Determinants of Consumers' Purchase Intentions of Electronic Vehicles

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Abstract: *Electric vehicles are being introduced as a sustainable innovative solution, aimed at eliminating the negative environmental effects by having the ability to reduce carbon emissions, air pollution and fossil fuel dependency. It is therefore important for management, marketers and government to find innovative ways to promote and increase the adoption rate of these vehicles. This paper aims to make use of the theory of consumption values to predict the purchase intention for plug-in hybrid electric vehicles (PHEVs) in Gauteng, South Africa. Using structured questionnaire and convenience sampling, data were collected from 286 respondents. Online data collection was used due to the Corona virus pandemic restrictions, which limited the researchers' abilities to explain items in the questionnaire. A partial least squares structural equation modelling was performed to test the proposed hypotheses. Results indicate that functional, social, emotional and conditional values are positively related to customers' purchase intention of PHEVs, while the epistemic value is not positively related. This study will provide useful information to electric vehicle manufacturers, car dealerships, marketing managers and the government in developing strategies aimed at encouraging the adoption of PHEVs.*

Keywords: *Functional values, Emotional values, Social values, Conditional values, Epistemic values, Consumption values*

Introduction

There is a global emphasis placed on addressing the challenges of sustainability. These challenges are inclusive of environmental issues, such as the rising levels of pollution, the heavy reliance on fossil fuels as a depleting source of energy, and the growing implications of climate change which the world faces today. The presence of these challenges has led to a greater cause for concern capturing global attention, thus driving efforts towards negating harmful environmental practices (Kapoor & Dwivedi, 2020: 1). Green technology has been introduced as a sustainable, innovative solution, aimed at eliminating the negative environmental effects by having the ability to reduce carbon emissions and fossil fuel dependency.

The rising global concern is illustrated through the 2015 Paris Agreement consisting of 195 countries expressing their support to reduce carbon emissions and energy usage levels. The transport industry worldwide experiences high levels of criticism; considering that 15% of global carbon emissions are attributed to road transport. Subsequently, traffic contributes 25% of particulate matter that reduces air quality, thus impacting individual health. Furthermore, transport is identified by to have the highest potential for energy-efficient improvements

considering that one of the main contributors of CO2 emissions has been identified to be light-duty vehicles, of which the majority are privately owned. Thus, highlights the adoption and usage of electric vehicles as being a sound solution in achieving the goals of the Paris Agreement. A number of governments from countries such as the US, the UK and China have introduced policies aimed to encourage the production, entry to market and the adoption of electric vehicles. However, argue that although policy interventions play an integral role in influencing the adoption of green technology, it is irrelevant unless consumers initiate the adoption themselves. Mass adoption of electronic vehicles is highly reliant on consumers' perception, thus making it imperative to understand factors that will increase consumers' intention to purchase (Rezvani et al., 2015: 122). Therefore, indicating the importance of investigating behavioural intention to purchase as highlighted in multiple studies by Sarkar, Sarkar and Yadav (2019) and Kapoor and Dwivedi (2020).The global industry for hybrid and electric vehicles is regarded as strong and steady, aligned to multiple countries agreeing to lower emissions and energy usage (MarketLine, 2019:7; GreenCape, 2019:3). Currently, the market share, as reported by Market Line (2019:12) consists of Asia (56.9%), Europe (22.7%), the US (18.9%), the Middle East (0.4%) and all remaining countries (1.0%). This demonstrates the reason why existing studies are mainly situated in the US, the UK, China and the Middle East.

There are limited studies conducted in Africa, considering the fact that only two prominent countries have adopted electric vehicles, being South Africa and Nigeria. These studies have mainly focused on affordability with Ayetor, Quansah and Adje (2020:1) conducting a study in Ghana investigating the cost-saving benefit of electric vehicles, and Pillay, Brent and Musango (2019:1) determining affordability to be a critical barrier towards electric vehicle adoption in South Africa. The electric vehicle market in South Africa is in its infancy stage when compared to other international markets and the growth in sales

has also been slow (Moeletsi, 2019). Hence, researchers have called for further research on determinants of pro-environmental buying behaviour, which may influence consumers to purchase electric vehicles. Thus, identifying factors which may influence consumers positively towards purchasing electric vehicles that are considered to be environmentally friendly is yet to be investigated.

The study aims to investigate factors influencing purchase intention to contribute to the existing knowledge gap with findings assisting marketing strategies to influence the adoption of plug-in hybrid electric vehicles (PHEVs). Applying the theory of consumption values (TCV) by Sheth, Newman and Gross (1991) would be beneficial to this study as the theory is known to be useful in identifying and understanding the basic attributes of consumption. The TCV offers a collection of consumption values that can influence decision making (Sheth et al., 1991). This study will focus on investigating these values, including functional, social, emotional, conditional and epistemic values, to find out how each element influences the customers' purchase intention towards PHEVs in the South African context.

Research Objectives

The empirical objectives of the study are:

- To understand the role that functional and social values play in consumers' behavioural intention towards the purchase of PHEVs

- To determine how conditional and emotional values have an impact on consumers' behavioural intention to adopt PHEVs

- To ascertain how epistemic values influence consumers' behavioural intentions to purchase PHEVs

Literature Review

The United Nations Environment Programme (2019) stated that environmental issues are sweeping the globe at an incredible pace which is higher than expected, and they advised that companies should practise pro-environmental

behaviour to reduce environmental issues like air pollution. According to Gkorezis (2015), pro-environmental behaviour is an action which aims at preserving the environment by practising sustainable measures such as avoiding waste, recycling and eliminating greenhouse gas emissions. Markle (2019) elaborates that pro-environmental behaviour was implemented to help resolve environmental issues such as air pollution and the spread of greenhouse gases, and it was reckoned that environmental issues can be reduced through changes in behaviour patterns. Pro-environmental behaviour creates awareness of environmental matters and outlines the level of sustaining a green environment (Shabbir Husain& Varshney, 2019:84). The environment is mostly affected by greenhouse gases that are triggered by air pollution caused by conventional vehicles through the release of carbon dioxide into the air.

Greenhouse gases consist of nitrous oxide, water vapour, methane and carbon dioxide, which have a negative effect on global warming (Lallanilla, 2019). Therefore, marketers need to be conscientious of products that can help reduce the production of greenhouse gases that is due to the growing demand for green consumerism, which has led to a change in adopting green products. Knibb and Taylor (2017) state that green consumerism compliments pro-environmental behaviour in a significant manner, as it is process whereby customers request for products or services which are environmentally friendly. Furthermore, Abdeen, Rajah and Gaur (2016) highlight pro-environmental behaviour as important, and that marketers should detect gaps through innovations such as the implementation of plug-in hybrid electric vehicles (PHEVs), which help preserve natural resources and reduce air pollution. Malik et al. (2018) state that PHEVs can contribute to keeping the environment clean and, in general, they create fewer emissions that lead to negative climate implications. Furthermore, pro-environmental behaviour incorporates green technology, which forms part of a sustainable consumption behaviour (Joshi & Rahman, 2016:452). PHEVs will help

eliminate ecological issues such as global warming and the spread of greenhouse gases in South Africa by eliminating air pollutioncaused by conventional vehicles that utilise gasoline with the act of using PHEV-inducingpro-environmental behaviour (Barros & Pádua, 2019:168).

The innovation of electric vehicles has been posed as a solution for lowering levels of fossil fuel dependency and reducing carbon emissions (Rezvani et al., 2015:122). Different types of electric vehicles include alternative fuel vehicles (AFVs), hybrid electric vehicles (HEVs), battery electric vehicles (BEVs), plug-in hybrid electric vehicles (PHEVs), extended range electric vehicles (EREVs) and full electric vehicles (FEVs).

AFVs contain a traditional internal combustion engine (ICE) as well as an electrical system making the vehicle partly or fully fuelled by less harmful alternatives such as bio fuel or electricity (Rezvani et al., 2015: 123; Hamilton & Terblanche-Smit, 2018:1).HEVs operate on an ICE and an electric motor, which capitalises the performance and fuel efficiency when utilised (Poullikkas, 2015: 1278), with Rezvani et al. (2015: 123) indicating that HEVs have become increasingly popular in the US and Japan. PHEVs are adapted from HEVs with improvements made to battery capacity and the option to charge the battery from the electrical grid in contrast to the self-sustaining battery of the HEV (Poullikkas, 2015: 1280; Li, Long, Chen & Geng, 2017: 319). EREVs have a similar structure to PHEV with both an ICE and a battery that achieves a greater driving range with the fuel acting as a charger for the battery system (Li et al., 2017: 319). FEVs are powered through the electric and traction motor and utilise a standard plug outlet or a dedicated charging station (Poullikkas, 2015: 1282). This study focuses on PHEVs considering Hamilton and Terblanche-Smit (2018:1), who indicate that PHEVs are to be one of the main electric vehicles introduced to the South African market with the future expected growth indicating their relevance to future studies regarding consumer behaviour and adoption.

Theoretical background

Created by Sheth et al. in 1991, the theory of consumption values (TCV) has been used in a number of studies to explain why individuals choose to purchase or not as well as why they choose certain products or brands over others. The TCV is built upon three fundamental propositions, which suggests that consumption values are regarded as independent, consumption values contribute to any choice decision and an individual's choice is a result of many consumption values (Sheth et al., 1991:160).Using the five consumption values, namely, functional, social, emotional, conditional and epistemic, the TCV was deemed the most appropriate for meeting the research objectives of determining what motivates South African public choices in terms of their intentions to purchase PHEVs (Sheth et al., 1991).

This theory has been previously used to examine the antecedents and predictors of green purchasing behaviour (Awuni & Du, 2016; Gonçalves et al., 2016). Other studies employed TCV to determine environmental concerns on green product purchases (Rahnama & Rajabpour, 2017; Suki, 2016). Additionally, the theory has been applied to consumers' choice behaviour in buying green products and has examined the impact of the five consumption values on drivers' willingness to acquire bio fuels (Khan & Mohsin, 2017; Zailani et al., 2019).Each of the values will now be discussed in turn.

Market choice has traditionally been regarded as being influenced primarily by functional value. According to Sheth et al. (1991a, 1991b), functional value is derived from the perceived utility of the object in the choice situation, and generally relates to such attributes as performance, price, durability and reliability.A study in China found that functional values were a vital determinant of consumers' buying behaviour in seeking maximum benefits at the lowest cost (Awuni & Du, 2016: 124). The literature describes functional values in terms of quality, price and dependability (Khan & Mohsin, 2017). Wang et al. (2019) concur, noting that

functional values regarding quality and price were used to predict green buying behaviour. Studies in Australia (Singh & Pandey, 2018), Malaysia (Zailani et al., 2019) and India (Biswas & Roy, 2015) found that functional values influenced sustainable consumption behaviour. Furthermore, Han et al. (2017) report that when consumers adopted environmentally friendly cars, the rewards included performance, convenience, as well as monetary value. In terms of behavioural intention, functional values derived from the use of PHEVs include perceived functional benefits, price and quality.

Many market choices are also influenced by social value, which attaches to a product from its association with social groups. Market choices such as product type, brand choices and purchase decisions are influenced by social value in that consumers perceive that various product classes are either congruent or incongruent with the norms of the reference groups to which they belong or aspire (Sheth et al., 1991a).A study conducted in Portugal found that social value is concerned with improving self-image and gaining societal approval, both of which influence sustainable consumption behaviour (Gonçalves et al., 2016). In Pakistan, Khan and Mohsin (2017) pointed out that an individual's choice behaviour is positively and significantly affected by his or her social values. Studies in China (Clark et al., 2019) and New Zealand (Johnstone & Hooper, 2016) found that social values affected consumers' behavioural intentions to consume green products. Han et al. (2017) posit that consumers are inclined to adopt environmentally friendly vehicles as such action fulfils their social obligation to help decrease CO2 emissions. In terms of behavioural intention, social values include social perceptions of utility acquired from the use of PHEVs.

According to Sheth (1991), the conditional value is defined as the perceived utility acquired as a result of the specific situation or the context faced by the choice maker. Thus, conditional value often influences the decision choice maker to deviate from their typical or planned pattern of behaviour.The literature suggests that changes in

conditional values (e.g., time, context, place, personal situation) can alter consumer behaviour (Kushwah et al., 2019). A study in Malaysia supported this finding, with consumption behaviour proving to be significantly influenced by conditional values (Zailani et al., 2019). In the same vein, some researchers found that green consumer behaviour was indeed influenced by conditional values, as changes in specific conditions affected green product purchases (Khan & Mohsin, 2017). Studies in India (Biswas & Roy, 2015) and Malaysia (Wen & Noor, 2015) found that conditional values influenced consumers' behavioural intentions towards adopting environmentally friendly products. As Awuni and Du (2016) posit, information relating to global warming or environmental concerns can sway consumer behaviour towards the adoption of sustainable products. In terms of behavioural intention, conditional values encompass the perceived situational utility obtained from the use of PHEVs.

Many products are associated with or facilitate the arousal of specific emotions or feelings. Emotional value relates to the individuals' affective response to the product (Sheth et al., 1991a, 1991b).Studies in Malaysia (Abdulrazak & Quoquab, 2018) and Hong Kong (Lee, 2017) found that emotional values influenced consumers' intentions to live conscious and sustainable lifestyles. As explained by Han et al. (2017), feelings of comfort, ease of driving and pleasure are among the psychological needs fulfilled when purchasing EVs. Han et al. (2017) also found that environmentally conscious consumers demonstrated a notable willingness to decrease their CO2 footprint, and derived emotional value from adopting EVs. In terms of behavioural intention, emotional values represent the perceived emotional benefits obtained from using PHEVs.

Epistemic value is a need to obtain a product in order to satisfy curiosity, novelty or knowledge seeking (Sheth et al., 1991). The literature suggests that novelty-seeking is a means of improving consumers' problem-solving skills, which is essential for stimulating their willingness

to test new products (Awuni & Du, 2016; Zailani et al., 2019). A study in Portugal found that green product purchases are influenced by an individual's epistemic values (Gonçalves et al., 2016), while in China, Wang et al. (2019), in Iran, Rahnama and Rajabpour (2017) and in Malaysia, Suki (2016) found that epistemic values affected green consumption behaviour. As Kushwah et al. (2019: 4) explain, consumers seek information related to credibility, production methods, and the environmental impact of a product and/or service, prior to deciding on whether or not to make a purchase.In terms of behavioural intention, epistemic values encompass perceived utility relating to the knowledge and novelty obtained from using PHEVs.

Considering that the five consumption values of the TCV have been proven to predict behavioural intention towards green products, the following hypotheses are formulated:

H1: Functional values will have a significant and positive impact on consumers' behavioural intentions in relation to the adoption of PHEVs.

H2: Social values will have a significant and positive impact on consumers' behavioural intentions in relation to the adoption of PHEVs.

H3: Conditional values will have a significant and positive impact on consumers' behavioural intentions in relation to the adoption of PHEVs.

H4: Emotional values will have a significant and positive impact on consumers' behavioural intentions in relation to the adoption of PHEVs.

H5: Epistemic values will have a significant and positive impact on consumers' behavioural intentions in relation to the adoption of PHEVs.

Research Method

Considering that hypotheses to be tested, quantitative data were collected using online survey questionnaires. The study target population consisted of consumers, 18 to 65 years old, at various levels of education and earning varied levels of income. The study was conducted

in the Gauteng province of South Africa. For determining the sample size, the guidelines given by Hair et al (2019) have been followed. Of the 350 questionnaires disseminated, only286 responses were valid and completed in full. A non-probability sampling design was used, the sampling technique followed was convenience and snowball sampling. The questionnaire was distributed to the respondents who were

convenient to be reached given the limited access to respondents owing to restrictions imposed in light of the COVID-19 pandemic. When some respondents participated in the study, they were requested to invite others to participate.

Data collection

Self-administered online questionnaires were used to gather data from a sample within the target population. The questionnaires, which were presented on Google Forms, adhered to a five-point Likert scale. Items and statements relating to the construct were presented, and respondents were required to select, from the scale, whether they strongly disagree, disagree, neutral, agree and strongly agree with each item (Wiid & Diggines, 2017).Scales from previous studies were adapted to measure the constructs in this study. The following sources were used: functional value (Biswas & Roy, 2015); social value (Lorek & Fuchs, 2013); emotional value (Suki & Suki, 2015); conditional value (Lin & Huang, 2012); epistemic value (Sheth et al., 1991) and behavioural intention (Wu & Chen, 2014).

Statistical Methods

The partial least square (PLS) structural equation modelling technique with the aid of the Smart PLS version 3.2.7 software was used to test the proposed study model (Hair, Risher, Sarstedt & Ringle, 2019). Further, bootstrapping function (5000 resample) was applied to assess the significance level of path and has been adopted by previous studies (Agu, Kalu, Esi-Ubani & Agu,2021). For convergent validity, the average variance extracted (AVE) method was adopted, while the Fornell and Larcker(1981)method and the heterotrait-monotrait ratio of correlations (HTMT) (Hair et al., 2019; Henseler, Ringle & Sarstedt, 2015) were used to assess discriminate validity. The Cronbach's alpha and the composite reliability were adopted as measures of reliability basing on the set minimum threshold ofe"0.60 (Cronbach's alpha) and e"0.70 (Bagozzi & Yi, 1988) for composite reliability. Multi-collinearity was assessed by means of variance inflation factor (VIF) and values should be below 5 (Hair et al., 2019).

RESULTS

Profile of respondents

The demographic profile for this study included gender, education level and the income level of the respondents. The sample, which comprised 286 respondents, included a higher number of female (52.8%) than male respondents (47.2%). With reference to education levels, 40.1 per cent of the respondents had a bachelor's degree, followed by those who completed Grade 12 (21.0%), those who had a post-matric certificate or diploma (19.6%), those who had a postgraduate degree (18.3%), and those who did not progress to Grade 12 (1.0%). Additionally,15.1 per cent of the respondents indicated that they had no form of monthly income, 27.2 per cent earned less than R10 000, 19.1 per cent between R10 001 and R20 000, 20.5 per cent between R20 001 and R35 000, 10.5 per cent earned R50 001 or more, and 7.6 per cent earned R35 001 to R50 000. Income levels were based on the South African rand (ZAR).

Measurement model

The reliability of the constructs was tested using Cronbach's alpha and composite reliability, while the validity was assessed with factor loadings and average variance extracted (AVE) for convergent validity. In table 1, apart from four items (FV1, FV2 and FV3) that had weak factor loadings, others loaded strongly with values ranging from 0.704 to 0.893. SEM VIF from 1.231 to 2.057 was within the acceptance threshold. Also, Cronbach's alpha values ranged from 0.721 to

0.830, and composite reliability from 0.812 to 0.888. All values were within the acceptable ranges for both internal consistency reliability methods and establish reliability for each latent variable. AVE values ranged from 0.543 to 0.666, the results support the convergent validity, since all values exceeded the 0.50 threshold (Hair et al. 2019).

Table 1: Test of reliability and convergent validity

Construct	Item	Factor loading	VIF	Cronbach's alpha	Composite reliability	Average variance extracted
Functional value			1.231	0.764	0.812	0.591
	FV4	0.785				
	FV5	0.717				
	FV6	0.802				
Social value			1.386	0.721	0.826	0.543
	SV1	0.762				
	SV2	0.704				
	SV3	0.745				
	SV4	0.736				
Conditional value			2.057	0.759	0.846	0.580
	CV1	0.743				
	CV3	0.822				
	CV4	0.736				
	CV5	0.741				
Emotional value			1.957	0.817	0.880	0.647
	EMV1	0.748				
	EMV2	0.779				
	EMV3	0.853				
	EMV4	0.834				
Epistemic value			1.681	0.775	0.856	0.598
	EV1	0.782				
	EV2	0.802				
	EV3	0.781				
	EV4	0.725				
Behavioural intention			-	0.830	0.888	0.666
	BI1	0.756				
	BI2	0.893				
	BI3	0.752				
	BI4	0.853				

Table 2 and 3 show the results of discriminant validity that was checked, firstly, following the Fornell and Larcker (1981) method. Accordingly, each construct's AVE was compared to the squared inter-construct correlation (as a measure of shared variance) of that same construct and all other reflectively measured constructs in the structural model (Hair et al., 2019). To be accepted, the square root of each construct's AVE should have a greater value than the correlations with other latent constructs (Hair, Black, Babin & Anderson, 2014), and the shared variance for all model constructs should not be larger than their AVEs. As indicated in Table 2, discriminant validity is obtained as the results are consistent with expectations. To further validate the results, the HTMT was applied in Table 3, being a superior alternative (Hair et al., 2019; Henseler et al., 2015). In line with the recommendation of Gold, Malhotra and Segars (2001) that the HTMT values most be around 0.90 to establish discriminant validity using this criterion, the HTMT test indicates a maximum value of 0.816, which is well below 0.90. Therefore, these values suggest that adequate discriminant validity has been established.

Table 2: Fornell and Larcker criterion for discriminant validity

		1	2	3	4	5	6
1	Behavioural intention	**0.816**					
2	Conditional value	0.616	**0.761**				
3	Emotional value	0.603	0.628	**0.804**			
4	Epistemic value	0.417	0.595	0.542	**0.773**		
5	Social value	0.537	0.393	0.453	0.239	**0.737**	
6	Functional value	0.421	0.348	0.303	0.231	0.371	**0.769**

Note: All correlation coefficients were significant at $p < 0.05$; figures in bold in the diagonal are the square root of the AVEs.

Table 3: HTMT criterion for discriminant validity

		1	2	3	4	5	6
1	Behavioural intention						
2	Conditional value	0.765					
3	Emotional value	0.729	0.791				
4	Epistemic value	0.514	0.771	0.685			
5	Social value	0.691	0.509	0.573	0.320		
6	Functional value	0.547	0.450	0.392	0.384	0.554	

Assessment of the structural model

Figure 1 presents the R^2 value for the structural model. The model explains 53.6% variance in sustainable consumption intention among the students (= 0.536). For consumer behaviour studies, values of 0.20 are considered high. Henseler et al. (2015) indicate that values of 0.67, 0.33 and 0.19 are considered as substantial, moderate and weak values. Table 4 summarises the structural model path coefficients, t-values, p-values and the hypotheses proposed in this study.
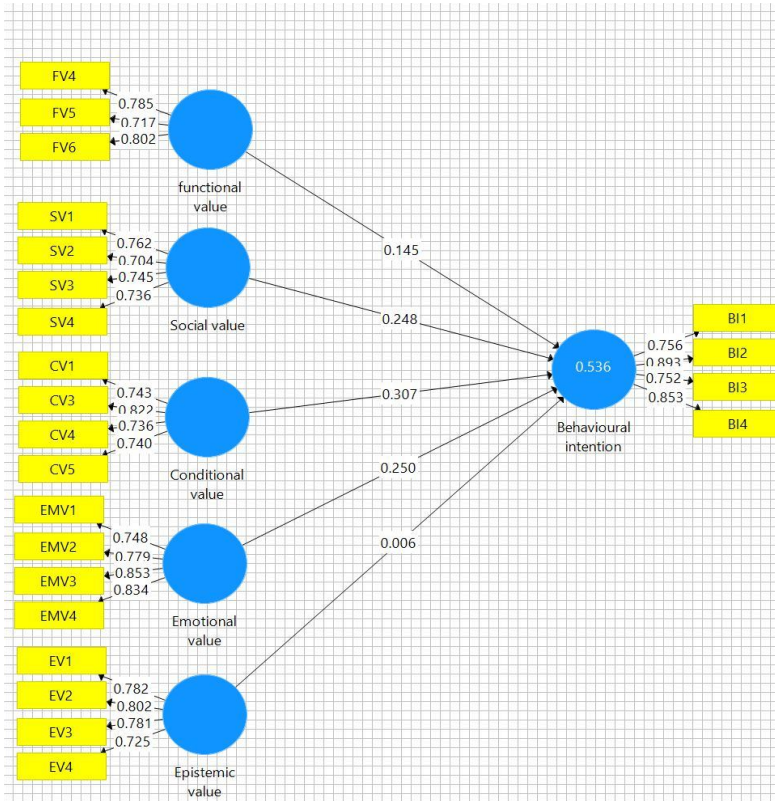
Figure 1: Structural model with path coefficients and R^2 value

Table 4: Summary of structural model analysis

		Path coefficient	T-statistics	P-values	Results
H1	Functional value -> Behavioural intention	0.145	4.585	0.000	Supported
H2	Social value -> Behavioural intention	0.248	5.992	0.000	Supported
H3	Conditional value -> Behavioural intention	0.307	6.291	0.000	Supported
H4	Emotional value -> Behavioural intention	0.250	5.231	0.000	Supported
H5	Epistemic value -> Behavioural intention	0.006	0.141	0.888	Not supported

The results presented in table 4 suggest that four of the five structural relationships showed significance and were supported. The results indicate that functional (β=0.145;

p-value<0.05), social values (β=0.248; p-value<0.05), conditional values (β=0.307;

p-value<0.05) and emotional values (β=0.250; p-value<0.05) were all significant in consumers' intentions towards purchasing electric vehicles. However, epistemic values (β=-0.006; p-value>0.05) was found to be non-significant in onsumers' intentions towards purchasing electric vehicles in South Africa.

To test the hypotheses of the study, a positive β-value and a significant p-value is required to accept or support the hypotheses. Thus, the hypotheses were supported due to their positive and significant relationships with behavioural intention, functional value, social value, conditional value and emotional value. However, epistemic value was not supported because of the non-significant relationships with behavioural intentions.

Discussion & Implications

The main aim of this study was to identify the key determinants of purchase intentions of electric vehicles from the South African consumer's perspective. This study contributes to existing literature by examining pro-environmental behavioural intention using the TCV. After applying the partial least square (PLS) structural equation modelling analysis, the results revealed that the functional, social, conditional and emotional values were positively related to PHEV behavioural (purchase) intention, while the epistemic values were found to be negatively related to it. These results are discussed below, alongside implications for South African consumers. Also, strategies are proposed for managers of outlets selling electric or environmentally friendly vehicles to target this market, based on the findings.

The results showed a significant influence of functional value on consumers' behavioural intentions to purchase electric vehicles within a South African context. Therefore, H1 was supported. This is congruent with studies conducted in Malaysia (Zailani et al., 2019), Australia (Singh & Pandey, 2018) and India (Biswas & Roy, 2015), which found that sustainable consumption behaviour was driven by functional values, which suggests that functional values (price, quality, durability and reliability of the PHEVs) did not significantly influence consumers 'behavioural intentions to adopt these cars. This is important for marketers to consider when they come up with pricing strategies, as this value is considered to be an essential inducement by consumers.

For social value, the results confirmed that this value had a significant influence on consumers' behavioural intentions to purchase electric vehicles, therefore supporting H2. This result is congruent with that of a study conducted in Taiwan, which identified the effects that social values and image had on behavioural intention (Horng et al., 2018). This implies that social values (e.g., improved self-image, societal approval, social obligation/pressure to reduce CO2 emissions) influenced South African consumers towards adopting PHEVs. Furthermore, the marketing managers of electric vehicles will need to invest more on strategies utilising social values as it was found to have a strongest relationship with behavioural intention. This can be done by implementing a social media campaign whereby images and videos will contain messages relating to societal obligations and pressures to reduce CO2 emissions by purchasing PHEVs.

The results also showed the positive effect of conditional value on consumers' behavioural intentions towards purchasing electric vehicles, therefore supporting H3. Conditional value (β = 0.307) made the greatest contribution to behavioural intention formation. This result supports the findings of studies conducted in India, which found a significant relationship between conditional values and consumers' behavioural intentions towards adopting environmentally friendly products. Marketers can take note of the fact that South African consumers are influenced by conditional values such as global warming, as well as subsidies or discounts on PHEVs. Additionally, the South African government can offer subsidies or tax exclusions on electric vehicles, more especially PHEVs, to make them more affordable to consumers in order to entice them to purchase electric vehicles. According to *The Korea Herald* (2020), countries such as South Korea and China have implemented a subsidy scheme and tax concessions for environmentally friendly vehicles, which has resulted in an increase in the purchase of such vehicles in their countries. It is therefore envisaged that implementing these subsidies and

tax deductions may have the same impact in South Africa.

The results further confirmed that emotional value had a significant influence on behavioural intentions to purchase electric vehicles, thereby supporting H4. This aligns with the findings of Wang et al. (2019) who found that consumers were willing to purchase higher-priced items if their friends owned the same, as it gave them an emotional sense of belonging. For marketers, this indicates that consumers would be influenced to purchase PHEVs if their emotional values were stimulated (e.g., psychological needs, morals and the sense of being a better person, based on their green consumption). Marketers can highlight visual advertisements at exhibitions, events as well as utilise educational campaigns to evoke emotional responses or feelings from consumers. Participating in these events and exhibitions may also arouse positive feelings of contributing towards sustainable efforts among consumers.

For epistemic value, the results had a negative effect on behavioural intentions to purchase electric vehicles. Therefore, H5 was not supported. Awuni and Du (2016) found that epistemic value was not significant in terms of influencing intentions to purchase green products in China, which supports the results obtained in this study. Epistemic values such as curiosity and a yearning for knowledge about PHEVs therefore did not significantly influence consumers' behavioural intentions to adopt these cars within a South African context.

Overall, this study contributes to the theory by consolidating the use of the theory of consumption values to explain the factors that influence the intention to purchase electric vehicles. Understanding consumers' functional, social, conditional, emotional and epistemic values in respect of the intention to purchase PHEVs provided valuable insights that contributed to the existing body of literature on consumer behaviour and green marketing.

With this knowledge, marketing managers are better able to define and improve customer acquisition strategies (e.g., to segment consumers based on the combinations of consumption values and to develop a communication strategy emphasising, for example, contribution to a green environment and less air pollution) and to develop product offerings that best meet the consumer's needs.

Conclusion & Recommendations

This study applied the TCV factors in understanding the determinants of PHEV purchase (behaviour) intention in Gauteng, South Africa. Using the proposed model, the combined factors explained 53.6 per cent of the variance in behavioural intention to purchase PHEVs. Although the findings of this study present important insights for electric vehicle dealerships and marketing managers, it certainly has limitations. As a result of the COVID-19 pandemic, convenience sampling was used, with the researcher mailing questionnaires to respondents online. This restricted the possibility of doing physical convenience sampling in public areas in Gauteng. It is recommended that future researchers utilise quota sampling to accurately represent the population. Since this study was conducted in Gauteng, it would be beneficial for future studies to consider gathering responses from individuals throughout South Africa, to reflect the overall behavioural intentions of consumers more accurately. Additionally, most of the responses were completed using mobile devices, which meant that the researcher could not fully explain the questionnaire to respondents, causing some to misunderstand certain questions, or what was required of them. An environment which allows the researcher to engage with the respondents, and provide clarification where required, is recommended for future studies.

In conclusion, the research empirically linked and highlighted the effects that functional, social, conditional, emotional and epistemic values had towards the respondents' behavioural intentions to purchase electric vehicles. The empirical findings positively supported the hypotheses that functional, social, conditional and emotional values significantly influenced their behavioural intentions in this regard, while the hypotheses

stating the influence of epistemic values on behavioural intention proved not to be significant. Practical implications were identified and strategies for management were proposed to support the adoption of electric vehicles.

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