Investigating the influence of reference group judgements of global warming on consumers

Investigando a influência das opiniões e críticas do grupo de referência do aquecimento global sobre os consumidores

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ABSTRACT

Objective: To examine the influence of different reference group judgments of global warming on consumers.

Methodology: A scale measuring the influence of reference group judgments' on consumers was developed using secondary research. The scale was evaluated by renowned researchers and a statistician. It was pretested prior to being administered to consumers using mall intercept. 548 responses were obtained and the data analyzed using IBM SPSS Statistics version 20.0. The Cronbach alpha for the reference group scale is 0.889.

Findings: Descriptive statistics revealed that the greatest reference group influence on consumers about global warming was experts in the field. Independent t-test results on gender revealed that there were no statistically significant differences in responses between males and females, while one way ANOVA tests revealed that there were significant differences in responses between groups belonging to different ethnic groups and generation cohorts. However there were no significant differences in responses with groups having different levels of education using the one-way ANOVA.

Conclusions: Reference group judgments' of global warming can be used to influence consumers in relation to global warming. Experts in the field appear to be the best option. Using reference group judgments and segmenting consumers on the basis of generation cohort and ethnic group may be beneficial in trying to influence certain groups of consumers in relation to global warming. However segmenting consumers on the basis of sex and education in order to use reference group influence does not appear beneficial since there is no difference in their responses.

Keywords: Reference groups influences, consumers, global warming.

RESUMO

Objetivo: analisar a influência das opiniões e críticas dos diferentes grupos de referência do aquecimento global sobre os consumidores.

Metodologia: Uma escala para medir a influência das opiniões e críticas do grupo de referência sobre os consumidores foi desenvolvido por meio de pesquisa secundária. A escala foi avaliada por pesquisadores de renome e um estatístico. Foi sujeita a um pre-teste antes de aplicada aos consumidores em centros comerciais. 548 respostas foram obtidas e os dados foram analisados usando o IBM SPSS Statistics versão 20.0. O alfa de Cronbach para a escala grupo de referência é 0,889.

Resultados: estatísticas descritivas revelaram que a maior influência do grupo de referência sobre o aquecimento global sobre os consumidores vinha dos especialistas na área. Resultados do teste t independente de gênero revelaram que não houve diferenças estatisticamente significativas nas respostas entre respondentes do sexo masculino e feminino, enquanto a análise de variância simples (ANOVA one-way) revelou que houve diferenças significativas nas respostas entre grupos pertencentes a diferentes grupos étnicos e grupos etários. No entanto, não houve diferenças significativas nas respostas dos grupos com diferentes níveis de ensino usando a análise de variância simples (ANOVA one-way).

Conclusões: As opiniões e críticas do grupo de referência do aquecimento global podem ser utilizadas para influenciar os consumidores em relação ao aquecimento global. Especialmente quando são especialistas na área. A utilização das opiniões e críticas do grupo de referência e a segmentação dos consumidores com base nos grupos etários e étnicos pode ser benéfica na tentativa de influenciar certos grupos de consumidores em relação ao aquecimento global. No entanto, a segmentação dos consumidores em função do sexo e da educação, a fim de usar a influência do grupo de referência não parece benéfica, já que não há nenhuma diferença nas suas respostas.

Palavras-chave: Influência dos grupos de referência, consumidores, aquecimento global.

1. Introduction

Reference groups play an important role in the behaviours of consumers particularly when they are used to guide consumer behaviour. Hawkins and Mothersbaugh (2013: 216) define a reference group as "a group whose presumed perspectives or values are being used by the individual as a basis for his or her current behaviour." Although the term reference group implies that there is more than one individual involved as a point of reference, Schiffman and Kanuk (2007: 312) state that a reference group is "any person or group that serves as a point of comparison." Consumer reference groups vary according to the type of membership that exists in the group, the strength of the social tie, the type of contact and the attraction of the group (Hawkins & Mothersbaugh, 2013). Reference groups can be family, friends, acquaintenances, professional and neighbourhood associations, celebrities, governments and consumer groups on the Internet.

Global warming is a macro-environmental variable that has emerged as one of the most significant global, social, political, technological and economic issues facing business today (Polonsky, Miles, & Gau, 2011). According to Svensson (2008) unless preventive actions are taken to mitigate global warming and the resultant climate change, global society and its political unions/governments will have to impose anti-climate change agreements and regulations across private and public sectors. Consumers contribute to global warming on the planet through their own personal behaviours and lifestyles. If one takes into account the fact that there are over 7 billion people on the planet all releasing greenhouse gases into the earth's lower atmosphere, their direct contribution to global warming is significant. In addition their demand for goods and services which businesses provide in response, also contribute through derived demand to global warming and the subsequent climate change.

Consumers can assist in the mitigation of global warming in a variety of ways. They can modify their own individual behaviours and lifestyles so that they minimize the amount of greenhouse gases they personally release into the earth's lower atmosphere. Furthermore they can support political candidates who are concerned about global warming and its consequences to all live on this planet. In addition consumers can use their purchasing vote (Shaw, Newholm, & Dickinson, 2006) to support businesses that are participating in global warming mitigation. This study aims to investigate the influence of reference group judgements of global warming on consumers.

2. Literature review

Marketers are interested in reference groups because they play a significant role in consumer purchase and consumption behaviour. Schiffman and Kanuk (2007) state that the degree of influence a reference group has on a consumer's behaviour

is determined by the nature of the individual, the conspicuousness of the product being considered and social factors such as the attractiveness of the group to the consumer, the credibility of the reference group and its power. Arnould, Price and Zinkhan (2005) have identified visibility and distinctiveness of the behaviour associated with the consumer's choice, the relevance of the behaviour to the group image, standards and norms, and the availability and credibility of information that is accessible to the consumer as being major contributors to reference group influence.

Reference groups have been categorised as having normative, informational and identificational influence on consumer behaviour (Hawkins & Mothersbaugh, 2013; Sheth & Mittal, 2004). According to Joubert (2010) reference groups that effect consumer behaviour through a normative influence do so through the norms of the group. Norms specify the behaviours that are acceptable to the group in a given situation and they are normally derived from widely held beliefs that confirm what is acceptable. Consumers will conform to the norms of a reference group when they want to be rewarded by the group or they want to avoid its sanction. Normative influence is strongest when consumers have strong ties to the group and the product is socially conspicuous (Hawkins & Mothersbaugh, 2013). Arnould et al. (2005) mention the fact that recycling in many cities such as Boulder, Colorado is made conspicuous through the prominent display of recycled materials in front of houses in brightly coloured bins. If a neighbour does not recycle, everyone in the surrounding area knows about it. Normative reference groups in this study are the respondent's family, friends, neighbours and acquaintances or peers who may influence their behaviour.

Informational influence on the other hand occurs when the consumer perceives that the opinions of the reference group are believable (Joubert, 2010) and that the members of the group are experts in a particular area. In this study, global warming experts could be seen being an informational reference group. The final reference group category that is considered is the identificational type which relates to the consumer's role models and may include entertainment, sports or political celebrities. In this instance the consumer does something in order to be like someone they admire since they have accepted the group's values as their own. In this instance, the government could be seen as an identificational influence since the majority of the South African population voted for the current government. Consumers do look to their governmental institutions to see what they do and they do develop attitudes toward governments and global warming based on their perceptions (Buckley, 2000).

Concern over the issue of global warming and the resultant climate change has arisen due to the negative outcomes that are associated with this macro-environmental variable. From a South African perspective the negative impact of global warming is that it will put pressure on infrastructure; the country's fauna and flora and its food security. This is particularly significant in a country where 25% of children are already severely under weight and it is estimated that daily five children die of malnutrition. Other negative impacts associated with global warming in South Africa, according to Rand Water, Environmental Management Services Department, include:

- Increased coastal flooding and soil erosion
- Increased intensity of tropical storms and subsequent human deaths as a result of natural disasters
- More frequent outbreaks of infectious diseases such as malaria
- Reduced crop yields and shifting growing zones

- Mass extinctions and animal and plant migrations
- Greater water stress levels in the country due to a growing population and economy, land use changes, urbanisation, and changing rainfall patterns as a result of global warming and the subsequent climate change.

This study investigates the influence of reference group opinions of global warming on consumers due to their potential ability to influence their global warming mitigation activities. As stated earlier reference groups play a significant role in the attitudes and behaviours of consumers.

4. Problem statement, purpose and objectives

Global warming is a macro-environmental variable whose negative impact influences all facets of human society in the world. Consumers contribute to this phenomenon through what they do in their personal lives and through derived demand. In order to reduce the impact of global warming on this planet, consumers need to participate in mitigation measures not only in their personal lives but in mitigation programmes instituted by private and governmental institutions. For example Woolworths Holdings Ltd (2011) states that being able to expose and inform their important stakeholders and in particular their customer base about their sustainable business activities is an important aspect of their business. One of the ways that consumers can be persuaded to participate in global warming mitigation measures is to use reference group influence. The purpose of this study is therefore to determine the extent to which reference group judgements of global warming influence consumers.

The purpose of this study is achieved by the formulation of the following objectives:

- To determine the extent to which Gauteng consumers are influenced by different reference groups' judgements of global warming.
- To investigate whether Gauteng consumers differ significantly in terms of reference group influence based on their demographic characteristics.

5. Research methodology

The empirical part of this study included a quantitative and a descriptive research design.

5.1. The population of the study

The target population for the study included consumers aged 18 and over who shopped at selected malls in Pretoria, Soweto and the surrounding areas of Johannesburg. The specific malls that were selected around Johannesburg were Eastgate, East Rand Mall, Southgate, the Glen, Sandton City, North and Westgate malls. In Soweto, mall intercepts were carried out at the Maponya Mall while in Pretoria the malls intercepts were carried out at the Menyln and Sammy Marks Square malls. The total number of completed questionnaires that were suitable for further analysis in this study was 548.

5.2. Sampling procedure

In this study non-probability sampling was used. Fieldworkers selected respondents based upon on age (18 years or over) and race quotas. This improved the representativeness of the sample so that it adequately reflected the target population under study. Respondents who qualified for the survey responded positively to the screening question which asked them if they had heard of global warming. The respondents in this study lived in Gauteng Province of South Africa.

5.3. Questionnaire design

The questionnaire used in this survey was specifically designed to collect data relating to the influence of reference group judgements of global warming on consumers. Insights

gathered from secondary research using academic journal articles extracted from electronic databases and academic and professional textbooks were used to develop the questionnaire. The questionnaire was evaluated by three renowned academics and a statistician who analysed and commented on it. These comments were then used to modify the questionnaire. The questionnaire was then pretested in the field using four respondents similar to the target audience. This allowed the researcher to determine whether potential respondents would experience any difficulties with the questionnaire itself.

The questionnaire used in the study also included a preamble that explained the aim of the survey, and it informed respondents of their rights. The questionnaire as stated earlier included a screening question which ensured that the respondents who took part in the survey were eligible to do so. The other sections of the questionnaire were structured as follows:

- A demographic section which elicited the demographic characteristics of the respondent. It included questions regarding the respondents age, gender, education level and ethnic affinity i.e. Blacks, Whites, Coloured and Indians

- The second part of the questionnaire focused on the influence of reference group judgements of global warming on consumers. This section of the questionnaire consisted of multi-item Likert-type questions which were labelled 1 strongly disagree, 2 disagree, 3 neither agree nor disagree, 4 agree and 5 strongly agree. The items used in the scale were derived from secondary research that was done specifically for this study.

5.4. Data collection

The data was collected using a professional data collection market research house. Prior to the distribution of the questionnaire, the researcher met with the field workers and went through the questionnaire with them. This was done to clarify any concerns that the fieldworkers may have had with the questionnaire itself. Once the completed questionnaires were received by researcher, these were checked for consistency in responses, omission and errors (Malhotra, 2007). The data was captured on IBM SPSS version 20. The data was then cleaned and errors were corrected.

The data was analysed using IBM SPSS statistics version 20. The analysis of the data included descriptive statistics for the demographic variables surveyed and the individual items contained in the multi-item scales which reflected the means, standard deviation and % of respondents that disagreed; neither agreed nor disagreed; or agreed with the statements. An independent samples t-test was used to determine whether there was any significant difference in the mean responses between males and females while one way ANOVAs were used to determine whether significant differences exist between the means scores of more than two groups. Scheffe's post hoc test was used to determine the groups between which significant differences exist when equal variances were assumed (Eiselen, Uys, & Potgieter, 2007). These tests were used to for comparing different ethnic groups, education and generation cohorts.

6. Results and discussion

6.1. Distribution of results

All items included in the measurement sets measuring the constructs in the study were found to fall within the limits of normality as professed by West, Finch and Curran (1995). According to the authors the distribution of an item can be considered normal if the kurtosis of the distribution is less than absolute 7.00 and the skewness of distribution is less than an absolute value of 2.00

6.1.1. Reliability

The Cronbach alpha value measuring the reliability of the construct was 0.889. A Cronbach alpha value of 1.00 indicates perfect reliability and a cut off point of 0.7 is generally accepted (Hair, Anderson, Tatum, & Black, 1998)

6.1.2. Validity

Validity examines the degree to which what was intended to be measured by the questionnaire was actually measured (Zikmund & Babin, 2010). Content validity implies that the questionnaire appears to reflect what was intended to be measured (Diamantopoulos & Schlegelmilch, 2000; Zikmund & Babin, 2010). In this study content validity was tested using three renowned researchers and a statistician in addition to carrying out a pilot study.

6.1.3. Respondent profile

It is evident from Table 1 that most of the respondents in the survey are male (54.4%) and that many of them belong to the Generation Y cohort (44.6%). In addition the majority of the respondents in this study have a matric or a matric and some tertiary education (58.7%). The black ethnic group was well represented in the sample since they form the largest ethnic group in the South African population. The rest of the sample consists of Whites, Indians and Coloureds which are also considered important ethnic groups in South Africa.

Table 1: Respondent Profile

Gender	Percentage
Male	54.4
Female	45.6
Generation Cohort	Percentage
Babyboomer	27.6
Generation X	21.5
Generation Y	44.6
Over 64	6.3
Highest Level of Education	Percentage
Some High School	18.9
Matric/some tertiary	58.7
Degree/Diploma	16.1
Postgraduate degree/diploma	6.3
Ethnic Group	Percentage
Blacks	46.5
Whites	29.7
Indians	9.3
Coloureds	14.4

7. Reference group judgement of global warming influence on consumers

Table 2 provides an exposition of reference group judgement of global warming influence on consumers in the Gauteng Province of South Africa. For each item on the scale the mean, standard deviation, and the percentage of respondents that disagree, neither agree or disagree and agree is given. From table 2 it is seen that for the first three normative group influence statements of the scale, most of the respondents either disagree or they either agree or disagree. This response suggests that for these consumers normative reference group influence is not a significant influencing factor. However for statements four and five which measures identificational

influence and informational influence respectively, the results indicate that these reference groups have a greater influence on consumers although the cumulative number of consumers that disagree or either agree or disagree still remains relatively high. Statement five however indicates that informational influence using expert reference groups has the greatest influence on consumers in relation to global warming.

Table 2: Reference group judgement influence on consumers

	Statements	Mean	Standard deviation	% of respondents agree	% of respondents that neither agree nor disagree	% of respondents that agree
1.	How my friends judge global warming influences me	2.91	1.19	40.5	23.5	36.0
2.	How my family judges global warming influences me	2.91	1.20	41.9	22.3	35.8
3.	How people other than my family and friends judge global warming influences me	2.95	1.17	40.7	21.9	37.4
4.	How the South African government judges global warming influences me	3.18	1.24	32.1	20.8	47.1
5.	How experts judge global warming influences me	3.53	1.23	23.2	18.4	58.4

8. The influence of reference group judgements of global warming on males and females

An independent t-test was done to determine if there was any significant difference between the males and females responses based on reference group judgement influence of global warming. The results indicate that there was no significant difference in the mean scores for males (M=3.08, SD=0.98) and females (M=3.12, SD=1.03; t (547) = 0.38, p = 0.71 (two tailed).

9. Reference group judgement influence of global warming based on ethic group affiliation

In order to determine whether there were any differences in terms of reference group judgement influence of global warming on different ethnic groups, a one way between groups analysis of variance (ANOVA) was carried out. Post hoc comparisons based on Scheffe (equal variances assumed) were done to indicate where the significant differences for the different groups lay. The results indicate that there was a statistically significant difference between the means for at least two of the groups since the p-value is below the cut of point off of 0.05. Post hoc comparisons using Scheffe indicated that the mean score for Blacks (M=3.23; SD=4.55) was significantly different from Whites (M=2.87; SD=0.99). There was no significant difference between Blacks, Coloureds and Indians and White, Coloured and Indians. This result suggests that any global warming mitigation strategy using reference group influence must take into account the fact that different types of reference group influence are to be found between these two ethnic groups.

10. Generation cohort and reference group judgement influence of global warming

Generation cohort analysis was carried out in this study because each age cohort tends to behave differently as a result of their shared history in terms of their social, political, economic and historical backgrounds (Hawkins & Motherbaugh, 2013:118). A one way between groups analysis of variance (ANOVA) was carried out in order to determine whether there were any significant differences in reference group judgement influence base on generation cohort. A Scheffe post hoc test (assuming equal variances) was done in to determine where the mean differences lay. The results obtained indicate that there is a significant difference at the p

<0.05 in the reference group judgement influence for the 4 groups: F (3, 531) = 3.03, p= 0.029. Despite reaching statistical significance, the actual difference in the means appears small since the Eta squared value for the sample is 0.017 (Pallant, 2010). However Pallant (2010) suggests that with a large enough sample (N=548) quite small differences can become statistically significant even if the difference between the group is of little practical importance. The post hoc comparison using Scheffe indicated that the mean score for Generation X (M =3.35, SD= 0.87) was significantly different from Generation Y (M= 3.03, SD= 1.04). The mean score for Babyboomers (M=3.03, SD=1.01) and those over 64 (M=3.12, SD=0.95) were not significantly different from the other groups Generation X and Generation Y. Further research would have to be carried out to determine whether the differences between Generation X and Generation Y were practically significant.

11. Education level and reference group judgement influence

This was not found to be statistically significant in the case of groups with different levels of education. This may be due to the fact that consumers will very often tend to mix with individuals who have the same level of education and the same interests and therefore education will not be a distinguishing factor.

12. Managerial implications

The descriptive component of the study revealed that for the majority of consumers the normative group influence does not play a significant role. This result suggests that using normative influence to get these consumers to participate in global warming mitigation will probably not produce the desired outcomes. However the responses to the two statements *"How the South African government judges global warming influences me"* and "*How experts judge global warming influences me"* suggests that for a identificational and informational influence perspective, reference groups can play a more significant positive role. For participation in global warming mitigation measures it is suggested that using experts to persuade consumers to become involved will probably produce the most positive outcome.

The quantitative component of the study revealed that males and females do not differ significantly in their responses based

on reference group judgement influence of global warming. This outcome suggests that a single communication strategy using reference groups can be used to persuade both males and females to participate in mitigation measures. However one way ANOVA's carried out on ethnic affiliation and generation cohort reveal that there are significant differences in responses between blacks and whites and between Generation X and Y. It is suggested that further research should be carried out to determine whether these differences are practically significant and whether these different groups need different approaches using reference groups in order to get them to contribute global warming mitigation measures. In addition it was found that there were no significant statistical differences in terms of education level and their responses to reference group influence.

13. Limitations and future research

This research was carried out in the Gauteng Province of South Africa. The selection of the sample was based on convenience, age and race. The Asian community in terms of consumers of Taiwanese, Korean, Chinese and other similar ethnic affiliations was left out as these population groups are relatively small in South Africa. Future research in terms of reference group influence should be conducted in other areas of South Africa to determine if there are significant differences. A future study should also aim at achieving higher sample sizes in the Indian and Coloured ethnic groups as well as other minority groups in South Africa. In addition, further research should be carried out to determine why the respondents who responded negatively or neither agreed or disagreed with the statements felt the way they did. This is essential if one wants these respondents to participate in the mitigation of global warming.

14. Conclusions

Global warming is a significant macro-environmental phenomenon that needs to be addressed by all consumers in all nations around the world. Finding creative ways to encourage consumers to participate in global warming mitigation is extremely important and reference group influence is an option that is available to all stakeholders. This study suggests that using experts and perhaps the government to influence consumers in South Africa may be a viable option.

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