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DEMYSTIFYING CUSTOMER PERCEPTION OF ELECTRIC VEHICLE ADOPTION IN SOUTH AFRICA USING THE TECHNOLOGY ACCEPTANCE MODEL

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Demystifying Customer Perception of Electric Vehicle Adoption in South Africa Using the Technology Acceptance Model

Electric vehicles are becoming increasingly popular and mainstream in today's world. One reason for this is the demand for vehicles with zero carbon footprint. Fossil fuels are extremely harmful as they endanger the planet and produce much toxic pollution. Therefore, using the Technology Acceptance Model, this study analysed customers' perceptions of electric vehicle adoption in South Africa. The Technology Acceptance Model has evolved into a critical model for understanding predictors of human behaviour towards potential technology acceptance or rejection. The first determinant is perceived usefulness, followed by perceived ease of use, cost and user attitude toward electric vehicles. Because EVs are new in the South African market, this study adapted this model to understand the customers' attitudes, perceptions, and benefits that EVs bring. The findings of this study show that most prospective customers had significantly agreed that perceived ease of use, perceived usefulness, attitude, and cost influence their intention to buy electric vehicles. This study's findings could benefit automobile industries, fleet purchasers, and private owners considering transitioning to low-emission vehicles. Electric vehicles will play a significant role in the future, and their adoption can help reduce dependence on fossil fuels. By understanding South African customers' perceptions, attitudes, and the barriers they face in adopting electric vehicle technology, this study could provide valuable insights to stakeholders in the automotive industry by enabling them to make informed decisions and develop strategies for promoting electric vehicle adoption.

Keywords: *Electric vehicles, Technology Acceptance Model, carbon emission, environment.*

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Мсоса С. К. Демістифікація клієнтського сприйняття щодо впровадження електромобілів у Південній Африці за допомогою моделі прийняття технології

Електромобілі стають дедалі популярнішими та типовішими щодо загалу користувачів транспортних засобів в сучасному світі. Однією з причин цього є попит на транспортні засоби з нульовим вуглецевим слідом. Викопне паливо надзвичайно шкідливе, оскільки загрожує планеті та спричиняє значне токсичне забруднення. Тому, використовуючи модель прийняття технології, у цім дослідженні було проаналізовано клієнтське сприйняття щодо впровадження електромобілів у Південній Африці. Модель прийняття технології (Technology Acceptance Model) набула подальшого розвитку та перетворилася на критичну модель, використовувану для розуміння предикторів поведінки людини щодо потенційного прийняття або відмови від технології. Першим визначальним фактором є розуміння користі, за нею слідує сприйняття простоти використання, вартості та ставлення інших користувачів до електромобілів. Оскільки електромобілі є новинкою на ринку Південної Африки, презентоване дослідження адаптувало вище зазначену модель, щоби зрозуміти сприйняття та ставлення клієнтів, а також переваги, які приносять електромобілі. Результати дослідження показують, що більшість потенційних клієнтів значною мірою погодилися з тим, що сприйняття простоти використання, користі, вартості та ставлення інших користувачів впливають на їхній намір купувати електромобілі. Результати цього дослідження можуть принести користь автомобільній промисловості, покупцям автопарків і приватним власникам, які розглядають можливість переходу на транспортні засоби з низьким рівнем шкідливих викидів. Електромобілі відіграватимуть значну роль у майбутньому, їх впровадження може допомогти зменшити залежність від викопного палива. Презентуючи сприйняття та ставлення клієнтів у Південній Африці, а також перешкоди, з якими стикаються при впровадженні технології електромобілів, це дослідження може надати цінну інформацію представникам зацікавлених сторін в автомобільній промисловості, допомагаючи їм приймати обґрунтовані рішення та розробляти стратегії сприяння впровадженню електромобілів.

Ключові слова: *електромобілі, модель прийняття технології, викиди вуглецю, довкілля.*

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Introduction. Transportation is one of the largest contributors and the primary cause of second carbon dioxide greenhouse gas emissions worldwide, primarily due to traditional fuel vehicles' use. One possible solution or promising pathway to curb greenhouse gas emissions worldwide and reduce air pollution lies in shifting towards electric vehicles in the next few years. Electric cars are seen as the answer to dealing with carbon dioxide emitted by fossil fuel vehicles into space, and these carbons are partly blamed for contributing to the ozone layer damage hence, we are faced with a lot of natural disasters ranging from droughts, floods, storms, and volcanoes. Many countries have started instituting strict policies, even in some cases banning fossil fuel vehicles [1]. Many countries, besides that, are going towards clean nuclear power to reduce the volume of harmful gasses' emissions to the earth's atmosphere [2].

According to analysts [3], in 2018 alone, about 1.6 million electric vehicles were sold in the United States, Europe and China, and the uptake is set to increase in the coming years. Consumer perceptions of electric vehicles (EVs) are influenced by a complex interplay of factors, ranging from environmental concerns to economic considerations. Research conducted by [4; 5; 6] collectively shed light on the multifaceted nature of these perceptions and the implications for the adoption of EVs in India. Acharya's (2019) study emphasises the growing emphasis on environmental sustainability and the role of EVs in reducing greenhouse gas emissions. The research underscores the significance of consumer awareness regarding the environmental impact of traditional vehicles, with many viewing EVs as a solution to mitigate the negative effects of vehicular pollution. This environmental consciousness aligns with global efforts to combat climate change and promote clean energy alternatives.

Poor air quality kills several people yearly and exposes millions to cardiovascular disease worldwide. Transportation accounts for the vast majority of global carbon emissions, which are expected to rise as cities expand and car ownership increases. Although Africa emits fewer greenhouse gasses than the rest of the world, it is the most vulnerable to the effects of climate change. As a result, African countries have pledged to reduce greenhouse gas emissions on the continent [7]. Nonetheless, electric vehicles are becoming increasingly popular and mainstream today. One reason for this is the demand for vehicles with zero carbon footprint. Fossil fuels are extremely harmful as they endanger the planet and produce much toxic pollution [1]. Switching to a more sustainable mode of transportation, such as electric mobility, and investing in renewable energy sources are two potential steps the subcontinent can take to reduce greenhouse gas emissions [8]. There hasn't been much literature on electric vehicles in South Africa. As a result, this study is built on the literature and possibly stimulates discourse about electric vehicles in the country. Therefore, this study analysed customer perception of electric vehicle adoption in South Africa using the technology acceptance model.

Literature review. *Motor Vehicle Industry.* The motor vehicle industry has undergone significant transformations over the years, with the current spotlight on transitioning from traditional petroleum-fuelled vehicles to electric vehicles (EVs). This evolution traces back to the early days of motor vehicles, where the landscape was characterised by various propulsion methods. The initial manufactured motor vehicles were propelled by various means, including steam engines, electricity, and internal combustion engines running on petroleum-based fuels. These early vehicles paved the way for the rapid growth of the automotive industry, leading to the dominance of Internal Combustion Engine (ICE) vehicles for the better part of the 20th century [9].

The transition from petroleum-fuelled to electric vehicles marks a significant shift in the motor vehicle industry, driven by concerns about environmental sustainability, energy security, and technological innovation. As the adverse impacts of fossil fuel combustion on the environment have become increasingly evident, there is a growing imperative to explore alternative propulsion systems. Electric vehicles powered by batteries or fuel cells have emerged as a promising solution due to their potential to reduce greenhouse gas emissions and dependence on fossil fuels [10].

Electric vehicles (EVs) have emerged as a promising solution to address environmental concerns and contribute to a more sustainable transportation system. In the study context, examining EVs and their environmental impact provides a crucial backdrop for understanding the motivations behind customer perceptions and attitudes towards these vehicles. Unlike conventional internal combustion engine (ICE) vehicles that rely on fossil fuels, EVs are powered by electricity stored in batteries or fuel cells. This shift in propulsion technology has the potential to significantly reduce harmful emissions that contribute to air pollution and climate change. EVs produce zero tailpipe emissions, which means they do not emit pollutants like nitrogen oxides (NOx), particulate matter, or carbon dioxide (CO2) during operation, making them an appealing option for environmentally conscious consumers [11].

Electric vehicles yield numerous positive outcomes, including protecting the environment, providing sustainable consumption, and increasing renewable energy use in Western countries. They do less harm to the environment, their engines are less noisy, they provide instant acceleration and a smooth driving experience and purchasing an EVs also improves one's status. Electric Vehicles are introduced as a solution for environmental problems such as increasing the concentration of Carbon Dioxide and additional environmental issues [11; 12].

Consumer intention to purchase\ buy EV's. The Technology Acceptance Model has evolved into a critical model for understanding predictors of human behaviour toward potential technology acceptance or rejection [13]. It was created to demonstrate how users came to accept and use technology. The theoretical foundation assumes that when users are presented with new technology, three major factors influence their decision on how and when to use it. The first determinant is perceived usefulness, followed by perceived ease of use, and finally, user attitude toward usage. Because EVs are new in the South African market, this study adapted this model to understand the customers' attitudes and perceptions, and the benefits that EVs bring

According to [14], consumer intention to purchase, often termed purchase intention, refers to an individual's expressed willingness and inclination to acquire a particular product or service. One of the primary drivers shaping consumer intention

to purchase EVs is the heightened awareness of environmental concerns and the perceived benefits of electric vehicles. In psychology and human behaviour, intention refers to a conscious mental state where an individual plans or decides to carry out a specific action in the future. It serves as a precursor to actual behaviours and is pivotal in shaping how individuals approach and engage with various activities. Understanding intention is essential for comprehending the processes that drive human behavior and motivation.

Research by [15], emphasises that consumers who view EVs as environmentally friendly are more inclined to express an intention to purchase them. As the urgency to address climate change grows, individuals are increasingly drawn to the promise of reduced carbon emissions and a cleaner urban environment, making environmental considerations a potent motivator. Consumer intention to purchase, commonly referred to as purchase intention, constitutes a foundational concept that revolves around an individual's desire and willingness to acquire a specific product or service. This psychological inclination serves as a crucial precursor to actual purchasing behaviours, offering valuable insights into the complex processes governing consumer decision-making. Purchase intention goes beyond mere contemplation; it encapsulates a conscious mental state in which individuals contemplate and strategise their upcoming actions. This cognitive process shapes how people approach and engage in various activities, providing a glimpse into the intricate interplay between human behaviour and motivation.

A driving force that significantly influences consumer intent to purchase electric vehicles (EVs) is the heightened awareness of environmental concerns and the perceived benefits associated with these vehicles. Within the realm of psychology and human behavior, intention signifies a conscious mental state wherein an individual plans or decides to carry out a specific action in the future. It operates as a precursor to actual behaviors and plays a pivotal role in shaping an individual's approach and engagement with various activities. The comprehension of intention is pivotal in understanding the mechanisms propelling human behavior and motivation [14].

Perceived usefulness on Electric Vehicles. Perceived usefulness is the "extent to which an individual views the technology developed as superior than the existing one" [16]. The previous studies have shown that perceived usefulness has a direct influence on the attitudes towards actual usage of technology [17; 18]. It is believed that any work done can be efficient if the technology being used is perceived as useful by that particular user [17]. Perceived usefulness is the most predominant feature for consumer's acceptance and use of information technology, "the features of the technology, targeted users and the environment can also affect users' acceptance" of electronic or mobile application as an educational tool [19].

People are more likely to develop positive attitudes and intentions to undertake a brand-new technology if it has been verified to be a beneficial tool [20]. Within the context of domestic EVs, sensible measurements of PU may be summarised as superior energy performance, environmentally friendly, longer driving distances and better quality of life [15].

Perceived Ease of Use. Perceived ease of use (PEOU) is critical in assessing users' interactions with information technology. It refers to the extent to which an individual believes that utilizing a particular technology will require minimal effort and be devoid of complexity [21]. This dimension directly pertains to the percentage of users consider the technology easy to use [22].

Invariably, as barriers to operation diminish, customers become increasingly amenable to embracing new technologies [23]. In the evolving technological innovation landscape, especially in the context of domestic Electric Vehicles (EVs), perceived ease of use holds significant sway. It is positioned as a subjective assessment of an EV's technology, potentially enhancing consumers' psychological and physical comfort.

Attitudes towards Electric Vehicles. It is known that emotions can play a critical role in attitudes concerning EVs. Attitudes are assessments of ideas, events, objects, or people. Attitudes can be positive or negative, but they can also be uncertain at times [24]. A substantial body of literature asserts that effectively pleasing emotions can create positive attitudes towards and judgements about items, which may be more effective [25]. Existing literature has identified a wide range of issues that have the potential to influence how consumers form opinions about and preferences for EVs . Specific attention has been paid to identifying barriers which are inhibiting EV demand. Jena [26], discovered that attitudes toward the functional characteristics of cars were the most effective, indicating that functional barriers are central concerns. These barriers can represent some of the intervening variables that influence an individual's receptivity to a particular innovation.

Cost Concerns. The slow adoption of electric vehicles (EVs) in South Africa can be attributed to a combination of factors, with high costs and potential future maintenance expenses being prominent barriers. Coffman, Bernstein, and Wee [27] research underscores the significance of the purchasing price as a primary hurdle to widespread EV adoption. The literature in this area emphasises that EVs' higher upfront cost than conventional internal combustion engine (ICE) vehicles deter potential buyers.

Furthermore, Ahjum, Merven, Stone, and Caetano [28] have contributed to the discourse by indicating that the overall ownership costs of EVs cannot be easily compared to those of traditional vehicles. One of the key findings of their study is that the acceptability of EVs is adversely affected by purchase prices that are approximately 30% higher than those of conventional vehicles. In this context, the cost disparity between EVs and traditional vehicles is projected to persist until at least 2050.

Research Methodology. This study adopted a descriptive, quantitative, and cross-sectional study. A descriptive research aims to identify and describe the detailed characteristics of phenomena to provide a basis for arguments founded on empirical evidence [29]. According to Saunders *et al.* [30], descriptive research goes further than exploratory research when examining a phenomenon, as the study aims to provide a basis for arguments founded on empirical evidence. Quantitative research involves collecting and analysing numerical data [31]. This type of research aims to establish relationships between variables and to generalise findings to larger populations.

Quantitative data can be collected through surveys, experiments, and statistical analysis of existing data. The quantitative research design was chosen because it can provide sev-

eral benefits when understanding customer perceptions and attitudes towards electric vehicles in South Africa. These benefits are that using quantitative research allows for collecting large amounts of data from a representative population sample. This provided a comprehensive overview of customer attitudes and perceptions towards electric vehicles in South Africa. Quantitative research also allows for statistical analysis of data, which can help to identify trends, patterns, and relationships between variables. The target population for this research were all university staff and final-year students, from which 150 respondents were drawn.

In this study, a non-probability sampling technique known as convenience sampling was used to collect data because it is more convenient and less expensive and through volunteer sampling, with each participant having the option of participating or not [30]. Convenient sampling is a nonprobability sampling technique that involves selecting participants based on their accessibility and willingness to participate rather than using a random selection process [32]. This method is commonly used when time, resources, and access to the population of interest are limited. This sampling technique was chosen because it is quick to collect data and is representative of the population. Data was collected using a closed-ended questionnaire. The questionnaire designed for this study employed a closed-ended format, using a five-point Likert scale to evaluate the perceptions and attitudes of South African customers towards electric vehicles. The Likert scale allowed respondents to indicate their level of agreement or disagreement with a series of statements related to electric vehicle adoption, perceived benefits, and potential barriers. Data was analysed using descriptive statistics by means of the SPSS.

Results and discussion. *Demographic profile of respondents.* As shown in Table 1, the distribution of respondents' genders shows both male and female composition. The data highlights a notable disparity in gender representation among the participants. Among the respondents, 56.0% identified as female, indicating a higher presence in the dataset. In contrast, 43.3% of the participants identified as male, accounting for a slightly smaller portion of the total. Additionally, there was a smaller representation of individuals who identified as "other," constituting a mere 0.7% of the respondents. In total, the data encompassed 150 participants.

Table 1

Gender of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Female	84	56.0	56.0	56.0
Male	65	43.3	43.3	99.3
Other	1	.7	.7	100.0
Total	150	100.0	100.0	

Source: Author's construct

As shown in Table 2, the distribution of respondents' ages is depicted. The data unveils a clear breakdown of respondents across different age brackets. Notably, the largest segment, comprising 58.7% of the total, falls within the 18 to 24 age range.

Additionally, a considerable portion, accounting for 47% of respondents, falls between the ages of 25 to 34. The next age group, encompassing individuals aged 35 to 44, represents 14% of the respondents. Lastly, a smaller segment, constituting 1% of the total, falls within the age range of 45 to 54.

Table 2

Age category of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
18- 24	88	58.7	58.7	58.7
25-34	47	31.3	31.3	90.0
35-44	14	9.3	9.3	99.3
45-54	1	.7	.7	100.0
Total	150	100.0	100.0	

Source: Author's construct

Respondents' perception of their intention to purchase an electric vehicle

Perceived Ease of Use. Table 3 below shows that most respondents agree it's easy to understand and drive an electric vehicle (average score of 3.720, with a standard deviation of 1.0689, t (149) = 42.62, p = .00). Respondents also feel confident about being able to operate an electric vehicle without any problems (average score of 3.560, with a standard deviation of 1.069, t (149) = 40.704, p = .00).

Charging an electric vehicle is also seen as not too difficult, with an average score of 3.360 and a standard deviation of 1.94 (t = 34.454, p = .00). Additionally, many respondents agree that using an electric vehicle for transportation is a convenient option, shown by an average score of 3.56 and a standard deviation of 1.10 (t = 39.36, p = .00). Lastly, it seems respondents don't think they need special knowledge or training to drive an electric vehicle (average score of 3.73 and a standard deviation of 1.11, t = 41.22, p = .00).

These results suggest that respondents perceive electric vehicles as user-friendly, convenient, and accessible. These perceptions may enhance electric vehicles' attractiveness as feasible and appealing options for individuals seeking uncomplicated and convenient transportation solutions.

Studies such as [18, 33] have demonstrated that when individuals perceive technology to be easy to use and believe that it will be beneficial in their lives, they are more likely to develop positive attitudes towards it and express an intention to use or adopt it.

Translating this to the context of EVs, a similar relationship can be inferred. If consumers find EVs easy to understand and use, and if they perceive them as useful in addressing their transportation needs while being environmentally friendly, they are more likely to develop favourable attitudes towards EVs and intend to purchase them.

Table 3

Customer perception of perceived ease of use

Item	N	Mean	Std. Deviation	Std. Error Mean
An electric vehicle can be easy for me to understand and operate	150	3.720	1.0689	.0873
I am confident that I can operate an electric vehicle without any difficulties	150	3.560	1.0712	.0875
It can be easy for me to charge an electric vehicle	150	3.360	1.1944	.0975
I believe using an electric vehicle would be convenient for me.	149	3.564	1.1048	.0905
I would need specialised knowledge or training to operate an electric vehicle.	150	3.733	1.1092	.0906

Perceived Usefulness. This section examines how useful electric vehicles are perceived to be. As indicated in Table 4 below, there is a significant agreement concerning the environmental friendliness of electric vehicles compared to traditional ones, with an average score of 3.93 and a standard deviation of 1.08 (t = 44.41, p = .00). Respondents show agreement in the belief that electric vehicles have lower operating costs than traditional vehicles, reflected by an average score of 3.14 and a standard deviation of 1.20 (t = 31.94, p = .00). Furthermore, there is a consensus that electric vehicles offer better performance than their traditional counterparts, evidenced by a mean score of 3.45 and a standard deviation of 1.20 (t = 40.77, p = .00). Moreover, participants agree that electric vehicles can provide a more satisfying driving experience compared to traditional vehicles, as indicated by an average score of 3.58 and a standard deviation of 1.04 (t = 42.24, p = .00).

The results suggest that participants hold positive perceptions about the usefulness of electric vehicles, considering them to be environmentally friendly, cost-effective, technologically advanced, and capable of providing satisfying driving experiences. These perceptions may contribute to shaping individuals' willingness to consider electric vehicles as viable and attractive alternatives in their transportation choices. Wang *et al.*, [8] analyzed the effects of consumer knowledge about EVs, perceived risks, usefulness, and current financial incentives. The results of their study showed that consumer awareness about EVs has a positive effect on perceived usefulness, attitude, and intention to purchase EVs; however, it is negatively related to perceived risks.

Attitudes. This section illustrates the attitudes held towards electric vehicles. As presented in Table 5 below, there exists a significant consensus regarding the belief that electric vehicles offer a superior option compared to traditional vehicles, reflecting an average score of 3.57 and a standard deviation of 1.01 (t = 43.13, p = .00). Similarly, respondents express an inclination to potentially switch to electric vehicles in the future, with an average score of 3.92 and a standard deviation of 1.02 (t = 47.07, p = .00). Furthermore, there is shared agreement that

Table 4

Customers perception of perceived usefulness

Item	N	Mean	Std. Deviation	Std. Error Mean
Electric vehicles are more environmentally friendly than traditional vehicles.	150	3.933	1.0848	.0886
Electric vehicles have lower operating costs than traditional vehicles.	150	3.140	1.2042	.0983
Electric vehicles have better performance than traditional vehicles.	150	3.487	1.0474	.0855
Electric vehicles can provide a better driving experience than traditional vehicles	150	3.580	1.0380	.0848

Source: Author's construct

electric vehicles will soon gain popularity as a trend in South Africa, showcased by an average score of 3.80 and a standard deviation of 1.05 (t = 44.09, p = .00). Moreover, participants concur that electric vehicles offer an effective means to reduce their carbon footprint, with an average score of 4.08 and a standard deviation of 0.87 (t = 56.99, p = .00).

The results collectively suggest that the surveyed individuals harbour favourable attitudes towards electric vehicles, viewing them as superior alternatives, potential future choices, and effective tools for both personal and environmental betterment. These attitudes likely play a pivotal role in shaping their perception and potential adoption of electric vehicles in the context of broader transportation options. Research by [34] in the context of hybrid vehicles suggests that the perceived cost-effectiveness of a new technology can significantly impact consumer intentions. If consumers believe that EVs offer long-term cost savings through reduced fuel and maintenance expenses, their intention to buy an EV is likely to be higher.

Table 5

Customer perception of attitude towards electric vehicles

Item	N	Mean	Std. Deviation	Std. Error Mean
I believe that electric vehicles are a better option than traditional vehicles."	150	3.567	1.0128	.0827
I would be willing to switch to an electric vehicle in the future.	150	3.920	1.0201	.0833
Electric vehicles are a trend that will soon become popular in South Africa.	150	3.800	1.0555	.0862
Electric vehicles are a good way to reduce my carbon footprint	149	4.081	.8739	.0716

Source: Author's construct

Cost. This section delves into the cost aspect of electric vehicles. As illustrated in Table 6 below, a significant consensus emerges concerning the perceived affordability of electric vehicles, with an average score of 3.86 and a standard deviation of 0.99 (t = 47.75, p = .00). Many respondents express the view that the cost of electric vehicles is too high for their budget. Additionally, there is shared agreement among respondents about concerns regarding the maintenance costs associated with electric vehicles, evident from an average score of 3.89 and a standard deviation of 0.99 (t = 52.63, p = .00).

Furthermore, participants show agreement that they would be willing to pay more for an electric vehicle if it translated into lower operating costs. This sentiment is reflected in an average score of 3.67 and a standard deviation of 1.09 (t = 40.88, p = .00). Additionally, there's a shared belief that the government should give rewards to encourage more customers to use electric vehicles (average score of 3.77, with a standard deviation of 1.12, t = 41.19, p = .00).

The results collectively suggest that participants are acutely conscious of the cost-related aspects of electric vehicle ownership. While there is a consensus about the perceived high cost, respondents' openness to potential cost savings and the endorsement of governmental incentives indicates a complex interplay of factors influencing their attitudes and decisions toward electric vehicle adoption. studies conducted in the context of other industries, such as smartphones or energy-efficient appliances, indicate that cost considerations can strongly affect purchase intentions [20]. Therefore, the perceived financial feasibility of EVs holds the potential to be a determining factor in consumers' decisions to adopt them.

Intention. This section delves into the intention to buy electric vehicles. On average, participants expressed a relatively moderate level of intention to buy electric vehicles within the next five years as a means to reduce gas emissions and contribute to addressing climate change, with a mean score of 3.567 and a standard deviation of 1.1494 as shown in Table 7. Simi-

Table 6

Customer perception of cost concerns towards electric vehicles

Item	N	Mean	Std. Deviation	Std. Error Mean
The cost of electric vehicles is too high for me to afford.	150	3.860	.9901	.0808
I am concerned about the maintenance costs of an electric vehicle.	150	3.893	.9060	.0740
I would pay more for an electric vehicle if it meant lower operating costs.	149	3.664	1.0943	.0896
The government should offer incentives to encourage the adoption of electric vehicles	150	3.767	1.1198	.0914

Source: Author's construct

larly, the participants indicated a positive inclination to recommend electric vehicles to others (mean = 3.813, standard deviation = 1.0452) and believed that owning an electric vehicle would align with their values of sustainability and environmental responsibility (mean = 3.833, standard deviation = 0.9994). Furthermore, participants conveyed confidence in the reliability of electric vehicles as a viable option for reducing greenhouse gas emissions, with a mean score of 3.893 and a standard deviation of 0.9494. Additionally, electric vehicle adoption was seen as a potential strategy to counteract the impact of increasing fuel prices in South Africa, with participants averaging a mean score of 3.840 and a standard deviation of 0.9836.

The "One-Sample Test" table reveals that all mean differences between the participants' responses and the test value of 0 were statistically significant ($p < .001$). These results suggest that participants generally displayed favourable attitudes and intentions toward electric vehicle adoption and its positive impacts on climate change mitigation and environmental responsibility.

Numerous studies have investigated the variables that affect EV acceptance and consumers' purchase intentions. For example, Wu *et al*., (2019), explored factors affecting the public acceptance of autonomous EVs by using data collected from an online survey in China. Considering the potential environmental benefits of EVs, they evaluated the environmental concerns that affect people's intentions of buying autonomous EVs. The results of their study showed that perceived usefulness, perceived ease of use, and environmental concern have a positive relationship with consumers' intentions to purchase autonomous EVs

Table 7

Customer perception of intention to buy an electric vehicle

	N	Mean	Std. Deviation	Std. Error Mean
I am considering purchasing an electric vehicle in the next 5 years to reduce gas emissions and contribute to addressing climate change.	150	3.567	1.1494	.0938
I recommend an electric vehicle to reduce carbon footprint and mitigate climate change.	150	3.813	1.0452	.0853
I believe owning an electric vehicle would positively impact my lifestyle by aligning with my sustainability and environmental responsibility values.	150	3.833	.9994	.0816
I am confident in the reliability of electric vehicles and see them as a viable option for reducing greenhouse gas emissions.	150	3.893	.9494	.0775
Electric vehicle adoption is seen as a strategy to mitigate the impact of increasing fuel prices in South Africa	150	3.840	.9836	.0803

Source: Author's construct

Conclusion. The evolution of the motor vehicle industry towards EVs has been a subject of debate in recent years. Therefore, this study sought to analyse customer perception of electric vehicle adoption in South Africa using the Technological Acceptance Model. The findings of this study show that electric vehicle adoption has environmental benefits and the potential to reshape the transportation landscape. The importance of consumer knowledge in shaping attitudes and the context of South Africa's knowledge deficit were also underscored. However, to increase customer intention and interest in the usage of electric motor vehicles, there is more that the government and key stakeholders must do.

The general perception is that the cost of running and maintaining electric vehicles could be prohibitive, hence the need to incentivise the sector or introduce a motor vehicle purchase subsidy to spur its uptake. The subsidy could also be used as a tool to mitigate the effects of climate change and carbon emissions. The government has to take many measures in the area of putting up a strong charging infrastructure in the nation, which is a necessity for the adoption of Electric Vehicles technology. This discrepancy arises from the limited range of electric vehicles (EVs) compared to internal combustion engine (ICE) automobiles, necessitating regular recharge. One crucial measure that should be implemented to incentivise the transition from internal combustion engine vehicles to electric vehicles is the elimination or reduction of import tariffs on electric vehicles and their components. The aforementioned development is expected to result in a decrease in the price of electric vehicles inside the nation, as the high cost of electric vehicles serves as a significant deterrent for those who tend to favour internal combustion engine automobiles over electric ones. In addition, companies producing electric vehicles need to sensitize prospective consumers on the benefits they can derive from using electric vehicles. This information will enable users to make informed decisions.

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