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ENVIRONMENTAL PURCHASE BEHAVIOUR CONCERNS OF AFRICAN GENERATION Y STUDENTS IN SOUTH AFRICA

Abstract:

Preserving the natural environment has rapidly become a pressing matter amongst the youth in South Africa. This may result from the youth or Generation Y individuals being inundated with information pertaining to the deteriorating state of the natural environment. This tech-savvy cohort has grown up with environmental issues constantly being placed in the spotlight both towards them and on a worldwide scale. Consequently, heightened environmental awareness and environmental concern have kick-started green consumerism in South Africa and organisations have begun to notice. Corporate social responsibility (CSR) is a popular tool used in business practices to gain a competitive advantage targeted at environmentally conscious consumers. However, studies show that CSR does not always guarantee green purchase behaviour, especially when targeting the ambivalent Generation Y cohort. The focus of this study was to determine the effect environmental knowledge, attitude and subjective norm have towards African Generation Y students' green purchase behaviour in the South African context. The 332 data points were collected from full-time students currently enrolled in four South African higher education institutions in the Gauteng province. Statistical methods used to analyse the data included internal-consistency reliability and validity measures, descriptive statistics and structural equation modeling. The results indicate that African Generation Y students consider themselves to be knowledgeable over environmental issues, possess positive environmental attitudes and subjective norms. Additionally, these aspects positively predict African Generation Y students environmental purchase behaviour. The implications of this study will aid both practitioners and business organisations who are aiming to target the lucrative Generation Y cohort and gain a competitive advantage by implementing environmental practices.

Keywords:

environmental knowledge, attitudes, subjective norms, green purchase behaviour, Generation Y students, South Africa

JEL Classification: M31, Q59

1   Introduction

The world as we know it is facing several highly complicated environmental issues which has led to environmental degradation. It has been argued multiple times that the earth's environmental woes are as a result from mankind's endeavours of constant global urbanisation (Wang & Dong, 2019:165-166; Jeff, Marla, Jha, Levy & McEntee, 2015:676; Said, Ahmadun, Paim & Masud, 2003:306). Relentless industrialisation has created various environmental problems such as natural resource depletion, water contamination, global warming, carbon dioxide emissions and climate change to name but a few (Mayerl & Best, 2019:27; Taufique & Vaithianathan, 2018:46; Jeff *et al.*, 2015:676). As a result, consumers have become more aware and concerned over the environment for reasons such as running out of natural resources (food & water), preservation of the environment for future generations and self-preservation or health consciousness (Singh, Chiliya, Chikandiwa & Chodokufa., 2016:467; Lim, Yong, & Suryadi., 2014:298). Heightened environmental concerns have led consumers to rethink their everyday purchasing behaviours. Consumers are looking for more sustainable ways to consume, recycle and dispose of products they are using every day (Bhuian & Sharma, 2017:352; Trivedi, Patel, & Savalia., 2015:74; Albayrak, Aksoy & Caber, 2013:28). This is most evident amongst the youth of today, who are at the driving seat behind green purchasing behaviour (Verma & Chandra 2018:1153). The youth of today are more concerned over the state of the natural environment than their preceding generational cohorts, this is important to note as the Generation Y cohort occupies around a quarter of the world's population at 1.8 billion members (Taufique & Vaithianathan, 2018:47; Tilford, 2018; Verma & Chandra 2018:1153). As such, understanding the Generation Y cohort's environmental behaviour is imperative for both the environment and the environmentalism movement (Taufique & Vaithianathan, 2018:47; Kanchanapibul, Lacka, Wang & Chan*, 2014:528)

2   Literature review

2.1   Environmental concern

The earth's ever-increasing environmental problems has given rise to the premise of environmental concern amongst policymakers, academics, governments and society as a whole (Wang & Dong, 2019:166; Rahbar & Wahid, 2011:73; Sodhi, 2011:177). As a result, consumers purchase behaviour have changed to include environmentally products in their shopping habits to reduce their carbon footprint and contribute to environmental preservation (Chaudhary & Bisai, 2018:798). This new trend of environmental behaviour is especially present in the Millennial generation when compared to older generations. Authors Gray, Raimi, Wilson and Árvai. (2019:395) concur and elaborate further, stating that Generation Y individuals have not only become pro-environmental but they prefer policies geared towards environmental protection. Subsequently, governments and business leaders have been placed under pressure to make sustainability a primary concern (Ali, Khan & Ahmed., 2011:218).

The "green market" is a lucrative business. Jeff *et al.* (2015:676) explain that heightened environmental concern and awareness has made consumers willing to support start-up companies that develop green products and made consumers willing to pay a premium price for green products in efforts to lessen their environmental impact. This opinion is echoed by Taufique and Vaithianathan (2018:48), the authors state consumers that possess a greater concern for the environment are more likely to behave in a pro-environmental manner i.e. these consumers are

more likely to consume environmentally friendly products. Accordingly, sustainable business strategies should be promoted in order to stimulate consumer awareness, which increases concern and ultimately, encourages environmental purchase behaviour (Trivedi *et al.*, 2015:74). This may be seen as a great mechanism to grow and substantiate the environmental movement. Some studies believe that environmental concern and awareness can be spurred on by different psychological factors, amongst others, those being environmental knowledge (Sharma & Foropon, 2018:1018; Mostafa, 2007) and subjective norms (Yadav & Pathack, 2016).

2.2   Environmental knowledge and subjective norms

When a consumer transgresses through the decision-making process, the amount of knowledge he/she possesses over a particular item will influence the final purchase outcome. The same can be said when a consumer is considering to purchase an environmentally friendly product. An individual who resonates with environmental degradation will be more likely to consider environmentally friendly products (Zahari & Esa, 2016:447). As such, environmental knowledge refers to the total knowledge an individual possesses regarding current environmental issues in the world (Zsóka, Szerényi, Széchy & Kocsis, 2013:27). Prior research has proven environmental knowledge to be a positive correlating factor with environmental concern (Heo & Muralidharan, 2019:424; Yadav & Pathack, 2016:734; Almossawi, 2014:9; Zsoka *et al.*, 2013:127; Polonsky, Vocino, Grau, Garma & Ferdous, 2012:243) which, as mentioned above, may transgress into pro-environmental behaviour. Gray *et al.* (2019:395) concur and further elaborate stating that environmental concern can be linked to educated individuals. These individuals often have higher amounts of disposable income and thus, are more likely to engage in pro-environmental behaviour. In a study conducted by Sharma and Foropon (2018), the authors found environmental knowledge to have a direct positive influence towards environmental purchase intention of green products. To understand the green consumer environmental knowledge is regarded as one of the essential factors, however, it is not enough to fully predict environmental behaviour (Heo & Muralidharan, 2019:424). Another common factor used to explain purchase intentions is subjective norms.

Subjective norms, a construct which has manifested in numerous studies, is the way an individual perceives the social pressure from his/her significant others (peers, colleagues, associates, friends and family) to perform or not perform a specific behaviour (Chaudhary & Bisai, 2018:800; Yadav & Pathack 2017:115; Greaves, Zibarras & Stride., 2013:110). Huh and Chang (2017:128) add that the pressure to perform a behaviour experienced from significant others influences that individual's decision-making process. Shaping 'desirable' behaviour of a population has been achieved using the social norm of conformity in many social campaigns. In a similar vein, it can be said that this social norm will be just as effective when trying to endorse pro-environmental behaviour amongst consumers (Taufique & Vaithianathan, 2018:48). From an environmental standpoint, subjective norms would then be the decision of a consumer to act or not to act in a pro-environmental manner (Niaura, 2013:75). It may be inferred that environmental subjective norm is an influential factor in predicting both environmental intentions and behaviours. Ha and Janda (2012:463) agree, stating that environmental preservation is directly related to strong subjective norms. Furthermore, strong feelings of environmental norms will encourage positive pro-environmental behaviour. This notion resonates with the prior works of Taufique and Vaithianathan (2018) (environmental purchase behaviours), Verma and Chandra (2018) (green hotel visit intentions), Yadav and Pathack (2017) (environmental purchase behaviours) and

Yadav and Pathack (2016) (green products). These authors found subjective norms to be a direct positive significant predictive of both environmental purchase intention and behaviour in a variety of environmental facets. To conclude subjective norm is a salient predictor of environmental intention (Ha & Janda, 2012:463).

2.3 Purchase intention and behaviour

Marketing literature delineates that a consumers purchase intention is a fundamental driving force to both new product adoption and continued product retention (Bhuian & Sharma, 2017:354; Ali *et al.*, 2011:219). Therefore, consumers purchase intention can be explained as the level of intent a consumer is willing to act out a specific behaviour (Niaura, 2013:74). Owing to societal factors (culture, social and economic) being the basis of environmental behaviour, it is imperative to understand consumers' environmental behaviour intentions (Chaudhary & Bisai, 2018:798) Environmental intent can then be described as the willingness or sacrifice a consumer is prepared to make in favour of environmental preservation (Mayerl & Best, 2019:354). Bhuian and Sharma (2017:354) opine that organisations must implement or introduce more effective environmental marketing strategies (such as CSR strategies) in order to increase consumer's intent to purchase environmentally products. This may be done by increasing consumers level of concern, as environmental concern is a mediating factor between intention and purchase behaviour (Sharma & Foropon, 2018:1024). Chen and Chang (2012:4) agree that marketing efforts are the gateway to increasing environmental purchase intentions. This is imperative as higher levels of environmental concern lead to higher probability levels of green purchase intent (Sharma & Foropon, 2018:1024; Taufique & Vaithianathan, 2018:48). Consequently, it may be inferred that environmental intention serves as a function of pro-environmental behaviour (Verma & Chandra, 2018:115; Jeff *et al.*, 2015:678; Polonsky *et al.*, 2012:240). Also, environmental intention then acts as a presupposition to purchase environmentally friendly products (Verma & Chandra, 2018:115; Jeff *et al.*, 2015:678).

As environmental issues have been placed into the limelight over time, consumers have begun shifting their purchasing behaviours to give preference to environmentally friendly products and towards organisations that incorporate CSR into their business strategies. This is especially evident in developed nations (Yadav & Pathack, 2017:114). Similarly, pro-environmental studies are plentiful in developed markets, however, in emerging markets such as South Africa, pro-environmental studies are somewhat lacking. Alleviating the problems associated with environmental degradation requires an understanding of consumer behaviour or better yet, it requires an understanding of the factors that influence environmentally friendly consumption behaviour (Taufique & Vaithianathan, 2018:46).

Actual environmentally friendly purchase behaviour is a controversial topic. On the one side of the coin, consumers actively purchase environmentally friendly products and in some cases even pay higher prices than their conventional product counterparts (Chaudhary & Bisai, 2018:798; Jeff *et al.*, 2015:677). On the other side of the coin, consumers report being environmentally concerned over the environment, yet, these consumer's concerns do not transgress into environmentally friendly product purchases (Gray *et al.*, 2019:400; Heo & Muralidharan, 2019:421). These contradicting results may be attributed to an absence of environmental knowledge (Kanchanapibul *et al.*, 2014:19), fear of inadequate product quality, stereotypical higher pricing of

green products (Chang, 2011:19; Do Paco & Raposo, 2007:376) and "social over-reporting (Peattie, 2001:137). Jeff *et al.* (2015:679) elucidate that pro-environmental consumers not only purchase environmentally products but they also practice pro-environmental activities. Such activities include becoming water and energy-efficient, recycling, consuming fewer animal products and reducing waste. However, some consumers may only, for example, recycle and try to be more water conscious, although this constitutes pro-environmental behaviour, it doesn't induce any green product purchases. Nonetheless, today's consumers have recognised their ability to help the environment and as a result, forced organisations into implementing CSR strategies into their business practices (Huh & Chang, 2017:127; Yadav & Pathack, 2017:114). Consequently, academics and practitioners must have a full understanding of a consumer's environmental purchase intention and environmental behaviour in order to successfully incorporate environmentally friendly purchase adoption (Levine & Strube, 2012:322; Peattie, 2001:137).

2.4   Generation Y

In 2019, 37 percent of South Africa's population consisted of the ecologically aware Generation Y cohort (Statistics South Africa, 2019; Eastman & Liu, 2012:94). Of South Africa's entire Generation Y cohort segment, the African portion constituted 84 percent which, represents 31 percent of the country's population. Signifying almost a third of the country's population, this cohort is a lucrative market segment for any organisation based just in terms of sheer size. There is great dispute amongst scholars as to the exact age bracket the Generation Y cohort belongs to, however, this study uses the definition of Markert (2004:21). The author classifies Generational cohorts in 20-year increments and defines Generation Y individuals to be born between 1986 and 2005, making this cohort aged between 14 and 33 years in 2019. This cohort has grown accustomed with technology at their fingertips and have often been referred to 'digital natives' (Zuurendonk, 2018; Sox, Kline & Crews, 2014:247). Generation Y individuals enjoy show boasting their economic muscle that has been attained from disposable income available to them (Zahari & Esa, 2016:448; Kanchanapibul *et al.*, 2014:528; Weidauer, 2012:18). Bevan-Dye and Surujlal, (2011:49) add that tertiary-educated Generation Y individuals are influencers, trendsetters, highly opinionated and have the ability to earn a higher than average remuneration, resulting in higher amounts of disposable income.

When it comes to the environment, the Generation Y cohort are the foot soldiers of the environmentalism movement (Eastman & Liu, 2012:94). Generation Y consumers have been raised within an eco-conscious society resulting in them becoming environmentally conscious (Huh & Chang, 2017:127). Consequently, their behaviour is gravitating more and more towards an environmentally sustainable life-style (Huh & Chang, 2017:127; Rogers, 2013). This is evident in Generation Y individuals purchasing patterns. Moreover, this cohort chooses to support socially responsible organisations that give back to the community, who integrate sustainability programmes into business operations and actively assist in environmental conservation (Huh & Chang, 2017:127; Smith, 2012:87; Jeff *et al.*, 2015:676). Organisations that implement this CSR into their business strategies are enjoying benefits such as brand loyalty, trust and a competitive advantage (Huh & Chang, 2017:127). Understanding the environmental Generational Y consumer is imperative because these young educated individuals represent both the future consumer and the future of the environmental movement (Taufique & Vaithianathan, 2018:47; Kanchanapibul *et al.*, 2014: 528). Organisations should, therefore develop sustainable marketing strategies targeted towards this specific cohort.

3   Purpose of the study

The main purpose of this study was to investigate and validate a model depicting the effect which environmental concern, environmental knowledge and subjective norms of African Generation Y students play on their environmental purchase intentions and ultimately, their behaviour in the South African context.

4   Research methodology

Sampling and data collection

The chosen research design for this study was descriptive in nature, which included a single-cross sectional sampling approach. Students classified in the Generation Y cohort aged between 18 and 24 years were the target population for this study. The sampling frame comprised the 26 public registered Higher Education Institutions (HEI) in South Africa. From this preliminary sampling frame, a judgement sampling method was undertaken to narrow down the 26 sampling elements to four HEIs. The four chosen HEIs included one university of technology, one comprehensive university and two traditional universities. Once the target population and sampling frame had been identified, a non-probability convenience sample utilising 500 self-administered questionnaires was conducted. The questionnaires were distributed evenly amongst the four HEIs to full-time registered students using the mall-intercept method. The sample size encompassed 500 questionnaires, this sample size was in the same range as other studies similar in nature: Heo and Muralidharan (2019:428) (sample size: 283), Gray *et al.* (2019:396) (sample size: 500), Ali *et al.,* (2011:220) (sample size: 400), Cheah and Phau (2011:460) (sample size: 600). As such, the sample size was deemed adequate for the purpose of this study. The questionnaire itself included a cover letter which explained the purpose and nature of the study. Furthermore, the cover letter clearly outlined that participation in the study was purely on a voluntary basis and that all responses will be treated as confidential and only used for statistical purposes.

Research instrument

To collect the data for this study a self-administered questionnaire was developed as the research instrument. Trained field workers distributed the questionnaires to the target population either after class or during their lunchtime as to not interrupt any academic learning. The questionnaire consisted of two sections, those being Section A, that collected demographic data and Section B which recorded the scaled responses needed to answer the research question. The measurement scale included previously validated scales from prior studies. The scales included environmental concern (six items) adopted from Gam (2010:187), environmental knowledge (five items) adopted from Mostafa (2007:472-473), subjective norms (three items) adopted from Fielding, McDonald & Louis. (2008:321), environmental purchase intentions (three items) adopted from Mostafa (2007:472-473) and environmental purchase behaviour (four items) adopted from Lee (2008:580). All scaled responses were measured using a six-point Likert scale ranging from (1) strongly disagree to (6) strongly agree.

Data analysis

The captured data was analysed using version 25 of IBM's Statistical Package for Social Sciences (SPSS) and Analysis of Movement Structures (AMOS). These statistical programmes allowed for several different statistical techniques to be conducted on the data in order to address the research questions at hand. These techniques included descriptive statistics, exploratory factor analysis, internal-consistency reliability, multiple validity analysis, composite reliability analysis and structural equational modelling (SEM).

The measurements scale's internal-consistency reliability was assessed using the Cronbach alpha statistic. Any Cronbach alpha statistic value above ≥ 0.60 indicates acceptable reliability, however, any value ranging between 0.70 and 0.90 represents good to excellent internal-consistency reliability (Sarstedt & Mooi, 2014:256; Hair, Black, Babin & Anderson., 2014:90; Zikmund & Babin, 2013:257). To ascertain if there were any significant underlying relationships between the constructs, a Pearson Product-moment correlation coefficient was computed. This analysis computed a correlation matrix to determine the presence of nomological validity (Malhotra, 2010:321). In addition to nomological validity, multicollinearity diagnostics were undertaken to test for any presence of multicollinearity concerns. The tolerance values and variance inflation factor (VIF) values of the independent variables were computed to detect for any multicollinearity. Tolerance values lower than 0.10 and VIF values greater than 10 are indicative of multicollinearity and pose for areas of concern (Pallant, 2013:164). To address the main objective of the study, a measurement and structural model were constructed using SEM. The measurement models composite reliability and convergent validity were determined by employing a composite reliability analysis and assessing the average variance extracted (AVE). A measurement models CR values must be that of ≥ 0.70 to achieve adequate composite reliability, whilst, AVE values must exceed ≥ 0.50 to assert convergent validity (Hair *et al.*, 2014:619, Malhotra, 2010:733). Discriminant validity occurs when the square root of the AVE is greater than the correlation coefficients produced by the measurement model (Hair *et al.*, 2014:631; Byrne, 2010:290-291, Malhotra, 2010:745). Known to be sensitive to sample size, the chi-square was not used to assess the models fit. However, various over incremental fit indices were examined to achieve model fit, these included, the goodness-of-fit index (GFI), incremental fit index (IFI), the Tucker-Lewis index and the comparative fit index (CFI). In order to achieve a good model, fit these indices must achieve values equal to or greater than that of 0.90. In terms of the standardised root mean residual (SRMR), and the root mean square error of approximation (RMSEA) values must be below the 0.08 threshold (Hair *et al.,* 2014:631: Malhotra, 2010:732, 747). The level of practical significance was set at the conventional p ≤ 0.01 for the purpose of this study.

5   Results

This study made use of trained field workers to collect the required data. The data collection procedure took over a four-week period, where 500 questionnaires were distributed to the chosen HEIs. The 500 self-administered questionnaires were equally shared amongst the four HEIs (125 per campus) which were located in the province of Gauteng, South Africa. Owing to the limitations of a convenience sample design and to aid in sample representativeness, the chosen HEIs consisted of two traditional universities, one university of technology and one comprehensive university. Furthermore, various demographic questions were included in the questionnaire to

advocate sample representation. Upon completion of the data collection, 422 completed questionnaires were returned representing an initial 84 percent response rate. The collected questionnaires underwent screening in order to account for any outliers, missing item responses, any irregular responses and discarded any questionnaires that fell outside the target scope of the study. Questionnaires which had a total of 10 percent or more missing item responses were discarded. For questionnaires which had missing items of less than 10 percent, the mode of the missing response item was calculated and subsequently replaced any missing value. Once this cleaning process had been completed, 332 usable questionnaires remained for examination. This then represents an actual response rate of 66 percent. Table one below displays the demographics of the data set.

Table 1: Demographics

Age	%	Gender	%	Province of origin	%	Year of study	%	Institution	%
18	13	Male	47	Eastern Cape	5	First year	42	Traditional	67
19	17	Female	53	Free State	5	Second year	25	Comprehensive	25
20	19			Gauteng	51	Third year	25	Technology	8
21	23			KwaZulu-Natal	6	Postgraduate	8		
22	15			Limpopo	18				
23	9			Mpumalanga	8				
24	4			Northern Cape	<1				
				North-West	7				
				Western Cape	<1				

Source: Own work

As Table one shows, a representative sample was achieved. The bulk of the respondents were aged between 20 and 21 years of age (42%), followed by 19 year olds (17%). Regarding gender, the data set contained fewer males (47%) than females (53%). Logically, the two traditional universities (67%) made up the bulk of the respondents in terms of institutions, followed by the comprehensive university (25%) and university of technology (8%).

As this study made use of various scales, despite the use of validated scales, it is often common practice to conduct an exploratory factor analysis. The purpose of the analysis is to assure that there are no cross-loaded items or any items loading on the incorrect factor. As such, an exploratory factor analysis was performed on all itemised responses. Factorability of the data is often assessed using the KMO test and the Bartlett Test of Sphericity. For the KMO test, Pallant (2013:190) recommends values to exceed 0.60, whilst, a significant Barlett's Test of Sphericity

indicates an adequate sample. The constructs of the measurement scale computed a KMO value of 0.876 and a chi-square Bartlett test = 2650.818 (df = 210), p = 0.000 < 0.05. Thus, complying with the recommendations of Pallant (2013:190). Thereafter, a principal component analysis, using the promax rotation was conducted on the itemised responses. In accordance with the literature, five factors were specified for extraction. Each of the specified factors had eigenvalues greater than one and consequently explained 60.753 percent of the total variance. The results of the exploratory principal component factor analysis can be found in Table 2 below:

Table 2: Exploratory principal components analysis

Items	Factors					Communalities
	1	2	3	4	5	
EC1		.673				0.52
EC2		.775				0.59
EC3		.700				0.50
*EC4		.354			.774	0.62
EC5		.607				0.50
EC6		.638				0.48
*EK1					.509	0.46
EK2			.845			0.68
EK3			.706			0.64
EK4			.731			0.60
EK5			.884			0.67
SN1				.903		0.78
SN2				.662		0.60
SN3				.881		0.74
PI1	.759					0.66
PI2	.895					0.71
PI3	.900					0.72
PB1	.598					0.63
PB2	.538					0.45
PB3	.726					0.64
PB4	.663					0.60

Note: *Bold items were deleted

As can be seen from the table above, only three factors aligned with the specified scales. Not only did items EC4 and EK1 load on the incorrect factor they also loaded on their own individual

factor. As a result, the purchase intention and purchase behaviour scales loaded on the same factor. Upon closer inspection, these two items were deleted once assurance was confirmed that their removal would not alter the original constructs intended purpose.

The data was then rerun under the same conditions. The second exploratory factor analysis computed a KMO of 0.876 and a Bartlett's test score of a chi-square Bartlett test=2488.287 (df = 171), p = 0.000 < 0.05. The five specified factors explained 64.111 percent of the total variance. The results of the second exploratory principal component factor analysis are presented in Table 3.

Table 3: Exploratory principal components analysis

Items	Factors					Communalities
	1	2	3	4	5	
EC1	.644					0.48
EC2	.806					0.62
EC3	.686					0.50
EC5	.693					0.53
EC6	.659					0.50
EK2		.836				0.68
EK3		.729				0.62
EK4		.733				0.61
EK5		.850				0.65
SN1					.905	0.78
SN2					.705	0.55
SN3					.882	0.74
PI1			.802			0.71
PI2			.943			0.77
PI3			.846			0.77
PB1				.677		0.67
PB2				.981		0.71
PB3				.692		0.70
PB4				.480		0.61

As we can see from Table 3, all five specified factors aligned with their respective constructs. Furthermore, all measured item values were above the 0.50 threshold as indicated by (Hair *et al.*, 2014:117).

Once the factorability of the data had been asserted, the measurement instruments internal-consistency reliability was evaluated by calculating the Cronbach alpha statistic. A Cronbach

alpha statistic in the range 0.70 and 0.80 indicates good internal-consistency reliability, whilst, values between 0.80 and 0.90 are indicative of excellent internal-consistency reliability (Hair *et al.* 2014:90; Sarstedt & Mooi, 2014:256; Silver, Stevens, Wrenn & Loudon., 2013:104; Zikmund & Babin, 2013:257). Table 4, displays the Cronbach alpha values for the studies constructs.

Table 4: Summary of reliability test results

Constructs	Number of items	Cronbach alpha
Environmental concern	5	0.743
Environmental knowledge	4	0.805
Subjective norms	3	0.759
Purchase intention	3	0.840
Environmental Purchase behaviour	4	0.813

Source: Own work

As is indicated in Table 4, all measured scale constructs achieved a value greater than the 0.70 threshold asserting good internal-consistency reliability. In addition, three constructs achieved excellent internal-consistency reliability, with purchase intention achieving the highest Cronbach alpha value of 0.840. As such, it may be concluded that the measurement instrument scale has good to excellent internal-consistency reliability.

Once the data had been cleaned and constructs validated, descriptive statistics were executed. The descriptive statistics included means, standard deviations and t-values. Additionally, the significance of the data sets means was tested utilising a one-sample t-test on the measured constructs. The questionnaire made use of a six-point Likert scale ranging from strongly disagree (1) to strongly agree (6) to record the responses of participants. As such, an expected mean threshold of ≥3.50 was set. The significance level was set at the conventional $p = 0.05$. The results are presented in Table 5 below.

Table 5: Descriptive statistics

Constructs	N	Means	Standard deviations	t-value	p-value
Environmental concern	332	5.150	0.717	130.780	0.000
Environmental knowledge	332	4.258	1.033	75.062	0.000
Subjective norms	332	4.263	1.075	72.209	0.000

Purchase intention	332	4.402	1.030	77.796	0.000
Environmental purchase behaviour	332	3.992	1.137	63.975	0.000

Source: Own work

As Table 5 shows, means of ≥ 3.5 were recorded for all measured constructs, with environmental concern (mean = 5.150), environmental knowledge (mean = 4.258), subjective norms (mean = 4.263), purchase intention (mean = 4.402) and environmental purchase behaviour (mean = 3.992). Furthermore, each construct mean was statistically significant at the $p ≤ 0.05$ level. Therefore, African Generation Y students display a sense of concern for the environment, perceive themselves to have some sort of knowledge over environmental problems and take the opinions of their peers into consideration with regards to environmental protection. Moreover, these individuals show a heavy intent to purchase environmentally friendly products as well as act in a pro-environmental manner.

Nomological validity of the data set was calculated through the Pearson's product-moment correlation statistic. In order to combat multicollinearity issues between the latent factors, collinearity diagnostics were carried out. Table 6, outlines the Pearson correlation matrix.

Table 6: **Correlation matrix**

Constructs	1	2	3	4	
Environmental concern	1				
Environmental knowledge	.238**	1			
Subjective norms	.210**	.398**	1		
Purchase intention	.353**	.425**	.417**	1	
Environmental PB	.144**	.486**	.515**	.609**	1

****Correlation is significant at the 0.01 level (2-tailed).**

Source: Own work

Table 6, shows that all corresponding latent factors recorded a statistically positive association between one another at the $p ≤ 0.01$ level. As significant positive relationships are present amongst the latent factors it may be concluded that nomological validity is present for the proposed model. The strength of the correlations varied between the constructs. The strongest correlation was between purchase intention and environmental purchase behaviour (r = 0.609). This result is not surprising and aligns with the current literature (Taufique & Vaithianathan, 2018; Chaudhary & Bisai, 2018, Yadav & Pathak, 2017; Yadav & Pathak, 2016; Jeff *et al.*, 2015). Closely following that, is the correlation between subjective norms and environmental purchase behaviour (r = 0.515). Surprisingly, the lowest correlation, yet still significant, was that of environmental concern on environmental purchase behaviour (r = 0.144). This is a perplexing find which warrants further investigation. The collinearity diagnostics equated to tolerance values ranging between 0.798 and 0.918 and attained an average VIF of 1.19 between the independent variables. These results are indicative of the absence of multicollinearity concerns (Pallant,

2013:164). With the presence of nomological validity and the lack of multicollinearity concerns, the data set was deemed safe to conduct SEM analysis.

The measurement model included a confirmatory factor analysis using the maximum likelihood approach, this was done in order to confirm the items of the latent factors. The first item loading was set at the conventional value 1.0, the model then computed 190 sample moments and 48 parameters to be estimated. Subsequently, 142 degrees of freedom were specified with a significant chi-square of 254.520 (p = 0.000) based on an over identified model. Figure 1 below depicts the measurement model.

Figure 1: Measurement model
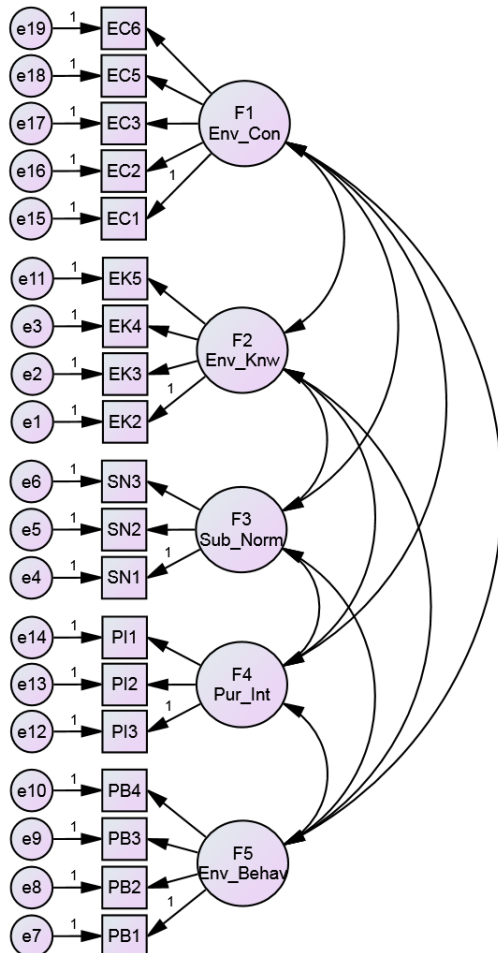
Source: Own work

The results of the measurement model indicated no problematic estimates, all standardised estimates were in the specified range of 1.0 and -1.0. What's more, no negative error variances were found indicating that there were no Heywood cases (Hair *et al*., 2014:618). The remainder of the measurements model's analysis can be found in Table 7 below. This analysis included the standardised loading estimates, error variance estimates, CR values, AVE values, square root of the AVE values (√AVE) and the correlation coefficients.

Table 7: Measurement Model Estimates

| Latent factors	Standardised loading estimates	Error variance estimates	CR	AVE	√AVE
Environmental concerns (F1)	.580	.399	0.83	0.50	0.71
	.680	.400			
	.555	.308			
	.632	.463			
	.631	.336			
Environmental knowledge (F2)	.750	.481	0.80	0.50	0.71
	.744	.553			
	.694	.562			
	.665	.443			
Subjective norms (F3)	.822	.617	0.75	0.50	0.71
	.561	.315			
	.786	.676			
Purchase intention (F4)	.768	.711	0.75	0.50	0.71
	.787	.619			
	.843	.590			
Purchase behaviour (F5)	.778	.547	0.80	0.50	0.71
	.607	.605			
	.778	.368			
	.740	.605			
Correlations	F1↔F2: 0.297 F2↔F3: 0.480 F1↔F3: 0.234 F2↔F4: 0.516 F1↔F4: 0.415 F3↔F4: 0.486				

Source: Own work

The measurement models composite reliability was confirmed as all CR values exceeded the recommended 0.70 cut-off level. In the same vein, all AVE values were equal to or exceeded the 0.50 threshold, implying convergent validity. Furthermore, the square root of the AVE for the independent variables exceeded the measurement models correlations F1↔F2 (0.71 > 0.29), F2↔F3 (0.71 > 0.48) and F1↔F3 (0.71 > 0.23), thus, discriminant validity was established (Hair *et al*., 2014:620). Commonly known for being sensitive to large sample sizes, the measurement model computed a significant chi-square value of 254.520, p=0.000. Owing to this, various other incremental fit indices were evaluated to determine if the model achieved a good fit. These incremental fit indices included: GFI = 0.925, IFI = 0.953, TLI = 0.943, CFI = 0.953, SRMR =

0.054 and a RMSEA of 0.049. As all fit indices were above the recommended 0.90 and both the SRMR and RMSEA being under 0.08, the measurement model achieved good model fit (Hair *et al.*, 2014:631; Malhotra, 2010:732).

Once a good fit was confirmed for the measurement, a structural model was executed to determine the effects between the latent variables. The purpose of the structural model was to investigate the effect the independent variables of environmental concern (F1), environmental knowledge (F2) and subjective norms (F3) have on African Generation Y students' environmental purchase intentions (F4). From there on the structural model considers the relationship between African Generation Y students' purchase intentions (F4) on their environmental purchase behaviour (F5). The proposed model can be seen in Figure 2.

Figure 2: Proposed structural model
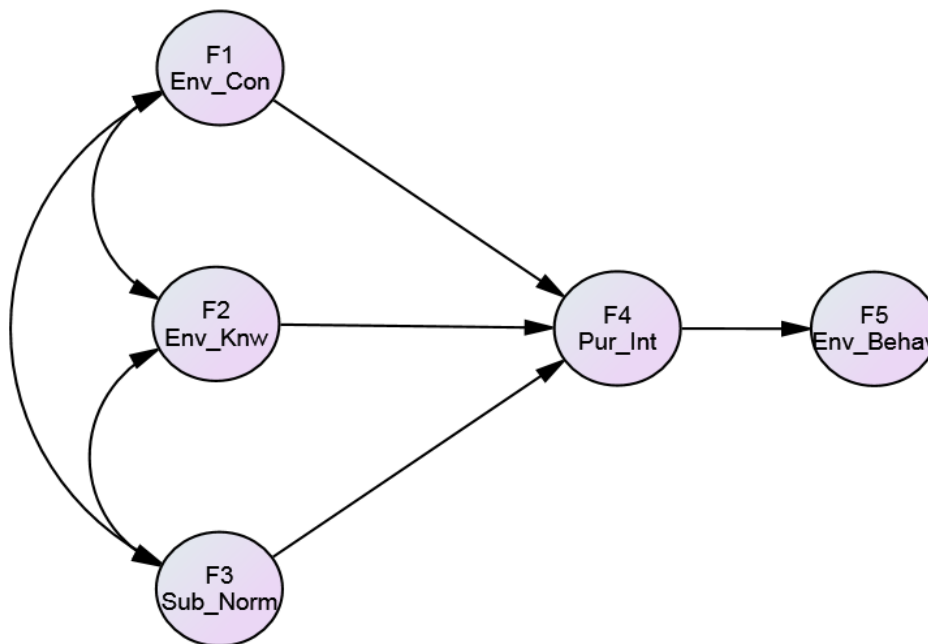
Source: Own work

The structural model returned a significant chi-square value (308.484, p=0.000). Consequently, model fit confirmation was achieved by assessing the other incremental fit indices, these included a GFI of 0.909, a IFI of 0.932, a TLI of 0.919, a CFI of 0.931, a SRMR of 0.068 and a RMSEA of 0.058. Once again, all fit indices exceeded recommended cut-off levels, thus, implying good fit of the structural model. The results of the path estimates for the structural model are shown in Table 8.

**Table 8: Standardised regression estimates and p-values**

Relationship	Estimates	p-value	Results
Environmental concern → Purchase intention	0.213	0.000**	Significant
Environmental Knowledge → Purchase intention	0.336	0.000**	Significant
Subjective Norms → Purchase intention	0.334	0.000**	Significant
Purchase intention → Environmental behaviour	0.789	0.000**	Significant

**Significant at the p < 0.01 level

Source: Own work

As can be seen in Table 8, all tested pathways were positively significant at the $p \leq 0.01$ level. Environmental concern ($\beta = 0.213$, $p < 0.01$), environmental knowledge ($\beta = 0.336$, $p < 0.01$) and subjective norms ($\beta = 0.334$, $p < 0.01$) are statistically significant predictors of African Generation Y students' environmental purchase intentions. Furthermore, environmental purchase intentions ($\beta = 0.789$, $p < 0.01$) has a significant positive influence on environmental purchase behaviour of African Generation Y students. The squared multiple correlation coefficients of Environmental concern, environmental knowledge and subjective norms explained 45 percent of the variance in African Generation Y students' environmental purchase intentions. Similarly, environmental purchase intentions explained 62 percent of the variance towards African Generation Y students' environmental purchase behaviour. The path estimates of the structural model are represented in Figure 3.

Figure 3: Structural model of university students' brand loyalty
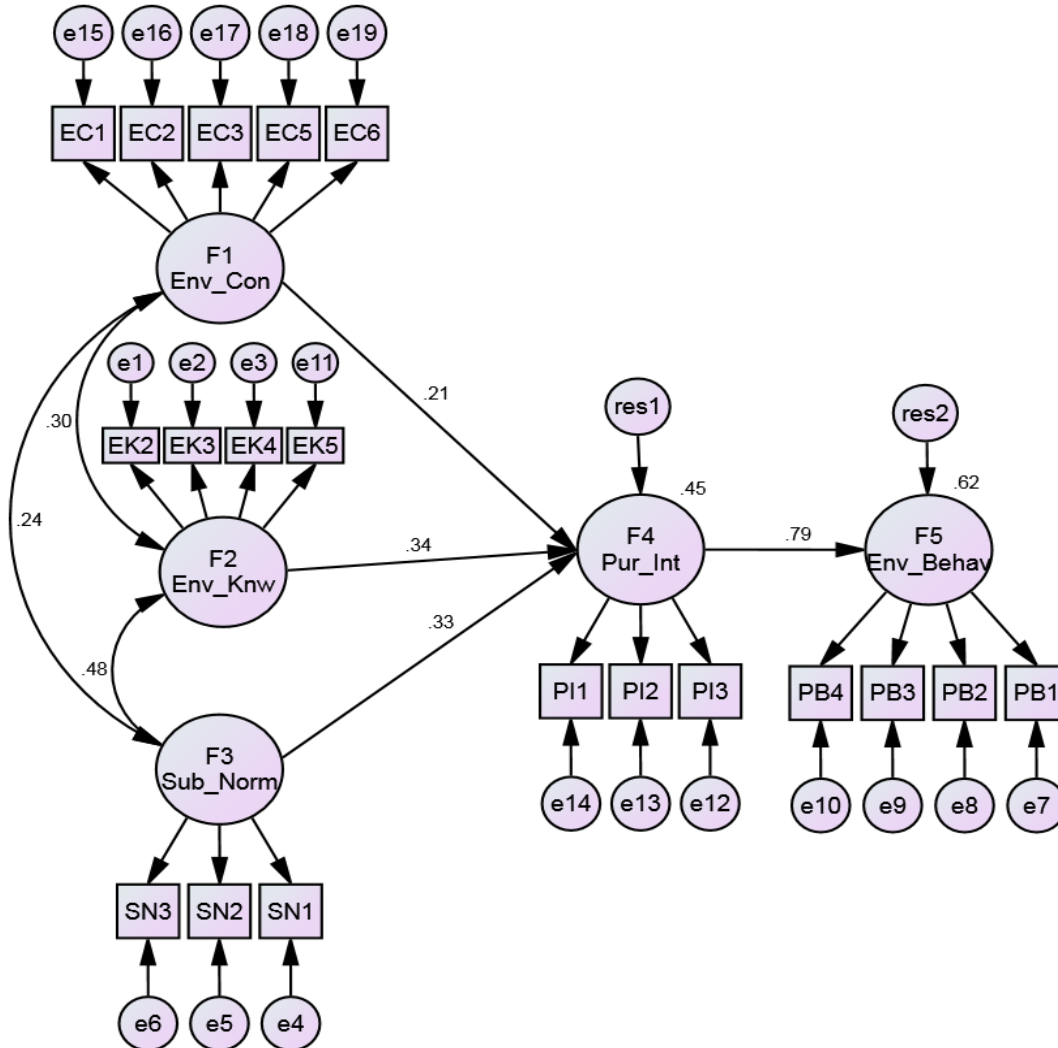
Source: Own work

The works of Chaudhary and Bisai (2018), Sharma and Foropon (2018), Taufique & Vaithianathan (2018), Yadav and Pathak (2017) and Yadav and Pathak (2016) concur with the results found in this study.

6   Conclusion

The youth are leading a new and different way of lifestyle when compared to preceding generational cohorts, one of the top factors of change includes the preservation of the natural environment (Taufique & Vaithianathan, 2018:47; Verma & Chandra 2018:1153; Lee, 2009: 87). This study aimed to determine the influence which environmental concern, environmental knowledge, subjective norms and environmental purchase intentions had towards African Generation Y students' environmental purchase behaviour. To achieve this objective, a model of environmental concern purchase behaviour was compiled from a review of the current theoretical literature. The model was confirmed by means of structural equational modelling utilising data gathered from 332 African Generation Y students at four HEIs in Gauteng, South Africa. The results from the study concluded that environmental concern, environmental knowledge and

subjective norms display a positive influence on students' environmental purchase intentions. Furthermore, the study revealed that this environmental purchase intention then increased students' intent to become pro-environmental purchasers.

The study found that both environmental knowledge and subjective norms were the key determinants of students' environmental purchase intentions, that being: the intent to willingly purchase products that are of an environmentally friendly nature over conventional products. This is done to express concern and preserve the natural environment. Unexpectedly, environmental concern had the lowest effect, yet still positive and significant, on African Generation Y students' environmental purchase intentions. It seems that peer pressure (subjective norms) have a greater influence on these individuals to act in a socially responsible manner over and above that being concerned about the natural environment. These results have been replicated in the works of Taufique and Vaithianathan (2018) and Yadav and Pathak (2017). Similarly, the more knowledgeable these individuals become regarding environmental issues, their purchase intent increases. These results are supported by prior works of Chaudhary and Bisai (2018) and Sharma and Foropon (2018). In addition, built on the theory of planned behaviour, this study concluded that environmental purchase intention is a large determining factor of environmental purchase behaviour. Therefore, organisations and environmental practitioners looking to target this market segment should then create business strategies that (1) increase environmental concern, (2) inform or create awareness of environmental issues to heighten this cohort's overall knowledge basis, (3) attempt to instil social values amongst consumer segments, and (4) implement greener practices into business strategies to attract environmentally friendly consumers.

In this study African Generation Y students displayed tendencies of being pro-environmental purchasers, this is an important find as this specific generational cohort are future leaders, trendsetters, influencers and brand ambassadors of the world (Chaudhary & Bisai, 2018; Taufique & Vaithianathan, 2018:47; Kanchanapibul *et al.*, 2014: 528). This cohort can quickly spread positive word of mouth about an organisation's CSR in an instant via social media, conversely, the opposite can also occur and quickly damage an organisations reputation. Correctly implementing CSR is vital to gain both a competitive edge over competitors and can also be used to attain new market share (Huh & Chang, 2017:127). Additionally, appealing to the lucrative environmentally aware African Generation Y cohort in South Africa could be a possible avenue to increase environmentally friendly product use in South Africa.

7   Limitations and future research

Limitations are a given in any study, as is the case with this study. The data collected for this study was done using a non-probability sampling method. As such, generalising these results to a specified population should be done with caution even though precautionary measures were taken into consideration. Data screening, demographic questions and researcher judgement were the precautionary measures taken into account. Another limitation of this included the use of a cross-sectional design. This design only focuses on a single point of time and lacks the robustness of a longitudinal design.

In terms of the selected target sample, this study only focuses on one segment of age and race, therefore, future studies may include all races and consider all age categories. Additionally, the study only focused on respondents in one geographic location and targeted individuals who were enrolled for tertiary studies. The model itself may be broadened to include other factors known to

influence environmental purchase behaviours such as perceived behaviour control, perceived price and quality of environmentally friendly products and environmental attitudes. To end off, this study may be duplicated to include the general public as well as other tertiary institutions such as colleges or further education and training institutions (FET).

8   References

ALBAYRAK, T., AKSOY, S. & CABER, M. (2013). The effect of environmental concern and scepticism on green purchase behaviour. *Marketing Intelligence & Planning*, 31(1): 27-39.

ALI, A., KHAN, A.A. & AHMED, I. (2011). Determinants of Pakistani consumers' green purchase behavior: some insights from a developing country. *International Journal of Business and Social Science*, 2(3): 217-226.

ALMOSSAWI, M. (2014). Promoting green purchase behavior to the youth (case of Bahrain). *British Journal of Marketing Studies*, 2(16): 1-16.

BEVAN-DYE, A.L. & SURUJLAL, J. (2011).   Attitudes towards materialism in sport and materialism tendencies amongst Black Generation Y students. *African Journal for Physical, Health Education, Recreation and Dance,* 1(1):43-55.

BHUIAN, S. & SHARMA, S.K. (2017). Predicting consumer pro-environmental behavioral intention: The moderating role of religiosity. *Review of International Business and Strategy*, 27(3): 352-368.

BYRNE, B.M. (2010).   Structural equation modelling with AMOS: basic concepts, applications, and programming. 2nd ed. New York, NY: Taylor & Francis Group.

CHANG, C. (2011). Feeling ambivalent about going green: Implications for green advertising processing. *Journal of Green Advertising*, 40(4): 19-31.

CHAUDHARY, R. & BISAI, S. (2018). Factors influencing green purchase behavior of millennials in India. *Management of Environmental Quality: An International Journal*, 29(5): 798-812.

CHEAH, I. & PHAU, I. (2011). Attitudes towards environmentally friendly products: the influence of ecology, interpersonal influence and value orientation. *Marketing Intelligence & Planning,* 29(5): 452-472.

CHEN, Y.S. & CHANG, C.H. (2012). Enhance green purchase intentions: the roles of green perceived value, green perceived risk, and green trust. *Management Decision*, 50(3): 1-43.

DO PACO, A. & RAPOSO, M. (2009). "Green segmentation": an application to the Portuguese consumer market. *Marketing Intelligence & Planning,* 27(3): 364-379.

EASTMAN, J.K. & LIU, J. (2012). The impact of generational cohorts on status consumption: an exploratory look at generational cohort and demographics on status consumption. *Journal of Consumer Marketing*, 29(2): 93-102.

FIELDING, K., MCDONALD, R. LOUIS, W. R. (2008). Theory of planned behaviour, identity and intentions to engage in environmental activism. *Journal of Environmental Psychology* 28 (4): 318–326.

GAM, H.J. (2010). Are fashion-conscious consumers more likely to adopt eco-friendly clothing? Journal of Fashion Marketing and Management, 15(2): 178-193

GRAY, S.G., RAIMI, K.T., WILSON, R. & ÁRVAI, J. (2019). Will Millennials save the world? The effect of age and generational differences on environmental concern. *Journal of Environmental Management,* 242 (1): 394-402.

GREAVES, M., ZIBARRAS, L.D. & STRIDE, C. (2013). Using the theory of planned behavior to explore environmental behavioural intentions in the workplace. *Journal of Environmental Psychology*, 34(1): 109-120.

HA, H. & JANDA, S. (2012). Predicting consumer intentions to purchase energy-efficient products. *Journal of Consumer Marketing,* 29(7): 461-469.

HAIR, J., BLACK, W., BABIN, B. & ANDERSON, R. (2014). Multivariate Data Analysis. 7th ed. Harlow, Essex: Pearson.

HEO, J & MURALIDHARAN, S. (2019). What triggers young Millennials to purchase eco-friendly products?: the interrelationships among knowledge, perceived consumer effectiveness, and environmental concern. *Journal of Marketing Communications*, 25(4): 421-437.

HUH, C. & CHANG, H. (2017). An investigation of Generation Y travellers' beliefs and attitudes towards green hotel practices: a view from active and passive green Generation Y travellers. *International Journal of Tourism Sciences*, 17(2):126-139.

JEFF, T., MARLA B.R., JHA, S., LEVY, M. & MCENTEE, W.B. (2015). Factors affecting the relationship between environmental concern and behaviors. *Marketing Intelligence & Planning,* 33(5): 675-690.

KANCHANAPIBUL, M., LACKA, E., WANG, X. AND CHAN, H.K. (2014). An empirical investigation of green purchase behaviour among the young generation. *Journal of Cleaner Production*, 66 (1): 528-536.

LEE, K. (2008). Opportunities for green marketing: young consumers. *Marketing Intelligence & Planning*, 26(6): 573-586.

LEE, K. (2009). Gender differences in Hong Kong adolescent consumer's green purchasing behavior. *Journal of Consumer Marketing,* 26(2): 87-96.

LEVINE, D.S. & STRUBE, M.J. (2012). Environmental attitudes, knowledge, intentions and behaviors among college students. *The Journal of Social Psychology,* 152(3): 308–326.

LIM, W.M, YONG, J.L.S. & SURYADI, K. (2014). Consumers' Perceived Value and Willingness to Purchase Organic Food. *Journal of Global Marketing*, 27 (1): 298-307.

MALHOTRA, K.N. (2010). Marketing research: an applied orientation. 6th ed. Upper Saddle River, N.J: Pearson Education.

MARKERT, J. (2004). Demographics of age: generational and cohort confusion. *Journal of Current Issues and Research in Advertising*, 26 (2):11-25.

MAYERL, J. & BEST, H. (2019). Attitudes and behavioral intentions to protect the environment: How consistent is the structure of environmental concern in cross-national comparison? *International Journal of Sociology*, 49(1): 27-52.

MOSTAFA, M.M. (2007). A hierarchical analysis of the green consciousness of the Egyptian consumer. *Pschology & Marketing*, 24(5): 445-473.

NIAURA, A. (2013). Using the theory of planned behavior to investigate the determinants of environmental behavior among youth. *Environmental Research, Engineering and Management,* 1(63): 74-81.

PALLANT, J. (2010). SPSS survival manual. 4th ed. London: Open University Press.

PALLANT, J. (2013). A step by step guide to data analysis using IBM SPSS: SPSS survival manual. 5th ed. Maidenhead: Open University/McGraw-Hill.

PEATTIE, K. (2001). Towards sustainability: The third age of green marketing. *Journal of The Marketing Review*, 2(2): 129-147.

POLONSKY, M.J., VOCINO, A., GRAU, S.L., GARMA, R. & FERDOUS, A.S. (2012). The impact of general and carbon-related environmental knowledge on attitudes and behaviour of US consumers. *Journal of Marketing Management*, 28(3–4): 238–263.

RAHBAR, E. & WAHID, N.A. (2011). Investigation of green marketing tools' effect on consumers' purchase behavior. *Journal of Business Strategies Series*, 12(2):73-83.

ROGERS, G. (2013). The rise of Generation Y in the sustainable marketplace. *The guardian*, 3Feb. http://www.guardian.co.uk/sustainable-business/blog/rise-generation-y-sustainable-marketplace. [Date of access: 26 February 2013].

SAID, A.M., AHMADUN F.R., PAIM L.H. & MASUD, J. (2003). Environmental concerns, knowledge and practices gap among Malaysian teachers. *International Journal of Sustainability in Higher Education,* 4(4): 305-313.

SARSTEDT, M. & MOOI, E. (2014). A concise guide to market research: the process, data, and method using IBM SPSS statistics. 2nd ed. Heidelberg, Berlin: Springer.

SHARMA, A. & FOROPON, C. (2018). Green product attributes and green purchase behavior. A theory of planned behavior perspective with implications for circular economy. Management Decision, 57(4):1018-1042.

SILVER, L., STEVENS, R., WRENN, B. & LOUDON, D. (2013). The essentials of marketing research. 3rd ed. USA, NY: Routledge, Taylor & Francis Group.

SINGH S, CHILIYA, N, CHIKANDIWA C.T. & CHODOKUFA, K. (2016). Assessing the factors that influence consumers' attitudes and beliefs towards their purchase intentions of organic food products in South Africa. (*In* Delener, N., Fuxman, L., Lu, V. & Rodrigues, S., *eds.* Exceeding the vision: innovate, integrate and motivate: 2016 eighteenth annual international conference organized by Global Business and Technology Association, Dubai, U.A.E. p. 467-477).

SMITH, T.K. (2012). Longitudinal study of digital marketing strategies targeting Millennials, *Journal of Consumer Marketing*, 29(2): 86-92.

SODHI, K. (2011). Has marketing come full circle? Demarketing for sustainability. *Journal of Business Strategies*, 12(4): 177-185.

SOX, C.B., KLINE, S.F. & CREWS, T.B. (2014). Identifying best practices, opportunities and barriers in meeting planning for Generation Y. *International Journal of Hospitality Management.*, 36(1): 244-254.

STATISTICS SOUTH AFRICA. (2019). *Mid-year population estimates: 2019. Key indicators, Statistical release P0302*, http://www.statssa.gov.za/publications/P0302/P03022019.pdf. Date accessed: 13/09/2019.

TAUFIQUE, K.R. & VAITHIANATHAN, S. (2018). A fresh look at understanding Green consumer behavior among young urban Indian consumers through the lens of Theory of Planned. *Journal of Cleaner Production,* 183(1): 46-55.

TILFORD, C. (2018). The millennial moment - in charts, a quarter of the world's population are millennials. What does data tell us about them? https://www.ft.com/content/f81ac17a-68ae-11e8-b6eb-4acfcfb08c11. Date accessed: 13/09/2019.

TRIVEDI, R.H., PATEL, J.D. AND SAVALIA, J.R. (2015). Pro-environmental behaviour, locus of control and willingness to pay for environmental friendly products. *Marketing Intelligence & Planning*, 33(1): 67 – 89.

VERMA, V.K. & CHANDRA, B. (2018). An application of theory of planned behavior to predict young Indian consumers' green hotel visit intention. *Journal of Cleaner Production*, 172(1): 1152-1162.

WANG, J. & DONG, K. (2019). What drives environmental degradation? Evidence from14 Sub-Saharan African countries. *Science of the Total Environment,* 656(1): 165-173.

WEIDAUER, J. (2012). Millennials determine future of retail. *Drug Store News*, 34(12):18.

YADAV, R. & PATHACK, G.S. (2016). Young consumers' intention towards buying green products in a developing nation: Extending the theory of planned behaviour. *Journal of Cleaner Production*, 135(1):732-739.

YADAV, R. & PATHACK, G.S. (2017). Determinants of consumers' green purchase behavior in a developing nation: applying and extending the theory of planned behavior. *Ecological Economics*, 134(1):114-122.

ZAHARI, A.R. & ESA, E. (2016). Motivation to Adopt Renewable Energy among Generation Y. *Procedia Economics and Finance*. 35(1): 444-453.

ZIKMUND, G.W. & BABIN, J.B. (2013). Essentials of marketing research. 5th ed. South-Western, Cengage Learning.

ZSÓKA, A., SZERÉNYI, Z.M., SZÉCHY, A. & KOCSIS, T. (2013). Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of Hungarian high school and university students. *Journal of Cleaner Production*, 48(1): 126-138.

ZUURENDONK, R. (2018). Millenials: This is how Generation Y works. *Proitera*. https://proitera.ch/en/millenials-how-generation-y-works/. Date accessed: 13/09/2019.