchasing behaviour (Busic-Sontic, Czap & Fuerst 2017; Kaiser, Wölfling & Fuhrer 1999;

Stern 2000). The traits proposed by the theory include openness, conscientiousness, extraversion, agreeableness and neuroticism. Of the five, openness has been proved to have the most significant effect on environment-related behaviour (Brick & Lewis 2014; Gordon-Wilson & Modi 2015; Hilbig et al. 2012; Markowitz et al. 2012). However, studies which have related the other four factors to the natural environment have yielded inconsistent results (Hirsh 2010; Milfont & Sibley 2012). For instance, findings from Wei, Chen and Long's (2016) study of the link between ecological personality and low-cost carbon behavioural intention of urban residents in China revealed that there was no consistent relationship between the two variables. In view of the preceding discussion, it is posited that:

**H2a:** Men and women significantly differ in their green personalities.

**H2b:** Personality predicts the green purchasing intention of different gender categories.

## Green values

Values relate to the moral codes which act as principles that guide an individual's behaviour (Padilla-Walker & Jensen 2016). Such values are an outcome of one's life and learning experiences. According to Dietz, Fitzgerald and Shwom (2005), values are useful in situations where one's preferences contradict, and thus they reflect what one regards as paramount in life. There are suggestions that values affect one's attitude and behaviour, and are, thus, often called upon in environmental discourse (Joshi & Rahman 2015). In such a context, individuals who attach importance to and act in a manner consistent with preserving the environment are said to have green or environmental values.

A study of literature on green consumerism reveals various attempts at classifying values in line with environmental issues. However, Stern and Dietz's (1994) value-based theory of environmental concern is seminal. This theory proposes the following categories of environment-related values: egoistic values, social altruistic values and biospheric values. In other words, these values demonstrate different concerns for (1) the self, (2) other human beings and (3) every other component of the natural environment. Considerations about the ramifications that environmental degradation may have on oneself underlie egoistic values (Schuitema & De Groot 2015). Hence, individuals guided by egoistic values seek to preserve the natural environment because they do not want to bear the after-effects of environmental deterioration.

Social altruistic environmental values reveal pro-social beliefs (Yadav 2016). Thus, individuals who are guided by such values show environmental concern because they are convinced that it serves best the common interests of humankind. The underlying idea is that the environment has to be protected because more people will benefit from such actions in the long run.

Lastly, biospheric values reflect an individual's acknowledgement of the innate utility of the natural environment (Van der Werff, Steg & Keizer 2014). Thus,

people who are guided by such a value system naturally and spontaneously engage in pro-environment behaviour. While the idea that individual values are interconnected to conservationism is seemingly acknowledged, little can be said of the gender differences in green values, and the implication of such contrasts on green purchasing intention. Therefore, the following hypotheses are proposed:

**H3a:** There are significant differences in egoistic values between male and female consumers of green products.

**H3b:** There are significant differences in social altruistic values between male and female consumers of green products.

**H3c:** There are significant differences in biospheric values between male and female consumers of green products.

**H4a:** Egoistic values predict the green purchasing intention of different gender categories.

**H4b:** Social altruistic values predict the green purchasing intention of different gender categories.

**H4c:** Biospheric values predict the green purchasing intention of different gender categories.

## Green purchasing intention

The notion of green purchasing intention relates to a consumer's willingness to purchase environmentally friendly products or services in the near future (Mostafa 2006). Social psychology theories suggest that intention is the only direct determinant of human behaviour and explains the largest proportion of human action (Ajzen 1991; Bagozzi & Warshaw 1990). Thus, intention mediates the relationship between any other factors and behaviour. Given this background, the higher the level of intention to engage in a particular behaviour, the higher the likelihood of the action being carried out, and vice versa. Several studies thus far have linked green purchasing intention with actual green purchasing behaviour, corroborating the views expressed in social psychology research (Kumar et al. 2017; Lin & Hsu 2015; Yadav & Pathak 2016b).

In view of the above, the green purchasing intention concept presents a unique context in which to study many interesting and challenging problems in consumer behaviour. For instance, researchers still pay substantial attention in trying to understand the factors that exert the most impact on consumers' intention to buy environmental products. Notably, the influence of gender on the aforementioned concept has grown in importance in recent times. However, the findings from such studies have yielded mixed results. Some studies suggest that there are statistically significant differences in green purchasing intention across gender categories (Anvar & Venter 2014; Chekima et al. 2016; Yadav & Pathak 2016b), while others suggest the opposite (Laheri 2017; Oztek & Cengel 2013). Based on the preceding discussion, the following hypothesis is formed:

**H4:** The mean scores for green purchasing intention are significantly different across gender groups.

## Research methodology

This study applied a quantitative and cross-sectional survey design to collect precise self-reported data on the research

variables from the respondents. The target population was made up of undergraduate students at a Zimbabwean polytechnic, and thus, the individual students constituted the sampling unit. A sample of 300 respondents was drawn randomly from class lists, which formed the sampling frame. All of the respondents had knowledge of or previous exposure to some form of environmentally friendly products or services.

The profile of the sampled respondents was such that the most frequently observed category of gender was female ( $n = 173$ , 60.92%), while males made up the remainder. The most frequently observed category of age was '21 to 30 years' ( $n = 170$ , 59.86%), followed by 'below 21 years' ( $n = 92$ , 32.39%), and lastly, '31 to 40 years' ( $n = 22$ , 7.75%). With regard to marital status, the most frequently observed category was 'not married' ( $n = 245$ , 86.27%), while 'married' group constituted the remainder ( $n = 39$ , 13.73%).

Permission to carry out the study was granted by the heads of departments at the concerned institution. Voluntary participation of the students was elicited, and there was no reward offered by the researchers. Furthermore, the respondents' rights to participate or unconditionally withdraw from the study were made explicit. Moreover, the respondents were assured of their right to privacy and the confidentiality of the views which they expressed in the course of the study.

Data were collected over a 3-week period, between June and July 2018, using a self-administered questionnaire which respondents had to complete on their own and return upon completion. These were distributed to the respondents by a research assistant, a lecturer at the aforementioned institution, during his lecture slots. The respondents were to complete these in their spare time and hand them back within a specified time period. Of the 300 questionnaires which were handed out and returned, 284 were fully completed and usable. Thus, a response rate of 94.6% was attained.

## Measuring items

The questionnaire used in the current study comprised closed-ended items intended to gather data relating to demographic characteristics, green attitude, personality, values and purchasing intention. These are presented in the following subsection

### Demographic characteristics

Information on the following three demographic attributes of the respondents were elicited: age, gender and marital status. The measuring items used to gather the information were generated by the author.

### Green attitude

Green attitudes were assessed by means of a four-item Likert scale, with scale points 1 (strongly disagree) to 5 (Strongly agree). The items were largely borrowed from Taylor and

Todd's (1995) scale. A high score meant positive green attitudes, and vice versa.

### Green personality

Green personality was measured using a three-item Likert scale, with scale points 1 (strongly disagree) to 5 (strongly agree). The items were formulated by the author using the existing literature.

### Green values

Green values were assessed using a 10-item Likert scale, with scale points 1 (strongly disagree) to 5 (strongly agree). The items were formulated in line with the following value orientations identified by Stern and Diertz (1994): egoistic, social altruistic and biospheric values.

### Green purchasing intention

A four-item Likert scale was used to measure green purchasing intention. Each item sought to ascertain the probability of an individual buying a green product in the foreseeable future. Two of the items were adapted from Liu, Segev and Villar (2017) and the remainder were formulated by the author from extant literature. A high composite score for the variable means stronger green purchasing intentions, and vice versa.

### Reliability

Cronbach's alpha coefficients were calculated for the following variables: green attitude, personality, values and purchasing intention. The Cronbach's alpha coefficient was evaluated using the guidelines suggested by George and Mallery (2016), where  $> 0.9$  is excellent,  $> 0.8$  is good,  $> 0.7$  is acceptable,  $> 0.6$  is questionable,  $> 0.5$  is poor and  $\leq 0.5$  is unacceptable. Table 1 presents the results of the reliability analysis.

Except for biospheric orientation which was questionable, all the variables had reliability coefficients ranging from acceptable to good.

## Results

### Gender differences in green variables

An independent samples *t*-test was conducted to examine whether the means of the following green variables were significantly different between the female and male categories of gender: green attitude, personality, values and purchasing intention. The assumptions of normality and homogeneity of variance were assessed prior to carrying out the *t*-test.

**TABLE 1:** Reliability test results.

Scale	Number of items	$\alpha$
Attitude towards green purchasing	4	0.73
Green product purchasing intention	4	0.76
Green personality	3	0.83
Egoistic value orientation	4	0.72
Social altruistic value orientation	3	0.82
Biospheric value orientation	3	0.65

$\alpha$ , Cronbach's alpha coefficient.

### Normality test

The Kolmogorov-Smirnov tests were conducted in order to determine whether the distributions of said variables were significantly different from a normal distribution. The results of the test are presented in Table 2. As can be seen from the table, all the variables had distributions that significantly differed from normality. Therefore, it is unlikely to have been produced by a normal distribution; thus, normality cannot be assumed. However, the mean of any random variable will be approximately normally distributed as sample size increases according to the central limit theorem (CLT). Therefore, with a sufficiently large sample size ( $n > 50$ ), deviations from normality will have little effect on the results (Stevens 2009).

### Homogeneity of variance test

Levene's test for equality of variance was used to assess whether the homogeneity of variance assumption was met (Carroll & Schneider 1985). The homogeneity of variance assumption requires the variance of the dependent variable to be approximately equal in each group. The results of this test are presented in Table 3.

As can be seen in Table 3, the assumption of homogeneity of variance was not met for some variables (where *p*-values are significant, therefore less than 0.05). In such cases, the results may not be reliable or generalisable. Against this background, Welch's *t*-test was used instead of the student's *t*-test, which is more reliable when two samples have unequal variances and unequal sample sizes (Ruxton 2006).

### Independent *t*-test results

Table 4 presents the results of the independent samples *t*-test. As can be seen from the table, the differences in the mean scores of the categories of gender across the six variables were not significant (*p*-values are greater than 0.05) for most of the variables except for social altruistic value orientation. In the case of social altruistic value orientation, the result  $t(282) = -1.83$ ,  $p = 0.034$ , indicates that the alternative hypothesis cannot be rejected. This finding

**TABLE 2:** Kolmogorov-Smirnov test results.

Variable	<i>D</i>	<i>p</i>
Attitude towards green purchasing	0.16	< 0.001
Green product purchasing intention	0.11	0.002
Green personality	0.18	< 0.001
Egoistic value orientation	0.14	< 0.001
Social altruistic value orientation	0.12	< 0.001
Biospheric value orientation	0.11	0.001

*D*, refers to the test statistic.

**TABLE 3:** Homogeneity of variance.

Variable	Result
Attitude towards green products	$F(1, 282) = 9.97$ , $p = 0.002$
Green purchasing intention	$F(1, 282) = 0.82$ , $p = 0.367$
Green personality	$F(1, 282) = 4.02$ , $p = 0.046$
Egoistic value orientation	$F(1, 282) = 1.18$ , $p = 0.278$
Social altruistic value orientation	$F(1, 282) = 0.24$ , $p = 0.622$
Biospheric value orientations	$F(1, 282) = 2.00$ , $p = 0.159$

suggests that the mean of social altruistic value orientation was significantly different between the female and male categories of gender.

### Significant predictors of green purchasing intention among male student consumers

A multiple regression analysis was carried out in order to identify significant predictors of green purchasing intention among male students. The model containing age, marital status, attitude towards green purchasing, green personality, egoistic value orientation, social altruistic value orientation and biospheric value orientation as predictors was significant ( $F[8,102] = 11.40, p < 0.001, R^2 = 0.47$ ). This indicates that approximately 47% of the variance in green purchasing intention was explained by the stated independent variables. Among the predictor variables, age, marital status and biospheric and egoistic value orientations had a statistically non-significant effect. On the other hand, green personality, attitude towards green products and social altruistic value orientation had a significant influence. The predictive effect of the preceding variables was in the following descending order: social altruistic value orientation,  $B = 0.39, t(102) = 4.46, p < 0.001$ ; green personality,  $B = 0.33, t(102) = 2.57, p = 0.012$ ; and attitude towards green products,  $B = 0.24, t(102) = 2.26, p = 0.026$ . Table 5 presents the results of the multiple regression analysis.

### Significant predictors of green purchasing intention among female student consumers

Another multiple regression analysis was performed in order to test whether a selected set of predictors had a significant influence on green purchasing intention among female college students. The regression model incorporated

**TABLE 4:** Independent samples *t*-test results.

Variable	Female		Male		<i>t</i>	<i>p</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Green personality	12.61	1.98	12.40	2.38	0.80	0.427	0.10
Egoistic value orientation	17.21	2.31	16.93	2.94	0.89	0.372	0.11
Social altruistic value orientation	9.71	3.16	10.41	3.21	-1.83	0.034	0.22
Biospheric value orientation	10.68	2.95	10.96	2.69	-0.81	0.418	0.10
Attitude towards green products	16.55	2.08	16.23	2.92	1.02	0.311	0.13
Green purchasing intention	14.36	3.18	14.03	3.28	0.86	0.390	0.10

Note: *d* represents Cohen's *d*.

*M*, mean; *SD*, standard deviation.

**TABLE 5:** Results of the multiple regression model (male respondents).

Variable	<i>B</i>	<i>SE</i>	95% CI	$\beta$	<i>t</i>	<i>p</i>
(Intercept)	1.10	1.84	(-2.55, 4.76)	0.00	0.60	0.550
Age (21–30 years)	0.69	0.54	(-0.38, 1.77)	0.10	1.28	0.202
Age (31–40 years)	-0.56	1.35	(-3.23, 2.11)	-0.03	-0.42	0.677
Marital status (married)	0.62	1.00	(-1.36, 2.60)	0.05	0.62	0.534
Attitude towards green products	0.24	0.10	(0.03, 0.44)	0.21	2.26	0.026
Green personality	0.33	0.13	(0.08, 0.59)	0.24	2.57	0.012
Egoistic value orientation	-0.05	0.09	(-0.22, 0.13)	-0.04	-0.50	0.615
Social altruistic value orientation	0.39	0.09	(0.21, 0.56)	0.38	4.46	<0.001
Biospheric value orientation	0.11	0.10	(-0.09, 0.32)	0.09	1.08	0.284

Note: Results:  $F(8,102) = 11.40, p < 0.001, R^2 = 0.47$ .

*B*, unstandardised beta; *SE*, standard error; CI, confidence interval;  $\beta$ , standardised beta; *t*, test statistic; *p*, probability value.

predictor variables similar to those employed in the model for male respondents, and its result was significant ( $F[8,164] = 7.51, p < 0.001, R^2 = 0.27$ ). This means that approximately 27% of the variance in green purchasing intention can be explained by the said predictor variables. Of the predictor variables, age, marital status, egoistic value orientation, social altruistic value orientation and biospheric value orientation had a statistically non-significant influence as reflected by the *p*-values, which are greater than 0.05. On the other hand, attitude towards green products and green personality had significant effects as shown by the following statistics: attitude towards green products ( $B = 0.48, t[164] = 4.25, p < 0.001$ ) and green personality ( $B = 0.45, t[164] = 3.72, p < 0.001$ ). Table 6 summarises the results of the regression model.

## Discussion

This study explored the gender differences in selected green consumption-related psychographic attributes of students. It also evaluated whether the aforementioned psychographic variables had a similar predictive effect on different gender groupings. To the researcher's knowledge, this is the first study of its kind in the Zimbabwean context.

The results indicate that there was no significant difference in the mean scores for attitude towards purchasing between the two groups of gender. This is contrary to findings from previous studies which underscored a gender-based chasm in the aforesaid variables (Gunnarsson et al. 2017; Lee 2009; Mostafa 2007). However, the findings echo those of Tsakiridou et al. (2007) who observed non-significant differences in the consumption of green products. This suggests an inconsistent relationship between the variables, and thus calls for further studies.

In general, the results of this study indicate no significant differences in green personalities across different categories of gender. The findings contradict those by Wei et al. (2016) who suggested that there was a marked difference between men's and women's attitudes towards buying green products. In addition, they challenged the notion of the assumed inherent difference between gender groups because of differences in biological make-up and contrasts in social experiences (Costa Pinto et al. 2014; Martens & Casey 2016). The reasons for the lack of a difference are not obvious.

**TABLE 6:** Results of the multiple regression model (female respondents).

Variable	<i>B</i>	<i>SE</i>	95% CI	$\beta$	<i>t</i>	<i>p</i>
(Intercept)	0.22	2.44	(-4.60, 5.04)	0.00	0.09	0.928
Age (21–30 years)	-0.05	0.48	(-0.99, 0.89)	-0.01	-0.11	0.914
Age (31–40 years)	0.80	0.87	(-0.93, 2.52)	0.08	0.91	0.364
Marital status (married)	-0.23	0.65	(-1.52, 1.05)	-0.03	-0.36	0.722
Attitude towards green purchasing	0.48	0.11	(0.26, 0.70)	0.31	4.25	<0.001
Green personality	0.45	0.12	(0.21, 0.68)	0.28	3.72	<0.001
Egoistic value orientation	-0.01	0.10	(-0.20, 0.18)	-0.01	-0.11	0.914
Social altruistic value orientation	0.12	0.08	(-0.03, 0.27)	0.12	1.61	0.109
Biospheric value orientation	-0.04	0.08	(-0.20, 0.13)	-0.04	-0.45	0.654

Note: Results:  $F(8,164) = 7.51, p < 0.001, R^2 = 0.27$ .

*B*, unstandardised beta; *SE*, standard error; CI, confidence interval;  $\beta$ , standardised beta; *t*, test statistic; *p*, probability value.

However, given that personalities can be nurtured by life experiences, and that the majority of respondents from either gender sides shared the same time experiences (e.g. age effects), it is possible that this could have blurred the green personality differences across gender.

Contrary to expectations, there are no significant differences in green purchasing intention. Previous empirical research on the topic had suggested substantial differences in the aforementioned variable (Anvar & Venter 2014; Chekima et al. 2016; Yadav & Pathak 2016b). This contradiction in findings can be explained by differences in the study setting, with some of the previous studies not necessarily having focused on college-level respondents.

With respect to green values, non-significant differences across gender groups were observed for egoistic and biospheric value orientations. This was quite unexpected as literature on gender and consumption insinuates that men are generally more conceited and spendthrift in their conduct than women (Meyers-Levey & Loken 2015; Nguyen et al. 2017). However, significant differences were noted for the social altruistic value orientation variable. Contrary to the common position in the literature that women are more benevolent and socially oriented than men (Betzig 2018; Rand et al. 2016), the current study proved otherwise, with male respondents scoring a higher mean value than female respondents. The explanation for this difference is not clear given that the current study is exploratory in nature.

It is interesting to note that the multiple regression analysis models, which sought to test the predictive effect of demographic variables, green attitude, green personality and green values on green purchasing intention, were significant for both groups of gender. However, the effect was stronger for the male than for the female group. A closer analysis of the model reveals variations in the predictive effect of the independent variables. For instance, the demographic variables (age group and marital status) had a non-significant effect for both models. This contradicts other studies which have cited the positive prognostic effect of demographic variables, such as age, gender, educational level and income group, on green purchasing intention (Chekima et al. 2016; Lasuin & Ching 2014; Oztek & Cengel 2013). A small number of studies, nonetheless, have also cited the inconsistent effect of demographic factors on individuals' green attributes (Ansar 2013; Lasuin & Ching 2014).

As expected, green personality and green attitude had the greatest influence on green purchasing intention. This finding supports previous research which links these two factors to green purchasing intention (Brick & Lewis 2014; Gordon-Wilson & Modi 2015; Hilbig et al. 2012; Hsu et al. 2017; Joshi & Rahman 2015; Moser 2015; Paul et al. 2016; Yadav & Pathak 2016b). It is somewhat surprising that a stronger predictive effect was observed for the male sample compared to the female group. This disputes previous studies which predominantly suggest that women are more oriented

towards environmental concerns in comparison to men (Meyers-Levey & Loken 2015; Nguyen et al. 2017). However, with a small sample size from a single institution, caution must be applied, as the findings might not be generalisable to students at other colleges in Zimbabwe.

Lastly, the results showed that different value orientations had different influences on the gender groups. Unexpectedly, all the proposed value orientations had a non-significant effect on the green purchasing intentions of female respondents. This finding, again, contradicts previous study findings, suggesting that women's value systems are sympathetic to environmental concerns because of their societal roles and expectations. In the case of the males' sample, the egoistic and biospheric value orientation variables had a non-significant effect on green purchasing intention. This outcome is not in harmony with previous research on gender and consumption behaviour, which insinuates that the consumption practices of males are self-centred (Nguyen et al. 2017). Perhaps, such patterns of behaviour are not applicable to all product contexts. Remarkably, social altruistic value orientation had a significant and positive predictive effect for the male sample and a non-significant one for female sample. Previous studies support a contrary position (Costa Pinto et al. 2014; Gifford & Nilsson 2014; Goebel et al. 2015; Martens & Casey 2016).

## Implications of the study

The results of the study demonstrate high levels of willingness to purchase green products among the respondents. If these outcomes are generalisable to other young consumers in Zimbabwe, it can then be inferred that the country is likely to encounter comparatively limited environmental challenges in the future, as young consumers will constitute the major spenders on consumer goods in the near future. Because of their positive inclination towards green products, the profiled consumers are more likely to be restrained in their purchase of environmentally unfriendly products. Hence, policymakers will have less pressure to commit more resources towards environmental management issues. The results also imply that lesser developed economies may have fewer environmental challenges than more developed ones. In line with Mostafa's (2007) observations, this dispels the myth that environmental concern is an indulgence which only the affluent can afford.

Contemporary marketing requires that practitioners should have a comprehensive understanding of the profile of their target market if they are to effectively fulfil the needs of the customer. This is equally applicable to the market for green products. The evidence of this study revealed significant gender-based disparities in green personalities and values, but none in green attitudes and green purchasing intention. Furthermore, it unravelled that green attitude, green values and green personality had different degrees of effect on the green purchasing intention of different gender groups, with the impact being much stronger on male respondents. An implication of this is the possibility that managers of firms

that produce and sell environmentally friendly products, which target young consumers of either gender groups, students in particular, should formulate promotional messages and materials that emphasise the affective benefits of the products as this resonates with their attitudinal beliefs. Both rational and emotional appeals can be used in this process. It is important to stress these perceived benefits as they eventually determine the intention to buy and the actual purchasing decisions of environmentally concerned consumers.

Lastly, the predominance of green attitude, green personality and social altruistic value orientation on the green purchasing intention of male respondents compared to female respondents suggests that young male students are a potentially rich market for environmentally friendly products. Therefore, retailers of green products should consider prioritising this market segment. Moreover, this finding challenges the widely held notion that women are more inclined towards environmental issues and products compared to men. However, this implication has to be taken with the caution that it represents the outcome of an exploratory study.

## Limitations

Notwithstanding the merits of this study, it had a number of significant shortcomings. Firstly, the fact that it was based on self-reports by respondents creates an inherent drawback in its research design. Respondents can deliberately or unintentionally volunteer incorrect information. Secondly, the study focused solely on a student sample, which may subject the findings to a cohort effect. This refers to a consequence induced by a group who have common age-related characteristics and/or experiences. Hence, the concerned respondents may end up expressing a common age-induced view. Thirdly, the findings of this study do not represent a national perspective of students in Zimbabwe given that the respondents were sampled from a single institution of higher education. This is understandable as this is an exploratory study. Future studies on a similar or related topic should incorporate respondents from a wider number of tertiary education institutions in order to derive representative views.

## Recommendations for future studies

Regardless of the important findings of this study, more research on this topic needs to be undertaken before the association between gender and the aforementioned green attributes is more clearly understood. In future investigations, it might be possible to use a comprehensive target population which may include respondents from different educational institutions. In addition, a comparative study of the same topic using student and non-student samples of young adults could yield instructive outcomes. Alternatively, an intergenerational study incorporating young versus elderly respondents could also extend the boundaries of knowledge regarding the green attributes of consumers in Zimbabwe.

## Conclusion

Recent developments in the field of sustainable development have led to a renewed interest in sustainable consumption behaviour of different customer categories. In this study, gender-based differences in various psychographic attributes for environmentally-friendly products in a low-income economy were explored. College students were the target population. The study was driven by a need to fathom possible variances in customer characteristics in markets for environmentally-friendly products. Statistically significant differences between male and female respondents were observed for the social altruistic values variable. Yet, no such variations were observed for the following variables: egoistic and biospheric value orientations, green personality, green attitude and green purchasing intention. It also emerged that the effect of green attitude, green values and green personality on green purchasing intention differed across gender groups, with a stronger impact of the said variables observed on the sample of male respondents. Despite its exploratory nature, this study offers some insight into some of the factors that influence the green purchasing intention of college students in Zimbabwe.

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### Competing interests

The author declares that he has no financial or personal relationships that may have inappropriately influenced him in writing this article.

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