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Article

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MARKETING | RESEARCH ARTICLE

Factors influencing the green purchase behaviour of millennials: An emerging country perspective

Nombulelo Dilotsotlhe^{1*}

Abstract: The study investigates the determinants of green purchase behaviour amongst the millennial cohort in an emerging market of South Africa. The research was theoretically grounded on the diffusion of innovation and the theory of planned behaviour models. A descriptive quantitative research design was followed and primary data was gathered using a self-administered questionnaire. A total of 355 complete responses were suitable for analysis. A partial least squares structural equation modelling technique was used to determine the significance of the inter-relationships between the items measuring the study's constructs. Furthermore, the measurement and structural models were assessed. The findings concluded that all the significant independent variables (relative advantage, compatibility and observability) explained 84.0% of the variance in attitude towards green purchase behaviour. Attitudes, subjective norm and perceived behavioural control explained 83.4% of the variance in behavioural intention towards green purchase behaviour and behavioural intention explained 24.2% of the variance in adoption behaviour. It is therefore important for the green industry of South Africa to cultivate the adoption behaviours of green products towards their customer base, thereby securing

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PUBLIC INTEREST STATEMENT

The promotion and adoption of lower energy consuming lifestyles is imperative for environmental sustainability. This is particularly needed in emerging markets, including South Africa, where there are faster electricity and water demand growth rates. Creating awareness about sustainability concerns and supplying green products to promote the demand and use of green household appliance products in emerging markets will therefore be important.

The findings from this study indicated that relative advantage, compatibility and observability had a positive impact on attitude. Secondly, attitude, subjective norm and perceived behavioural control had a significant influence on behavioural intention. Lastly, behavioural intention had a positive impact on adoption behaviour.

At a practical level, the study enables practitioners to understand which factors influence millennial consumers in their decision-making regarding green purchase and consumption. This knowledge will help marketing managers design effective strategies to encourage green purchase behaviour among such consumers.

the further growth of this niche market segment and enhancing purchase behaviours in the long run.

Subjects: Environmental Psychology; Testing, Measurement and Assessment; Consumer Psychology

keywords: Green purchase behaviour; millennials; attitudes; behavioural intention; perceived behavioural control; adoption behaviour

1. Introduction

Over the past decade, there has been an increased global awareness and interest in green products (Gleim et al., 2013; Godelink, 2012; Koller et al., 2011; Kumar et al., 2017; Nguyen et al., 2018; Pothitou et al., 2016; Song et al., 2015a). The reasons for this growth is attributed to environmental, health and social concerns, which are influencing consumer demand for more safer and friendlier options (Pothitou et al., 2016). In this regard, consumers both in developed and developing nations are thus becoming more concerned about the products they use in their households, and also consider other broader environmental issues (i.e. climate change). Consequently, this had led to a behavioural change towards the adoption of green products due to consumers' need to maintain a healthy lifestyle and in turn safeguard the natural environment (Cerri et al., 2018).

Green products have not only been seen as a key catalyst to address environmental issues by emphasising the importance of recyclability, reusability, refillability, long life, degradability or compostability, high quality in terms of their green performance, energy saving, and using recycled materials (Pothitou et al., 2016). This is because green products do not only help the environment, but there is a source of competitive advantage, profitability and a means to tap into the large and growing health and environmentally conscious consumers (Biswas & Roy, 2015). To reap the rewards of green products, business and nations across the global hemisphere need to be committed in the innovation and production of green products (Olson, 2013).

In South Africa (SA) for example, significant progress has been made with regard to environmental management in the last decade by implementing laws and strategies that focus on sustainable development and green issues (United Nations Environment Program (UNEP), 2011). Nonetheless, the country still faces unprecedented demands of electricity and water from its growing population (Eskom, 2016b). Thus, the promotion and adoption of lower electricity and water consuming lifestyles such as the use of green appliances, are of importance for environmental sustainability (United Nations Environment Programme (UNEP), 2015).

Prior studies in South Africa were mainly focused on assessing awareness, perceptions, habits and knowledge of green products, but how these factors determine consumers' willingness and actual purchase behaviour, is yet to be investigated in an emerging economy such as South Africa (Tshabalala & Chinomona, 2016; Anvar & Venter, 2014; Beneke et al., 2010; Hughes et al., 2015; Scott & Vigar-Ellis, 2014). Therefore, the aim of this study is to understand the factors that may drive or hinder the purchase and consumption of green household appliance products, especially in South Africa where very few published studies on the consumption of environmentally or ethically friendly products, have been done. This study will focus on green household appliance products such as fridges, washing machines, dryers, heaters, stoves, irons and kettles. These green products have been found to consume less electricity and/or water, which is especially important in South Africa (SA), where unsustainable household electricity and water consumption are becoming a growing problem (Gule et al., 2018). Naderi & Van Steenburg, 2018, p. 2) posits that younger generations are socially conscious and are more likely to act pro-environmentally than older generations, and thus the target group for this study is millennial consumers within the region of Gauteng.

Considering the foregoing environmental benefits of consuming green products, it is the researcher's view that this paper could practically and theoretically contribute in revealing the factors driving the green appliance product attitudes and ultimate purchase intention and behaviour of millennials in the emerging economy of South Africa. With this knowledge, green marketers can appropriately not only promote the right benefits of purchasing green appliance products over conventional products, but can also increase their market demand and the adoption of green products over time.

2. Literature review

2.1. Millennials

The millennial generation comprises individuals who were born between 1980 and 2000 (Jain & Dutta, 2019, p. 30), which means that they would currently be between 20 to 40-years-old. Millennials are regarded as more technologically oriented than other generations and rely on the Internet to get access to information and make decisions (Liu et al., 2019, p. 355). There has been a global shift towards the "Millennial Moment", which is a moment in history in which the millennial generation will have the greatest degree of power within economic, cultural and political spheres (Zachara, 2019, p. 2). According to Naidoo (2018, p. 24), millennials have remarkable purchasing power with a global contribution of 2,45 trillion dollars having been spent in 2015. They also comprise of approximately 27% of South Africa's population (Naidoo, 2018, p. 26). Furthermore, Naderi & Van Steenburg, 2018, p. 2) found that millennials are socially aware of their environmental impact, and are motivated to participate in the movement towards sustainable purchases.

2.2. Theory of planned behaviour

The theory of planned behaviour (TPB) has its foundations rooted in the theory of reasoned action (TRA) and was first coined by Ajzen (1985) to improve the explanatory power of TRA. In line with this notion, the TPB contends that an individual's intention to perform (or not to perform) a given behaviour, is the most fundamental determinant of that action (Ajzen, 2005). Moreover, the TPB posits that behaviour (B) is a direct product of behavioural intention (BI), and is perceived as behavioural control, and that behavioural intention is formed by the individual's attitude (A), which denotes the individual's overall positive or negative evaluation of engaging in a given behaviour. It is postulated to comprise affective (e.g., like/dislike), cognitive (beliefs and ideas) and conative (tendency to act in a particular way) elements. Subjective norm (SN) refers to the individual's perceptions of social pressure from important referents to perform the behaviour; and perceived behavioural control (PBC) refers to the perceived level of control that individuals have over performing the behaviour (Ajzen, 2005). Therefore, TPB is widely considered as one of the most influential theories for predicting the behavioural intentions of consumers (M.F. Chen & Tung, 2014).

In the line of the foregoing discussion, TPB has been labelled as a key theoretical lens in predicting consumer intention as well as behaviour in a wide range of green/pro-environmental areas. More specifically, the theory has been validated in several studies investigating recycling behaviours (Khan et al., 2019), green apparel (Nam et al., 2017), energy efficient products (Gao et al., 2017), organic food choices (Rana & Paul, 2017), green hotels and restaurants (M.F. Chen & Tung, 2014) and environmentally friendly cars (A. Chen & Peng, 2012), thereby proving its applicability and robustness.

The TPB, like previous theories, has limitations. Like the TRA, it emphasises proximity between intention and behaviour, which suggests that precise situational correspondence is still imperative for accurate prediction (Chudry et al., 2011). Moreover, the relationship between belief structures and the antecedents of intention is often criticised for its lack of clarity. These limitations notwithstanding, Ajzen (1991, p. 199) emphasises that the TPB is open to the inclusion of additional constructs that have the capability to demonstrate a significant variance in intention or behaviour.

2.3. Diffusion of the innovation model

The Diffusion of Innovation (DOI) model describes “the process by which innovation is communicated through certain channels over time among the members of a social system” (Rogers, 2010, p. 35). This definition contains four key elements of the diffusion, namely, i) the innovation, ii) the communication channel(s), iii) time, and iv) the social system.

For the adopter (individual or other unit of adoption), an innovation is seen as “an idea, practice, or object that is considered as new” (Rogers, 2010, p. 35). It can thus be new to the market, re-introduced, or modified from the original purpose (Rogers, 2010, p. 11). In order for an innovation to be diffused rapidly among potential adopters, it must possess certain characteristics. The perception of these characteristics by potential adopters determines its rate of adoption (Rogers, 2010, p. 14). In the classical DOI model, Rogers (2010, p. 15) identifies five characteristics of an innovation that influences its adoption. These are described next.

Relative advantage—“the degree to which an innovation is perceived to be a better idea than the idea it supersedes” (Rogers, 2010, p. 15). The fact that an innovation does indeed have an objective, comprises that its relative advantage is not enough. What is necessary is that the innovation be perceived as advantageous. According to Rogers (2010, p. 15), the more that individuals or adopting units perceive the innovation to be highly beneficial, the greater the likelihood of the innovation being adopted.

Compatibility—“the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters” (Rogers, 2010, p. 15). An innovation that is inconsistent with the values and norms of a social system will not be adopted as rapidly as an innovation that is compatible.

Complexity—“the degree to which an innovation is perceived as relatively difficult to understand and use” (Rogers, 2010, p. 16). Complexity in this case is analogous to the level of mental or physical effort that an individual exerts in attempting to use the innovation. Innovations that are easier to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understandings.

Observability—“the extent to which the outcomes of an innovation are noticeable to others” (Rogers, 2010, p. 16). The easier it is for potential users to see the results of an innovation, the more likely they are to adopt it.

Trialability—This refers to the degree to which an innovation may be experimented with, on a limited basis. According to Rogers (2010, p. 16), when users can try an idea in small doses or ease into an innovation gradually, they are more likely to adopt the innovation. This innovation characteristic will be excluded from this study. Previous research on household/domestic solar power systems has excluded trialability, as these products are not considered to be trailable due to their nature (Kapoor & Dwivedi, 2020; Claudy et al., 2011; Tapaninen et al., 2009a, p. 102).

Consequently, innovations that are perceived by potential adopters as having superior relative advantage, compatibility, observability and less complexity, are adopted more rapidly than innovations that do not contain these characteristics (Rogers, 2010, p. 16). The DOI characteristics have been extensively applied by many researchers to examine the awareness and acceptance of green innovations and sustainable/eco-friendly products (Islam & Meade, 2013; Kapoor & Dwivedi, 2020; Kapoor et al., (2014); Olson, 2013).

A number of studies that have sought to understand the main determinants of green products, have used the constructs from DOI and behaviour intention (Choshaly, 2019; Kapoor et al., (2014); Mannan et al., 2017). All of the results from these studies established that the model provided a good relationship between innovation characteristics and behavioural intention. In the recent

study by Choshaly (2019), the results from their model testing showed a 45 per cent of the variance in behavioural intention.

Thus, the current study will integrate both the DOI and TPB in order to determine consumers' attitudes, purchase intention and actual purchase towards green appliance products. The integration is likely to provide a higher explanatory power for attitudes towards green product purchase, behaviour intention and actual behaviour, than when these theories are applied individually.

3. Theoretical framework

3.1. Relative advantage and attitude

To have a relative advantage, an innovation must be perceived as better than the idea that it supersedes. The degree of relative advantage may be measured in economic terms and social prestige, but convenience and satisfaction are also important. The potential adopters are essentially weighing the advantages and disadvantages associated with the use of an innovation against the alternative technology that they are currently using. Literature on green innovation has reported a significant influence of relative advantage on users' behavioural intentions, as demonstrated in studies on the adoption of electronic indicators for capturing household energy use (Vollink et al., 2002, p. 334), household solar power and renewable energy system adoption (Alam et al., 2014:257; Tapaninen et al., 2009a, p. 101) and green practice adoption (Chou et al., 2012, p. 710). These studies concluded that consumers found environmentally friendly household products to have an advantage over conventional products commonly used in households. Considering that this may positively influence consumers' attitudes toward green products, the following hypothesis is proposed:

H₁: The relative advantage of green products will have a positive influence on attitudes towards green products.

3.2. Compatibility and attitude

The innovation must be compatible, which implies the degree to which it is perceived as being consistent with past experiences and needs of potential adopters. Claudy et al. (2011) point out that potential adopters are often concerned that the adoption of green innovation would require them to alter their daily habits. According to Rogers (2003, p. 240), when any innovation fits with the lifestyles of potential adopters, stays in line with their preferences, and matches similar technologies that they may have adopted in the recent past, the innovation becomes more appealing to them. Previous studies on green innovation have found that compatibility significantly influences the attitudes and use intention of the potential adopter (Alam et al., 2014:257; Muller & Rode, 2013). Hence the following hypothesis is proposed:

H₂: Compatibility of green products will have a positive influence on attitudes towards green products.

3.3. Complexity and attitude

In using any given technological innovation, an individual's knowledge about that innovation, and the related skills required to use that innovation, often determine the perception of complexity associated with the use of that innovation for the individual. The more comfortable an individual is with using a given innovation, the more attracted they will become to that innovation (Rogers, 2010). A new idea or innovation is less likely to be adopted if it is perceived to be complicated and challenging to use (Rogers, 2003, p. 257). The author further posits that new ideas that are easier to understand tend to be adopted faster than innovations that require the adopter to develop and/or use new skills and understanding. Studies on green innovation and innovation in general, have

confirmed complexity as an important factor underpinning attitudes towards adoption (Alshamaila et al., 2013:257; Chou et al., 2012: 710; Claudy et al., 2011). In line with this, the following hypothesis is proposed:

H₃: Complexity will have a negative influence on attitudes towards green products.

3.4. Observability and attitude

When it comes to observability, the underlying idea is that the innovation under consideration is already in use by other consumers, and the outcomes/results of using that innovation are available to be observed by potential users. The decision to adopt an innovation is greatly influenced by an individual's ability to observe the impact of the innovation on others who have already adopted it. When an innovation is perceived to have a high level of observability by members of a society, it is more likely to have an increased rate of adoption (Rogers, 2003, p. 258). Previous studies on the adoption of solar energy systems (Tapaninen et al., 2009a, p. 103) and renewable energy systems (Sardianou & Genoudi, 2013, p. 1) have observed a non-significant effect of observability on attitudes and behavioural intention. However, other studies on the adoption of green practices have reported a significant influence on the consumers' use intention (Claudy et al., 2011; Plotz et al., 2014). Based on the latter findings and the fact that intention to engage in green practices may have been preceded by positive attitude, the following hypothesis is proposed:

H₄: Observability will have a positive influence on attitudes towards green products.

3.5. Attitudes and behavioural intention

The level of attitudes influences the degree of behavioural intention. That is, the more favourable a person's attitude is towards some considered behaviour, the more likely it is that the person will want to engage in the behaviour (Cherian & Jacob, 2012). More specifically, attitudes are recognised in cognitive psychology as being one of the major factors that guide human behaviour (Fishbein & Ajzen, 1975). The performance of pro-environmental behaviour is contingent on nurturing and enforcing environmental attitudes (Zabkar & Hosta, 2013). Ajzen (1991) further suggests that a consumer's attitude towards certain behaviour is predictive of the person's intention to engage in that behaviour. On the basis of this argument, the following hypothesis is put forward:

H₅: Attitudes will positively impact on the behavioural intention to purchase green products.

3.6. Subjective norm and behavioural intention

A vast number of studies (Biswas & Roy, 2015:466; Ritter et al., 2015; Zhao et al., 2014, p. 149) have previously suggested that social pressure encourages consumers to purchase green products. Subjective norm is recognised as a predictor of consumers' intention to purchase green products (Biswas & Roy, 2015). Wahid et al. (2011) agree with this view by stating that subjective norm is one of the dominant factors influencing behavioural intention. Thus, it is hypothesised that:

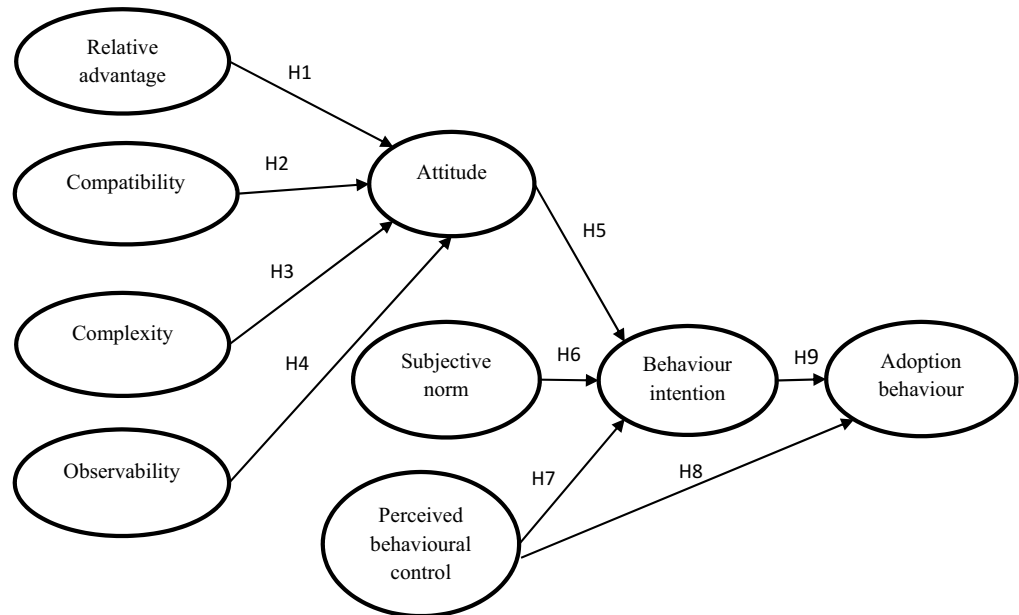
H₆: Subjective norm will positively influence behavioural intention towards green products.

3.7. Perceived behavioural control, behavioural intention and adoption behaviour

Perceived behavioural control is directly linked to intention and behaviour towards green products. A number of studies have shown that perceived behavioural control has a positive impact on intention in various research contexts, such as recycling (Yeow et al., 2014), conservation (Albayrak, Aksoy & Caber, 2013), green hotels (M.F. Chen & Tung, 2014) and green products in

Figure 1. The key factors of green purchase behaviour.

Source: Researcher's own construct



general (Moser, 2015). These findings suggest that behavioural control will enhance consumers' intention towards green product purchase, since it is positively related to both behavioural intentions and actual behaviour (Ajzen, 1991). On the basis of this argument, it is therefore hypothesised that:

H₇: Perceived behavioural control will positively impact on the intention to consume green products.

H₈: Perceived behavioural control will positively impact on the behaviour to purchase green products.

3.8. Behavioural intention and adoption behaviour

Behavioural intention is a significant driver of adoption behaviour towards green products (Lai & Cheng, 2016). This means that the stronger the intention to engage in behaviour, the higher the propensity for intention to translate into actual behaviour performance. Ajzen (1991) and Hassan (2014) found behavioural intention to be an important determinant of purchase behaviour, as it refers to the motivational factor that positively impacts on behaviour. Thus, the relationship between behavioural intention and green product adoption is hypothesised as follows:

H₉: Behavioural intention will have a positive influence on the adoption behaviour to purchase green products.

Considering the above, a theoretical framework (Figure 1) has been proposed that presents a schematic representation of the links between the four elements of DOI (relative advantage, compatibility, complexity and observability) and the five drivers of TPB (attitudes, subjective norm, perceived behavioural control, behavioural intention and adoption behaviour).

4. Research methodology

The research followed a descriptive and quantitative design to conduct the survey. The population of the study comprised of males and females within the millennial age group who are aware of

green products, being either users or non-users of green appliance products, living in the Gauteng Province of South Africa.

The respondents were requested to rate a series of statements on a self-administered questionnaire using a five-point Likert scale, where 1 indicated “strongly disagree” and 5 indicated “strongly agree”. The questionnaire was adapted from scales that had previously been validated from previous studies (refer to annexure 1). “Relative advantage”, “complexity”, “compatibility” and “observability” were measured using items which were adapted from Rogers (2003), Chou et al. (2012), Alam et al. (2014), and Kapoor et al. ((2014)). For “attitudes”, “subjective norm”, “perceived behavioural control”, “behaviour intention” and “adoption behaviour”, the items used were adapted from Wang et al. (2016), Moser (2015), M.F. Chen and Tung (2014), and Ajzen (2005). The first part of the questionnaire gathered the demographic data of the respondents. The remaining part of the questionnaire comprised of a list of scales for the independent variables (i.e. DOI and TPB constructs), as well as the dependent variable, adoption behaviour.

The validity of the study was attended to by ensuring that the content of the measuring instrument supported the formulated research hypotheses and measured what the survey intended to measure. A pilot study involving 30 respondents attained Cronbach alpha coefficients ranging from 0.702 to 0.835, signifying the attainment of internal consistency of the questionnaire (Hair et al., 2017). The results from the pilot study verified that the design of the questionnaire would assist in meeting the research hypotheses of the study. To be eligible for the study, the participants needed to be aware of green appliance products. Because no sample frame was available, a non-probability sampling technique in the form of convenience sampling was applied to choose participants (Saunders et al., 2016). The data was collected from participants that were intercepted from parking areas in malls, churches and recreational parks as the potential participants were easily accessible to the researcher. Five hundred (500) questionnaires were distributed to respondents, a total of 355 questionnaires representing an effective response rate of 71 per cent, were completed and could be used to analyse the results, thereby falling within the minimum sample size of 200–500 as recommended by Kline (2011).

After the data had been coded, captured and edited, the partial least squares structural equation modelling (PLS-SEM) version 3.6 software was applied to analyse data further. In assessing the model, the two-step approach recommended by Anderson and Gerbing (1988) was followed. In the first step, the validity of the measurement model was assessed and then the structural model was examined to test the hypotheses proposed for the study.

5. Results

5.1. Sample profile of respondents

The sample group was well represented as 80% of the respondents were within the working ages of 27–39 years old, compared to the 10%, who were between the 19–26 years old and from this age range, mostly were found to be studying at a particular university in South Africa. This implies that having up to 80% of the respondents being within the working age, predicts their capability of buying green appliance products. This is further reflected by 88.4% of respondents, who reported that they earned incomes between R15 000—R49 999 in South African rands. Earning within this range of income is made possible by the fact that up to 90.8% of the respondents were in possession of a high school qualification up to a Master’s degree level. Therefore, with this level of education, the awareness and use of green appliances were likely to be present.

5.2. Validity and reliability of the measurement model

The reliability and validity of the measurement model was tested using Cronbach alpha, composite reliability, factor loadings and average variance extracted (AVE) respectively. The Cronbach alpha and composite reliability (CR) scores for the all the constructs were all above the minimum threshold of 0.70 as recommended by Hair et al. (2017). *Composite trait reliability* could therefore

Table 1. Reliability and validity of the measurement instrument

Construct/ Item	Factor loadings	Alpha	CR	AVE	Mean Score	Item SD
Adoption		0.930	0.945	0.740	4.04	0.684
AB1	0.848					
AB2	0.889					
AB3	0.822					
AB4	0.870					
AB5	0.829					
AB6	0.902					
Attitude		0.952	0.962	0.807	3.78	0.675
AT1	0.894					
AT2	0.915					
AT3	0.889					
AT4	0.900					
AT5	0.907					
AT6	0.883					
Behaviour intention		0.930	0.950	0.827	3.76	0.657
BI1	0.920					
BI2	0.919					
BI3	0.904					
BI4	0.895					
Compatibility		0.821	0.894	0.739	3.66	0.724
CO1	0.894					
CO2	0.761					
CO3	0.915					
Complexity		0.924	0.951	0.867	2.14	0.401
CX1	0.950					
CX2	0.963					
CX3	0.878					
Observability		0.903	0.932	0.774	3.68	0.704
OB1	0.888					
OB2	0.892					
OB4	0.857					
OB5	0.882					
Perceived behavioural control		0.928	0.943	0.736	3.71	0.730
PBC1	0.854					
PBC2	0.875					
PBC3	0.875					
PBC4	0.874					
PBC5	0.887					
PBC6	0.776					
Relative advantage		0.929	0.949	0.824	3.68	0.704
RA1	0.889					

(Continued)

Table 1. (Continued)

Construct/ Item	Factor loadings	Alpha	CR	AVE	Mean Score	Item SD
RA2	0.906					
RA3	0.940					
RA4	0.895					
Subjective norm		0.948	0.963	0.866	3.58	0.587
SN1	0.913					
SN2	0.945					
SN3	0.943					
SN4	0.921					

* CR = Composite Reliability, AVE = Average Variance Extracted, SD = Standard deviation.

be confirmed. The factor loading for each item was above 0.5, and the factor loadings for all 40 items varied between 0.761 and 0.963. Therefore none of the items were removed. *Convergent validity* was assessed by determining whether AVE value for each construct was above 0.5 (Hair et al., 2017). It is evident from [Table 1](#) that the AVEs for all nine constructs exceeded 0.5 and ranged between 0.736 and 0.867, thus confirming convergent validity. Finally, *discriminant validity* was assessed by determining whether the AVEs of the constructs exceeded the corresponding interconstruct correlations. It is also evident from [Table 2](#) that this was indeed the case as they varied between -0.063 and 0.931, therefore discriminant validity can be confirmed. Therefore, the measurement model fits the data satisfactorily.

5.3. Structural model: Hypotheses testing

The structural model was built after confirming the validity and reliability of the scales. Concerning the hypotheses testing, [Table 3](#) shows the combined analysis of path coefficients, *t*-values, and *p*-values which indicate that Relative advantage -> Attitude; Compatibility -> Attitude; Observability -> Attitude; Attitude -> Behaviour intention; Subjective norm -> Behaviour intention; Perceived behavioural control -> Behaviour intention; Behaviour intention -> Adoption behaviour have statistically significant path coefficients. The remaining path coefficients were not statistically significant, considering that their *t*-values were less than the recommended 1.96. This concludes that 7 out of the 9 hypotheses were supported.

The f^2 effect size (also known as R-square change effect) is a measure that calculates changes in the R^2 should a specific exogenous construct be omitted from the model (Garson, 2016). f^2 values of 0.02, 0.15 and 0.35 respectively were used as guidelines for the small, medium and large effect sizes of the predictive variables (Cohen, 1988). As presented in [Table 3](#), the results show a small effect of compatibility and observability on attitudes, whilst complexity and relative advantage were found to have a medium effect on attitudes. Attitudes and subjective norm were found to have a small effect on behavioural intention, whilst perceived behavioural control was found to have a medium effect size on behavioural intention. Lastly, the results further showed perceived behavioural control and behavioural intention to have a medium effect on adoption behaviour.

Remarkably, the structural model as presented in [Figure 2](#), indicates that relative advantage, complexity, compatibility and observability explained up to **84.0%** of the attitude of customers towards the adoption of green appliance products. On the other hand, attitude, subjective norm and perceived behavioural control contributed up to **83.4%** of the behavioural intention of customers towards the adoption of green products. In addition, perceived behavioural control and behavioural intention explained up to **24.2%** of the adoption level of green appliance products by consumers.

6. Discussion

The results of the present study show a significant and positive relationship between relative advantage ($\beta = 0.351$, $t = 4.849$, $p = 0.000$) and attitude, thus supporting H_1 . The results indicate that the South African millennials view the reduction in water and electricity bills as important when deciding on the purchase of green appliance products. This finding is consistent with earlier findings of Qureshi et al. (2017, p. 754) who found a significant relationship between relative advantage and attitude among Pakistan residents on household solar appliances.

Interestingly, complexity ($\beta = -0.037$, $t = 1.826$, $p = 0.068$) was found to have no significant relationship with attitude, implying that H_2 was not accepted. This result suggests that the millennials in South Africa are not necessarily influenced by the complexity of green appliance products when forming attitudes on making a green appliance purchase decision. This finding is inconsistent with the findings of earlier studies where it was found that complexity (referred to as difficulty/ease of use) had a strong, significant relationship with consumers' attitude and ultimately, their purchase intentions, as reported by Alam et al. (2014) in Malaysia and Stephenson and Ioannou (2010) in New Zealand.

The results of the study reveal that compatibility ($\beta = 0.166$, $t = 3.431$, $p = 0.001$) had a significant influence on attitude and this supports H_3 . The findings suggest that the South African millennials think that purchasing a green appliance will not require them to make any changes to their existing appliances at home, as the green appliance product will be compatible with their existing products, in turn, minimising their apprehension towards green adoption. This finding was also confirmed in related studies by Huetink et al. (2010) and Ozaki (2011). Similarly, the findings also show observability ($\beta = 0.454$, $t = 6.229$, $p = 0.000$) had a significant influence on attitude, thus supporting H_4 . This finding accords with that of Claudy et al. (2011) in Ireland and Chou et al. (2012) in Taiwan, who reported a significant influence of observability in influencing the purchasing of solar products. Their findings were also validated by Kapoor et al. ((2014)) in similar studies conducted in Swansea (United Kingdom) on household solar equipment.

The results further show that attitude ($\beta = 0.509$, $t = 8.001$, $p = 0.000$), subjective norm ($\beta = 0.096$, $t = 2.567$, $p = 0.010$) and perceived behavioural control ($\beta = 0.357$, $t = 5.991$, $p = 0.000$) had a significant impact on behavioural intention, hence H_5 , H_6 and H_7 are accepted. This finding resonates with findings of Chekima et al. (2016) and Wang et al. (2016) who contend that individuals who hold positive attitudes, experience social benefits and favourable behavioural control, are more likely to engage in sustainable behavioural such as green purchase intention. This suggests that attitudes, subjective norm and perceived behavioural control are key influencers of green purchase intention.

Interestingly, the findings established that perceived behavioural control ($\beta = -0.146$, $t = 1.499$, $p = 0.134$) does not significantly predict adoption behaviour, which suggests that H_8 cannot be accepted. This finding is inconsistent with the work of Joshi and Rahman (2016) which found perceived behavioural control to positively affect consumers' adoption of green products. Thus, the finding could suggest that South African millennials have lower levels of volitional control over themselves while making decisions regarding the actual adoption of green products.

Notably, the results of this study contend that a significant relationship exists between behavioural intention ($\beta = 0.614$, $t = 5.936$, $p = 0.000$) and adoption behaviour, hence H_9 can be supported. This is in line with the findings of Bisschoff and Liebenberg (2016) and Cheung et al. (2015) who established that consumers with an intention to purchase products, display a greater concrete purchasing prevalence as opposed to customers who exhibit that they have no intention of making a purchase. Therefore, behavioural intention has an explanatory power on determining the likelihood of purchasing/adopting green products.

Table 2. Average variance extracted and squared interconstruct correlations

	1	2	3	4	5	6	7	8	9
1	0.860								
Adoption behaviour									
2	0.433	0.898							
Attitude									
3	0.486	0.892	0.909						
Behaviour intention									
4	0.400	0.753	0.750	0.860					
Compatibility									
5	-0.257	-0.258	-0.234	-0.081	0.931				
Complexity									
6	0.414	0.885	0.850	0.750	-0.221	0.880			
Observability									
7	0.390	0.881	0.873	0.771	-0.223	0.838	0.858		
Perceived behavioural control									
8	0.422	0.864	0.827	0.694	-0.304	0.850	0.812	0.908	
Relative advantage									
9	0.435	0.717	0.715	0.795	-0.063	0.713	0.711	0.674	0.931
Subjective norm									

Note: AVE reflected diagonally and squared correlations below AVE

Table 3. Results of the structural model

Proposed Hypothesis Relationships	Path Coefficients	T Statistics	P Values	Result	f²
Attitude -> Behaviour intention	0.509	8.001	0.000	Supported	0.053
Behaviour intention -> Adoption behaviour	0.614	5.936	0.000	Supported	0.170
Compatibility -> Attitude	0.166	3.431	0.001	Supported	0.026
Complexity -> Attitude	-0.037	1.826	0.068	Not supported	0.170
Observability -> Attitude	0.454	6.229	0.000	Supported	0.021
Perceived behavioural control -> Adoption behaviour	-0.146	1.499	0.134	Not supported	0.163
Perceived behavioural control -> Behaviour intention	0.357	5.991	0.000	Supported	0.297
Relative advantage -> Attitude	0.351	4.849	0.000	Supported	0.196
Subjective norm -> Behaviour intention	0.096	2.567	0.010	Supported	0.025

*This study considers the value of $p = 0.05$ to be the limit in judging whether the relationship is considered to be significant or not.

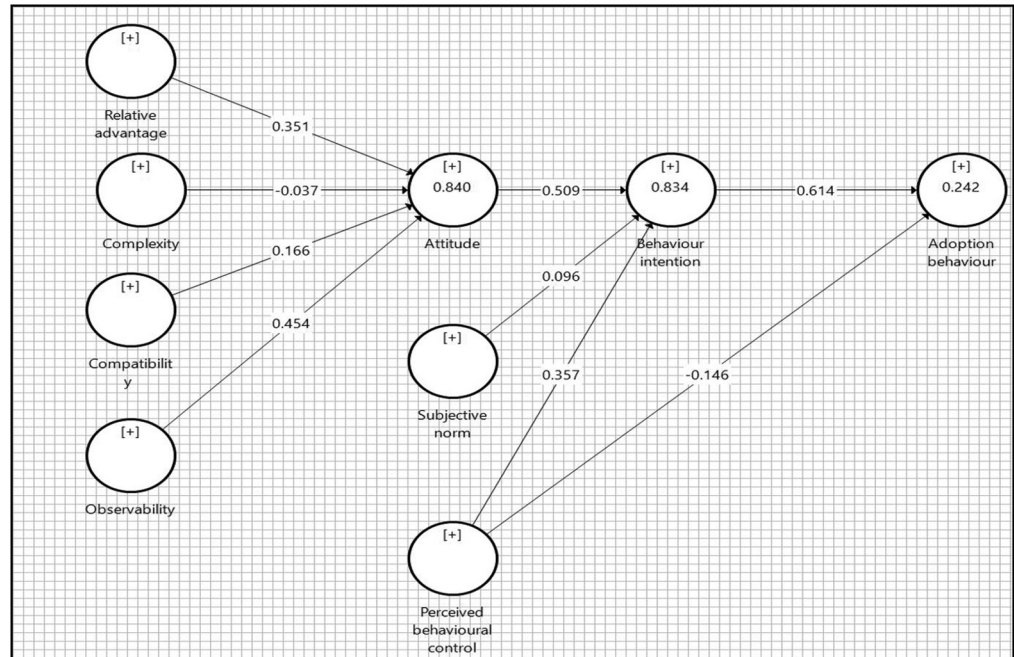
7. Managerial implications

Considering the implications of the study, it can be said that the findings are important for green home appliance manufacturers and marketers who are either targeting the millennials or see them as their potential customers.

The results revealed that South African millennials' attitudes towards green purchase behaviour are positively influenced by relative advantage, compatibility and observation. Firstly, marketers are advised to emphasise the advantages of purchasing green appliances, as well as taking into consideration the advantages that current and potential customers value most. The results from the study showed that financial advantages (such as savings from water and electricity bills) are very important. Secondly, in enhancing favourable attitudes towards green appliances, manufacturers and marketers should ensure to make and market green appliances that are more compatible with consumers' lifestyles. By doing so, consumers will be more likely to adopt them. The visibility of green appliance products was also considered very important by the millennials. This result suggests that marketers should create ways for these consumers to see the product being used by other people. This could include product demonstrations by salespeople inside stores, malls, on television and via the electronic media.

Figure 2. Structural model.

Source: Researcher's own construct



Secondly, it is suggested that green marketers can enhance consumers' attitudes, subjective norm and perceived behavioural control towards green products by creating awareness in society in order to stimulate the level of behavioural intention. This can be done by putting emphasis on how the use of green products can lessen environmental problems and damage, which in turn may create a favourable image of the green appliance products and help generate positive word-of-mouth among peers and family members. More specifically, businesses should ensure that green products are readily available and accessible in major retail stores across Gauteng Province to build consumer confidence and promote a favourable impression in the marketplace. As a result, if green appliances are considered to be easily accessible to the consumers, the probabilities are high that they will have more intention to opt for them due to the formation of good perceptions regarding their level of attitude, subjective norm and behavioural control.

Lastly, it is proposed that green marketers should focus on cultivating behavioural intentions and perceived behavioural control to ensure that they build genuine and sustained adoption behaviours towards green products. This can be achieved by highlighting the advantages and benefits that current and potential customers get from purchasing green products, such as cost savings from water and electricity bills, ensuring environmental protection and generating social awareness amongst peers and family members. Furthermore, this strategy can be enhanced by using personal selling, the social media and television to showcase how green products solve consumer problems. The key features that are most useful to consumers need to be promoted, and performing product demonstration to improve their visibility, increase brand awareness and stimulate trials and feedback from consumers are factors that will encourage consumer awareness. This in turn will build good impressions in the minds of consumers, thereby leading to favourable intentions and behavioural control, which may further lead to increased adoption and usage levels amongst consumers.

Although this study did provide additional insight into the influence of the determinants of green purchase behaviour in the emerging market of South Africa, a number of limitations are present. The main limitation of this study is that the study was conducted only on South African millennials

who resided in the Gauteng Province This thus limits the generalisation of the results of the study to the entire South African green product population. The study focussed on the product-specific factors included in DOI and TPB as determinants of green purchase behaviour. While the proposed research model has proved to be an effective predictor of green purchase behaviour, additional factors such as demographic elements could prove to be key drivers in green purchase behaviour amongst millennials. In terms of future research, the application of both qualitative and quantitative research techniques can be considered to obtain greater in-depth insight behind the determinants of millennial consumers to adopt or purchase green products in South Africa.

8. Conclusions, research limitations and future research opportunities

The aim of the study was to ascertain the factors influencing the green purchase behaviour of millennials. The study investigated the relationship amongst key variables and adoption behaviour in the green product industry of an emerging economy such as South Africa. The empirical findings revealed several factors on which the current (and potential) green businesses need to concentrate in order to build favourable adoption levels, comprising mainly of DOI elements (i.e. relative advantage, complexity, compatibility and observability) and the drivers of TPB (i.e. attitudes, subjective norm, perceived behavioural control and behavioural intention). Firstly, the study concluded that relative advantage, compatibility and observability do lead to a significant and positive impact on attitude, whereas complexity could not significantly predict attitude towards green products. Secondly, attitude, subjective norm and perceived behavioural control had a significant influence on behavioural intention. Lastly, behavioural intention had a significant relationship with adoption behaviour, while perceived behavioural control had no significant impact on adoption behaviour. The integrated model was useful to explain 83.4% of the variance of behavioural intention to purchase green appliances and 24.2% of the variance in adoption behaviour. This can be considered a good result in this field of consumer behaviour, bearing in mind that it is not always easy to predict the drivers of consumer behaviour, especially green purchase behaviour.

In conclusion, the results of this study contribute to an understanding of the determinants of green product purchase behaviours in an emerging market context. The study further provides direction to green businesses on the cultivation of the different DOI elements in alignment to TPB factors with their customers over the long term through a greater emphasis on stimulating adoption/purchase behaviours. Therefore, it is vital for green business to acquire knowledge and understanding about the factors that drive the adoption and purchase of green products amongst consumers in order to ensure sustained growth of this niche industry even further. To achieve such a task, green businesses need to concentrate on the elements that could assist them to drive growth and stimulate purchase behaviours that would benefit both themselves, their customers and the country.

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Annexure 1. Constructs' Items and their Sources

Constructs	Items	Sources of the items
Relative advantage	The green appliances have/would have significant benefits for me and the environment The green appliances decrease air pollution The green appliances decrease carbon footprint production Using green appliances reduces the pressure on energy (electricity) consumption.	Kapoor et al. ((2014)); Rogers (2003)
Compatibility	To buy the green appliances is/ would be in line with my lifestyle It is easy to find shops that sell green appliances To use green appliances is/would be in line with my values Buying green appliances does not/ would not differ from what I am used to in the past.	Alam et al. (2014); Rogers (2003)
Complexity	It is/would be difficult to understand how green appliances work It is/would be difficult to use green appliances It is not/would not be simple to use green appliances Using the green appliances is not/ would not be frustrating	Kapoor et al. ((2014)); Rogers (2003)
Observability	It is/would be easy to see the advantages of using green appliances It is/would be difficult to explain the benefits of using green appliances to others By buying green appliances, I show/would show that I care about the environment The benefits of using green appliances is/would not be hidden	Chou et al. (2012); Rogers (2003)
Attitudes	I feel that green appliances' environmental conservation claims are generally trustworthy. I feel that green appliance's' environmental protection reputation is generally reliable. Buying green appliances is/would be a good idea for me and the environment. Buying green appliances is/would be a worthwhile purchase decision. I have a favourable attitude towards purchasing the green version of the products. If I can choose between green appliances and the conventional ones, I would prefer the green versions.	Ajzen (2005)

(Continued)

<i>(Continued)</i>		
Constructs	Items	Sources of the items
Subjective norm	Purchasing the green appliances cause/would cause me to be admired. Purchasing the green appliances make/would make a good impression of me Purchasing the green appliances improve/would improve the way I am perceived. Most people who are important to me expect/would expect that I should buy the green appliances.	Wang et al. (2016); Ajzen (2005)
Perceived behavioural control	I believe that I have the financial ability to purchase green appliances. If it were entirely up to me, I am confident that I will purchase green appliances. I see myself as capable of purchasing green appliances in future. I have resources to purchase green appliances. I have the time to purchase green appliances. Green appliances are generally available in the shops where I usually do my shopping.	Moser (2015)
Behavioural intention	I intend to start/continue buying green appliances because of its environmental benefits. I will consider switching to green appliances for ecological reasons. I expect to start/continue to purchasing green appliances in the future because of its positive environmental contribution. I definitely want to purchase green appliances in my next purchase.	M.F. Chen and Tung (2014); Ajzen (2005)
Adoption behaviour	I make a special effort to buy green appliances. I have switched to buying green appliances because of the environmental benefits. When I have a choice between the same types of products, I purchase the ones that use less electricity and is less harmful to the environment. I make a special effort to buy home appliances that are green or environmentally friendly.	M.F. Chen and Tung (2014); Ajzen (2005)



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