

VALIDATION OF A SCALE MEASURING THE RELATIONSHIPS BETWEEN LONG-TERM ORIENTATION, POLITICAL ORIENTATION, ENVIRONMENTAL PURCHASE INTENTIONS AND GREEN PURCHASE BEHAVIOUR

C.Synodinos

North-West University (Vaal Campus), South Africa

E-mail: Costa.Synodinos@nwu.ac.za

—Abstract —

This paper outlines the procedure undertaken to validate a scale measuring the relationships between long-term and political orientation, and environmental intentions and behaviour as a four dimensional structure in the South African context. The data was gathered using a self-administered questionnaire from a convenience sample of 329 students registered at four public higher education institutions in South Africa. The four higher public institutions comprised one university of technology, one comprehensive university and two traditional universities. The questionnaire consisted of scales intended to measure long-term orientation, political orientation, environmental purchase intentions and green purchase behaviour. Pearson's Product-Movement correlation and structural equation modelling were the methods of analysis of the captured data. The proposed measurement model of long-term and political orientation, and environmental intentions and behaviour being a four dimensional structure revealed good internal-consistency reliability, composite reliability and construct validity. Furthermore, AMOS produced a well-fitting model represented by acceptable goodness-of-fit indices. The results of the measurement model suggest that long-term orientation, political orientation, environmental purchase intention and green purchase behaviour are four suitable dimensions for the use of path analysis in structural equation modelling.

Key Words: *Long-term orientation, political orientation, environmental purchase intentions, environmental behaviour*

JEL Classification: M31

1. INTRODUCTION

Environmental conservation is a topic gaining a great deal of interest amongst consumers, academic marketers, policy makers and society in general (Sodhi, 2011:177). Although it is believed that consumers' concerns for the environment gained prominence in the 1970s (Kuzmiak, 1991:265; Brown & Wahlers, 1998:39; Straughan & Roberts, 1999:558; Crane, 2000:277; Peattie & Crane, 2005:357), humanity's environmental concern can be traced back thousands of years (Peattie, 2001:129; Billitteri, 2010:81). It is this stream of thought over generations that have given today's individual the capacity to display long-term orientation behaviours in terms of environmental conservation.

Looking from an environmental-standpoint, behavioural intention and ultimately purchase behaviour, have been measured using various factors such as altruism (Chea & Phau, 2011:464), price and quality of green products (D'Souza, 2007:72), perceived value (Chen & Chang, 2012:8) and environmental knowledge (Chea & Phau, 2011:456) with most studies reporting varying results. Yet, three influential factors based on Ajzen's Theory of Planned Behaviour keep prevailing as top predictors of buying behaviour. These predictors include consumer attitude, subjective norms, and perceived behaviour control (Fielding et al., 2008:319). Regarding consumers' long term and political orientation, there is a dearth in the literature inquiring if these factors could successfully predict environmental intention and behaviour.

Long-term orientation refers to having a well-rounded view of the past and future trends of a situation or topic. A person with a long-term orientated viewpoint values traditions of the past and decides how to act, behave and plan for the future in the long-term accordingly (Yu & Cable, 2011:67). As such, long-term orientation ties in with environmentalism, which is the act of humans expressing concern over the state and future of the environment (Park, 2001:27). Based on this conclusion it may be postulated that a person who is an environmentalist or displays any form of environmentalism will most likely exhibit long-term orientated goals, such as preserving the environment for future generations to come (Leonidou et al., 2010: 1324). Recent research has shown that individuals who are long-term orientated tend to formulate pro-environmental attitudes pertaining to environmental protection. Such pro-environmental attitudes are voiced in environmental purchases, recycling, supporting anti-pollution legislation

and decreasing home consumption (Kumar et al., 2011:62.3; Han et al., 2010:327; Leonidou et al., 2010:1324; Laroche et al., 2001:503).

Environmental conservation has been on the political agenda of numerous governments over the decades. Political environmentalism dates back as far as the eighteenth and nineteenth centuries where economists and philosophers were voicing their concerns over the impact that industrialisation, urbanisation, population growth, and resource misuse had on the natural environment (Billitteri, 2010:81). Governments around the world alike have been pressured to pursue “green” legislations due to public pressures (Ali et al., 2011:218). Similarly, the South African government has begun initiatives to alleviate their carbon footprint as it is forecasted that South Africa will contribute 3.5 percent of the world’s greenhouse gas emissions by the year 2020. These initiatives include National Climate Change Response White Paper and adhering to initiatives developed at the Kyoto Protocol formed by the United Nation’s Framework Convention on Climate Change (UNFCCC) and Reducing Emissions from Deforestation and Forest Degradation (REDD) (den Elzen et al., 2013:639; Department of Environmental Affairs, 2013; Rahloa et al., 2011:25; RSA, 2010). An individual’s political orientation encompasses a desire to be actively part of various social-political issues; these could range from passive low-risk actions to active high-risk actions and unconventional behaviour (Corning & Myers, 2002:704). As the conservation of the environment is of significant importance to the public in modern societies, politically active individuals may develop pro-environmental attitudes towards environmental preservation (Leonidou et al., 2010:1324). Therefore, political orientation may become a prevalent factor for future political leaders.

While the dimensions of long term orientation and political orientation have proven to be valid measures of environmental intention and green purchase behaviour in other countries (Carmi, 2013; Akehurst et al., 2012; Leonidou et al., 2010;), upon searching four different major academic databases (EbscoHost, Emerald, Google Scholar and Sabinet Reference) no evidence could be found of this studies specified measurement model being validated in the South African context.

2. PURPOSE OF THE STUDY AND RESEARCH QUESTIONS

To overcome the limitation in the literature, the aim of this study was to validate a long-term and political orientation scale as a four dimensional structure comprising long-term orientation, political orientation, environmental purchase intention and green purchase behaviour amongst African Generation Y students in South Africa.

The selection of African Generation Y students as a suitable sample for validating the long-term and political orientation scale is based on several reasons. Defined as individuals born between 1986 and 2005, Generation Y members form the majority of the population in the US (Fry, 2015) and in South Africa (Statistics SA, 2014). African Generation Y individuals made up a staggering 84 percent of South Africa's Generation Y cohort in 2014 (Statistics SA, 2014), which makes them an attractive market segment. Tertiary educated individuals are more likely to possess a greater disposable income in the future and because environmental products are portrayed as more expensive products (Chang, 2011:19-20; Ottman et al., 2006:29) the use of university students was deliberate. Therefore, the study aimed to answer the following research question:

- Is long-term and political orientation amongst African Generation Y students a four dimensional structure comprising long-term orientation, political orientation, environmental purchase intention and green purchase behaviour?

3. RESEARCH METHODOLOGY

3.1 Sampling method

The study's target population was defined as 18 to 24 year old African students registered at South African public higher education institutions (HEIs). The 28 public HEIs located in South Africa made up the initial sampling frame, and as Gauteng contains the highest number of HEIs it was the province chosen to conduct the study. Thereafter, the sampling frame was narrowed down to four HEIs in Gauteng using the judgement sampling approach. The four HEIs consisted of two traditional universities, one comprehensive university and one University of Technology.

A non-probability convenience sample of 500 students was taken across all four campuses (125 per campus), from which 329 completed questionnaires were returned. This sample size of 329 was deemed sufficient given that structural models with seven or fewer latent factors, each of which has three or more variables require between 150 and 300 cases (Hair et al., 2010). In terms of ethical considerations, the questionnaire underwent examination through the North-West Universities (Vaal Triangle) ethical committee to ascertain the level of risk the study proposed. The committee deemed the study as a low/no-risk initiative and granted the questionnaire the following ethical clearance number: Econit-Econ-2014-007. Thereafter, senior academics at each of the participating four campuses were contacted and presented with a copy of the questionnaire and the ethical clearance document. The four academics were then asked to oversee the completion of the study for their respective students. Students were informed that participation in the study was purely of a voluntary nature and confidentiality was assured, including the name of the HEI from which they were registered. Furthermore, it was pointed out that all information collected would be used for research purposes only.

3.2 Research instrument

The data required for this study was captured utilising a self-administered questionnaire. African Generation Y students' thoughts pertaining to their long-term orientation (three items) and political orientation (four items) were measured using existing scales by Leonidou et al. (2010:1330). While, their environmental intention (three items) and green purchase behaviours (four items) were measured using existing scales developed by Mostafa (2007:472) and Lee (2008:579) respectively. A six point Likert scale ranging from strongly disagree (1) to strongly agree (6) was used to measure all scaled responses. Additionally, to overcome the limitations of using a convenience sample, demographic questions related to province of origin, gender, mother-tongue language and age were included in the questionnaire.

To assert reliability of the questionnaire, it was pilot tested on 47 students at a campus that formed no part of the sampling frame. All constructs returned respectable Cronbach alpha values ranging between 0.776 and 0.920, suggesting that the scale retains satisfactory internal-consistency reliability (Malhotra, 2010:319; Zikmund & Babin, 2010:248). The Statistical Package for Social

Sciences (IBM SPSS) and Analysis of Moment Structures (IBM AMOS) Version 22, were the chosen statistical programs to analyse the captured data.

4. RESULTS

Once the 500 questionnaires were distributed across the four selected campuses (125 per campus), 329 viable questionnaires were returned, indicating a response rate of 66 percent. Despite using convenience sampling, the sample was justified as being sufficiently representative of the target population as the sample included participants from each of South Africa's 11 official language groups, seven of the nine provinces and all of the seven specified age categories. The sample consisted of more females (58%) than males (42%), with the bulk of the sample (84%) indicating that they are 18 to 21 years of age. Majority of the participants indicated that their province of origin was Gauteng (51%) and Southern Sesotho was their mother-tongue language (24%). The description of the sample is outlined in Table 1 below:

Table 1: Sample characteristics

Demographics	Sub-groups	Percent (%)	Sub-groups	Percent (%)
Age	18-19	44		
	20-21	40		
	22-23	14		
	24	2		
Gender	Male	42		
	Female	58		
Home province	Eastern Cape	4	Kwazulu-Natal	8
	Free state	10	Limpopo	16
	Gauteng	51	Mpumalanga	5
	North-West	6	Northern Cape	0
			Western Cape	0
Home language	Afrikaans	1	Northern Sotho	10
	English	5	Southern Sotho	24
	Ndebele	2	Tswana	15
	Xhosa	8	Swati	5
	Zulu	20	Venda	4
			Tsonga	6

To assert nomological validity and to check for multicollinearity of the proposed measurement model, the Pearson's Product-Moment correlation was computed on the proposed constructs and a correlation matrix constructed. Table 2, below shows the correlation matrix.

Table 2: Correlation matrix

N = 329	1	2	3	4
Long-term orientation	1			
Political orientation	0.192**	1		
Environmental purchase intention	0.231**	0.283**	1	
Green purchase behaviour	0.214**	0.311**	0.482**	1

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

As can be seen in Table 2, there is a significant positive correlation between each of the latent factors of the proposed model. This infers that nomological validity is present (Hair et al., 2010:710). Additionally, there is no obvious evidence of multicollinearity as none of the correlations are above the recommended cut-off level of 0.80 (Field, 2009).

Thereafter, Structural equation modelling (SEM) using the maximum likelihood approach was undertaken using the AMOS program. The model-fit was evaluated using various indices such as Chi-square, The Adjusted Goodness-of-Fit Index (AGFI), the goodness-of-fit index (GFI), Normed Fit Index (NFI), Incremental Fit Index (IFI), the Tucker-Lewis Index (TLI), the comparative fit index (CFI), the standardised Root Mean Square residual (SRMR) and the Root Mean Square Error of Approximation (RMSEA) (Byrne, 2010:76-78; Malhotra, 2010:732). According to Byrne (2010:78-79) an adequate model-fit requires a non-significant Chi-square, with GFI, AGFI, NFI, IFI, IFI, TLI and CFI values of 0.95 or above, as well as a SRMR value lower than 0.05 and RMSEA value below 0.08. Hair et al. (2010:579) indicate that indices that are greater than 0.90 are also acceptable for a model-fit.

The measurement model to be specified included four latent factors of long-term orientation (three indicators), political orientation (four indicators), environmental purchase intentions (three indicators) and green purchase behaviours (four indicators). In order to identify the model, the first loading of each of the four latent factors were fixed at a value of 1.0. This resulted in 105 distinct sample moments and 34 parameters to estimate, which left 71 degrees of freedom (df) based on the overidentified model.

The proposed model was reviewed for any problematic estimates, such as Heywood cases (negative error variances) and any standardised factor loadings above 1.0 or below -1.0 (Hair et al., 2010:706). Table 3 below reports on the measurement models standardised factor loadings, error variances, correlations, composite reliability (CR), average variance extracted (AVE) and Cronbach alpha values.

Table 3: Measurement model values

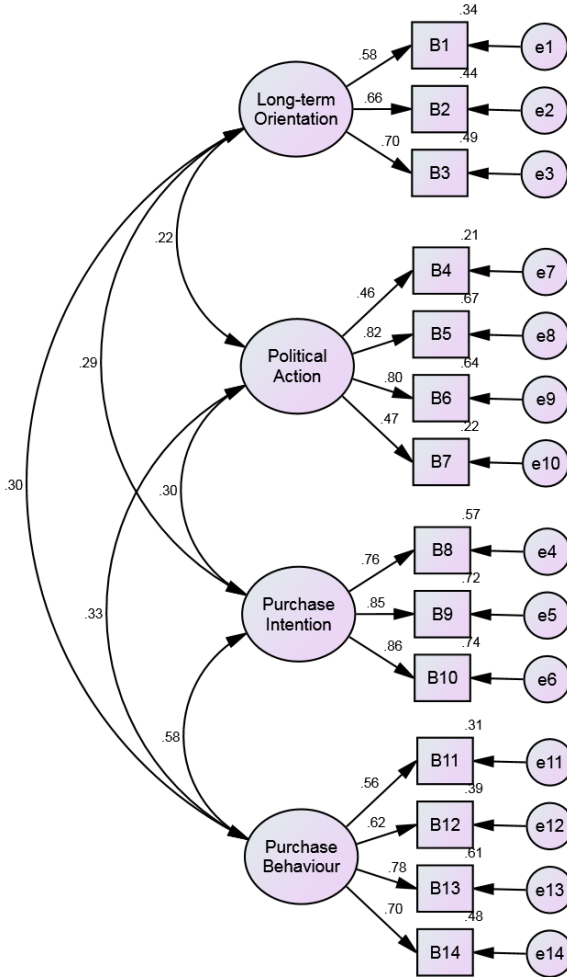
Latent Factors	Indicators	Standardised Factor Loadings	Error Variances	CR Values	AVE Values	$\sqrt{\text{AVE}}$ Values	Cronbach alpha				
Long-term Orientation	B1	0.583	0.339	0.749	0.570	0.818	0.677				
	B2	0.665	0.442								
	B3	0.698	0.487								
	B4	0.456	0.208								
Political Orientation	B5	0.819	0.671	0.788	0.50	0.707	0.718				
	B6	0.799	0.638								
	B7	0.470	0.221								
	B8	0.757	0.573								
Purchase Intention	B9	0.849	0.720	0.750	0.50	0.707	0.861				
	B10	0.859	0.738								
	B11	0.561	0.314								
	B12	0.624	0.389					0.797	0.50	0.707	0.750
	B13	0.778	0.605								
	B14	0.695	0.484								
Correlations	F1↔F2	0.218									
	F1↔F3	0.286									
	F1↔F4	0.303									
	F2↔F3	0.305									
	F2↔F4	0.325									
	F3↔F4	0.579									

Table 3 provides clear evidence that there are no problematic estimates in terms of standardised factor loadings above 1.0 or below -1.0 as well as no Heywood cases were present (Hair et al., 2010:706). With all Cronbach alpha values above the

0.60 level (Malhotra, 2010:319; Zikmund & Babin, 2010:248) and CR values above the 0.70 level (Malhotra, 2010:734; Lee et al., 2005:1100), the latent factors may be deemed as exhibiting internal-consistency reliability and composite reliability. In terms of convergent validity all AVE values were above 0.50 indicating acceptable convergent validity. Concerning construct validity all factor loadings exceeded the cut off value of 0.50, except for items B4 (0.456) and B7 (0.470). Deletion of these two latent indicators would result in the latent factor consisting of two latent indicators, since the loadings were relatively close to 0.50 it was decided to retain the two items for the purpose of this study. Furthermore, there is clear evidence of discriminant validity given that the square root of each of the latent factors is greater than the correlation values (Hair et al., 2010:709; Malhotra, 2010:734).

The hypothesised measurement model using the confirmatory factor analysis procedure is specified in Figure 1.

Figure 1: Measurement model



With regards to model-fit indices, a significant Chi-square value of 119.518 with 71 degrees of freedom was calculated. Even though this suggests poor fit, it is well known that the Chi-square statistic is highly susceptible to sample size (Muijs, 2012:235; Hox, 2010:306; Byrne, 2010:77; Ullman, 2006:44). However, the other fit indices proposed a well-fitting model with GFI=0.952, AGFI=0.929, NFI=0.920, IFI=0.966, TLI=0.956, CFI=0.966, SRMR=0.0513 and RMSEA=0.073.

Since the specified measurement model presented acceptable internal-consistency reliability, composite reliability, convergent validity and discriminant validity, it may be deemed suitable to implement structural model testing.

The hypothesised structural model will seek to determine if long-term orientation and political orientation positively affect environmental purchase intentions. Additionally, the model will test if a positive relationship exists between environmental purchase intentions and green purchase behaviours.

5. CONCLUSION

The primary objective of this study was to determine if long-term orientation, political orientation, environmental purchase intention and green purchase behaviour is a valid four-dimensional structure. The results of this study indicate that long-term orientation, political orientation, environmental purchase intentions and green purchase behaviour is a four-dimensional structure. The specified measurement model, utilising an African Generation Y student sample, displays internal-consistency reliability, composite reliability, convergent validity, and construct validity. Furthermore, the specified measurement model showed no evidence of multicollinearity between the dimensions. A good model-fit was computed as all the goodness-of-fit indices fell within acceptable levels of fit. In conclusion, the scale was deemed a suitable measure of long-term orientation, political orientation, environmental purchase intention and green purchase behaviour in the South African context.

6. LIMITATIONS

No study is without its limitations and this is no different. The study made use of a non-probability sampling method to select the sample. Despite the use of various demographic questions which were included in the study to avert the use of convenience sampling, caution should still be taken when generalising the results to the population. Furthermore, a single cross-sectional research was employed, which only observes a single moment in time and lacks the rigour of a longitudinal study. Finally, this study asserted that long-term orientation was a four-dimensional scale. However, the study did not determine if long-term orientation, political orientation and environmental purchase behaviours predict green purchase behaviours.

7 CKNOWLEDGEMENTS

This research study falls in line with the PoGenY research project that is currently underway at the North-West University (Vaal Triangle Campus). The ProGenY project aims to profile the South African Generation Y cohort in terms of consumer psychology within Southern Africa.

BIBLIOGRAPHY

Akehurst, Afonso, Gonçalves, (2012), "Re-examining green purchase behaviour and the green consumer profile: new evidences", *Management Decision*, Vol. 50, No. 5, pp. 972 – 988.

Ali, Khan and Ahmed (2011), "Determinants of Pakistani consumers' green purchase behavior: some insights from a developing country", *International Journal of Business and Social Science*, Vol. 2, No. 3, pp. 217-226.

Billitteri (2010), "Reducing your carbon footprint", (In Shaw, C. L., ed. *Issues for debate in environmental management: selections from CQ researcher.*), California: Sage Publications, pp. 73-96).

Brown and Wahlers (1998), "The environmentally concerned consumer: An exploratory study", *Journal of Marketing Theory and Practice*, Vol. 6, No. 2, pp. 39-47.

Byrne (2010), *Structural equation modelling with AMOS: basic concepts, applications and programming*, 2nd ed, New York: Routledge.

Carmi (2013), "Caring about tomorrow: future orientation, environmental attitudes and behaviors", *Environmental Education Research*, Vol. 19, No. 4, pp. 430-444.

Chang (2011), "Feeling ambivalent about going green: Implications for green advertising processing", *Journal of Green Advertising*, Vol. 40, No. 4, pp. 19-31.

Cheah and Phau (2011), "Attitudes towards environmentally friendly products: the influence of ecology, interpersonal influence and value orientation", *Marketing Intelligence & Planning*, Vol. 29, No. 5, pp. 452-472.

Chen and Chang (2012), "Enhance green purchase intentions: the roles of green perceived value, green perceived risk, and green trust", *Management Decision*, Vol. 50, No.3, pp. 1-43.

Corning and Myers (2002), “Individual orientation toward engagement in social action”, *Political Psychology*, Vol. 23, No. 4, pp. 703-729.

Crane (2000), “Facing the backlash: green marketing and strategic reorientation in the 1990s”, *Journal of Strategic Marketing*, Vol. 8, No. 1, pp. 277-296.

D’Souza, Taghian and Khosla (2007), “Examination of environmental beliefs and its impact on the influence of price, quality and demographic characteristics with respect to green purchase intention”, *Journal of Targeting, Measurement and Analysis for Marketing*, Vol. 15, No. 2, pp. 69-78.

den Elzen, Hof and Roelfsema (2013), “Analysing the greenhouse gas emission reductions of the mitigation action plans by non-Annex I countries by 2020”, *Energy Policy*, Vol. 56, No. 1, pp. 633-643.

Department of Environmental Affairs *see* South Africa, Department of Environmental Affairs.

Field (2009), *Discovering statistics using SPSS*, 3rd ed, London, UK, Sage Publications Ltd.

Fielding, McDonald and Louis (2008), “Theory of planned behaviour, identity and intentions to engage in environmental activism”, *Journal of Environmental Psychology*, Vol. 28, No. 4, pp. 318–326.

Fry (2015), *This year, Millennials will overtake Baby Boomers*, <http://www.pewresearch.org/fact-tank/2015/01/16/this-year-millennials-will-overtake-baby-boomers/>, [Accessed 12.04.2016].

Hair, Black, Babin, and Anderson (2010), *Multivariate data analysis: a global perspective*, 7th ed, Upper Saddle River, N.J.: Pearson.

Han, Hsu and Sheu (2010), “Application of the Theory of Planned Behavior to green hotel choice: Testing the effect of environmental friendly activities”, *Tourism Management*, Vol. 31, No. 1, pp. 325-334.

Hox (2010), *Multilevel analysis: techniques and applications*, 2nd ed, New York: Routledge.

Kumar, Kumar, Rahman, Yadav, and Goyal (2011), “Green marketing mix: rethinking competitive advantage during climate change”, *Special Issue of the International Journal of the Computer, the Internet and Management*, Vol. 19, No. 1, pp. 62.1-62.5.

Kuzmiak (1991), "The American environmental movement", *The Geographic Journal*, Vol. 157, No. 3, pp. 265-278.

Laroche, Bergeron and Barbaro-Forleo (2001), "Targeting consumers who are willing to pay more for environmentally friendly products", *Journal of Consumer Marketing*, Vol. 18, No. 6, pp. 503-520.

Lee (2008), "Opportunities for green marketing: young consumers", *Marketing Intelligence & Planning*, Vol. 26, No. 6, pp. 573-586.

Lee, Cheung, and Chen (2005), "Acceptance of Internet-based learning medium: the role of extrinsic and intrinsic motivation", *Information & management*, Vol. 42, No. 1, pp. 1095-1104.

Leonidou, Leonidou and Kvasova (2010), "Antecedents and outcomes of consumer environmentally friendly attitudes and behaviour", *Journal of Marketing Management*, Vol. 26, No. 13, pp. 1319-1344.

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

Mostafa (2007), "A hierarchical analysis of the green consciousness of the Egyptian consumer", *Psychology & Marketing*, Vol. 24, No. 5, pp. 445-473.

Muijs (2012), *Doing quantitative research in education with SPSS*, 2nd ed, London: Sage Publications Ltd.

Ottman, Strafford and Hartman, (2006), "Avoiding green myopia: Ways to improve consumer appeal for environmentally friendly preferable products", *Environment: Science and Policy for Sustainable Development*, Vol. 48, No. 5, pp. 22-36.

Park (2001), *The environment: principles and applications*, 2nd ed, New York: Routledge, Taylor & Francis Group.

Peattie and Crane (2005), "Green marketing: legend, myth, farce or prophesy?", *International Journal of Qualitative Market Research*, Vol. 8, No. 4, pp. 357-370.

Peattie (2001), "Towards sustainability: The third age of green marketing", *Journal of The Marketing Review*, Vol. 2, No. 2, pp. 129-147.

Rahloa, Mantlana, Winkler, and Knowles (2011), "South African national REDD+ initiative: assessing the potential of the forestry sector on climate change

mitigation”, *Journal of Environmental Science & Policy*, Vol. 17, No. 1, pp. 24-32.

RSA (Republic of South Africa) (2010), *Letter dated 29 January, for the South African National Focal Point*, Pretoria, Department of Environmental Affairs. http://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/southafricacphaccord_app2.pdf, [Accessed 30.04.2012].

Sodhi (2011),” Has marketing come full circle? Demarketing for sustainability”, *Journal of Business Strategies*, Vol. 12, No. 4, pp. 177-185.

South Africa. Department of Environmental Affairs (2013), *Climate change awareness campaign: South African’s governments position on climate change*, <http://www.climateaction.org.za/cop17-cmp7/sa-government-position-on-climate-change>, [Accessed 12.08.2013].

Statistics South Africa (2014), *Mid-year population estimates: 2014. Key indicators, Statistical release P0302*, <http://www.statssa.gov.za>, [Accessed 17.06.2014].

Straughan and Roberts (1999), “Environmental segmentation alternatives: a look at green consumer behavior in the new millennium”, *Journal of Consumer Marketing*, Vol. 16, No. 6, pp. 558-575.

Ullman (2006), Structural equation modeling: reviewing the basics and moving forward. *Journal of personality assessment*, Vol. 87, No. 1, pp. 35-50.

Yu and Cable (2011), “Unpacking cooperation in diverse teams, Team Performance Management”, *An International Journal*, Vol. 17. No.1/2, pp. 63 – 82.

Zikmund and Babin (2010), *Essentials of marketing research*, 4th ed, Mason, Ohio: South-Western/CENGAGE Learning.