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A STUDY ON CONSUMER PERCEPTION TOWARDS ELECTRIC VEHICLES IN BENGALURU CITY

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ABSTRACT

The study's goal was to investigate how consumers see electric cars (EVs) and assess the variables that affect their choice to buy one. The survey also sought to determine how Bengaluru city's consumers felt about electric cars. Using a descriptive study design, a quantitative research approach was used. A questionnaire that was given to customers of E-vehicle users was used to gather data. Approximately 145 respondents made up the sample, which was chosen using convenience sampling methods. According to the study's findings, consumer perceptions of factors like reducing air pollution and greenhouse gas emissions, gender, refuelling habits, the impact of government incentives and financial gains, curiosity, exposure to media sources and references, heterophily and serving as a source of information, affordability—both in terms of price and vehicle range—and design and style are all positively correlated with consumers' propensity to purchase electric vehicles. Technological elements that positively correlate with consumers' favourable perceptions of purchasing electric vehicles include disruptive innovation, advancements in battery technology, price premium reductions, superior e-vehicle service, low noise levels, operating costs, and energy independence through a decrease in oil imports.

Keywords: Consumer, Perception, Electric, Vehicles, Bengaluru City

1. INTRODUCTION

Regarding electric cars, this refers to how buyers see EVs in terms of their functionality, range, pricing, environmental effect, charging infrastructure, and general appeal as a means of transportation (Indira. M. S. 2021). Numerous things, such as individual experiences, societal influences, marketing and advertising efforts, and governmental regulations, can have an impact on these impressions (José, C. 2023). The way that consumers view electric vehicles has changed significantly during the last ten years. At first, EVs were frequently linked to drawbacks including a short range, lengthy charging periods, and expensive initial costs (Kumar, Aditya. 2023). However, public perceptions have begun to shift as a result of technological advancements and the introduction of more practical and reasonably priced electric cars by automakers (Lashari, Zulfiqar Ali 2021). From being viewed as specialized or futuristic, EVs are now acknowledged as a practical and environmentally friendly mode of transportation. Concern over environmental concerns like air pollution and climate change is one of the main factors contributing to consumers' favorable perceptions of electric cars (PwC Report. 2018). EVs have zero tailpipe emissions, which appeals to customers who care about the environment. Concerns regarding the viability of EVs for everyday usage have also been allayed by the growth of renewable energy sources and the expansion of charging infrastructure (Shivabeerappa, M. and Divya, L. 2022). The development of battery technology, which has increased the range and performance of electric vehicles, is

another important aspect affecting customer opinion. The restricted driving lengths and slow performance of modern EVs have been allayed by their ability to provide range and acceleration that are equivalent to those of their gasoline-powered rivals. There are still issues with customer perception, though (Vidyabharati. 2019). The availability of charging infrastructure, the charging time, the initial expense of electric vehicles, and the possibility of battery deterioration over time are some frequent worries. Building customer trust and confidence in electric vehicles requires addressing these issues and giving them accurate information (Zameel, I., and Aly, A.S. 2020).

2. LITERATURE REVIEW

(Charles,V. 2021) The route analysis found that customer views of e-vehicles were influenced by the price of petrol and oil. It was also shown that customer perception and oil prices affect consumers' intents to buy e-vehicles. As technology develops and people's awareness of the environment increases, they are gradually switching to hybrid and electric cars for their daily travels. (Acharya, S., etal 2019) discovered in the study as well According to 58% of respondents, EVs are environmentally beneficial and appropriate for urban areas. Perhaps city dwellers are fully aware of the pollution caused by cars. (Adhikary, A. etal. 2022) Most respondents believe that e-vehicles are a more ecologically friendly alternative, and this is a key factor in the decision to convert to e-vehicles. E-vehicles will also aid in reducing India's high levels of noise pollution, particularly in places with heavy traffic. (Muthukrishnan, R. etal., 2023) According to the study's findings, most respondents had a favorable opinion on electric cars. The majority's primary belief was that EVs are less expensive to operate. The primary motivator for consumers to purchase an EV was its environmental friendliness, but the primary deterrent was a lack of knowledge regarding EVs. It was discovered that respondents cared about the environment and thought that EVs produced less air pollution than conventional cars. (Harikrishnan,V. and Praveenkumar, S. 2023) The study's conclusions showed that a variety of elements, including lifestyle, social influences, personal beliefs, and marketing communications, impact consumers' attitudes, perceptions, and preferences. Consumer preferences for electric car manufacturers are influenced by a number of important criteria, including availability, price, quality, and brand image. (Nagpal ,A. 2020) Given that a major portion of the demand for oil and gas originates from car owners, it was determined which significant and critical elements influence customers' intentions and actual purchase behavior with regard to electric vehicles (for Indian cities). According to the survey, Indian consumers' attitudes on EVs and their readiness to adopt them as a form of transportation while taking the government's stance on their entry into the country's transportation system into account. (Ranjan, I., etal. 2022) The results showed that customers are opposed to buying EVs because they believe that monthly electric car charging is difficult and expensive. Because moving to an electric car involves costs, many who currently possess a vehicle are unwilling to do so. Some customers don't want to switch since they think gas prices are reasonable. (Malagi, A.K. and Ramya,S. 2022) In order to preserve environmental sustainability in places like Bangalore, the study focuses on gathering opinions, feelings, knowledge levels, likelihood, and perceptions on the purchase of electric automobiles. The chosen residents of Bangalore City make up the sample population for this study. The following are some of the factors that will influence a consumer's decision to buy an electric vehicle: product appearance, material quality, brand recognition, price, worthiness, marketing promotion, research and development, battery quality, complexity, charger station, battery risk, consumer behavior and awareness, and government support policy. Additionally, research is being done on lifestyle and demographic characteristics that influence the choice to buy an electric car. (Jose, S.P.etal., 2022) According to the findings, advancements in vehicle engine technology are contingent upon modifications to the infrastructure for fuelling, mobility, the global automobile market, energy price fluctuations, climate legislation, and the electrical industry. (Sankar,U. and Rajasekaran,R. 2019) The study's conclusions show that consumers' actions will support the e-vehicle market and benefit banks, insurance firms, dealers, oil bunks, and production facilities in the automotive sector. (Varghese, A.T. etal. 2021) According to the study's findings, over 60% of respondents want to purchase an electric car over the next ten years, indicating a positive trend toward EVs in the near future. The demand for power will rise annually, making it a difficult challenge to satisfy. for a significant decrease in CO2 emissions. (Selva, J. and Arunmazhi, R. 2020) The impact of these aspects is then explained after the relevant factors for consumer preferences have been categorized into groups, including socioeconomic characteristics, psychological factors, mobility circumstances, social influence, etc. The purpose of this descriptive study is to investigate customer preferences for electric vehicles in relation to the worldwide electric vehicle market. The results demonstrate that consumer preference for electric vehicles is significantly influenced by knowledge about electric vehicles, government incentives, the availability of pure electric vehicles on the global market, the availability of charging stations globally, EV battery life, and environmental consciousness.

(Masurali, A. and Surya, P. 2018) People believe that electric automobiles are somewhat expensive, need more maintenance, and take longer to recharge. When compared to other variables, people believe that electric automobiles have fewer options and a lower resale value. People's degree of awareness is greatly influenced by their level of education. The main percentage difference between those who are ready to acquire an electric car and those who are not is how they view performance, safety features, and the variety of options available. (Choksi, S. and Ayre,V. 2022) The findings explored that, majority of respondent of both Male and Female have selected Eco – Friendly fuel cars which is 53 out of 100. The second most preferred EVs cars is Attractive packaging which is 47 out of 100. The significant value of chi-square test is respectively 0.580 it means null hypothesis is rejected. And alternative is accepted. It means that there is significance relationship between priority towards EVs cars and Gender. (Kumar, P.etal. 2022) According to the study's findings, the majority of users expressed satisfaction with the electrical vehicles and gave positive feedback after using them. This is also very good for the future of the electrical vehicle industry in India, as the sector is still in its infancy and has room for significant growth. In the future, we can anticipate even better performance and results from electrical vehicles. (Tiwari, A., etal. 2022) The research found a significant relationship between the factors and the perception towards an electric vehicle, by testing out the various hypotheses. also influenced by education and income level to make a decision to buy an electric vehicle. (Rout, D. etal., 2020) Chain wheels and freewheels are incredibly dependable and reasonably priced power transfer systems. Although HEVs are slightly more expensive than traditional automobiles, they are more efficient and produce less pollution. (Campino, J. etal., 2023) Their study came to the conclusion that the two elements that have the biggest and most beneficial effects on purchase intention are attitude (affected by benefits, compatibility, and simplicity) and personal norms (influenced by efficiency). (Kumar, A. 2023) Respondents are open to accepting EVs as a future purchase option if adequate infrastructure is offered. Increasing client confidence is hampered by the initial cost of purchase, the scarcity of charging stations, and the time required to recharge the battery.

3. RESEARCH PROBLEM

The automotive industry has witnessed a significant shift towards electric vehicles (EVs) in recent years. With advancements in technology and growing concerns about environmental sustainability, EVs have gained popularity as an alternative to traditional gasoline-powered vehicles. Consumer perception towards electric vehicles plays a crucial role in the widespread adoption of this new mode of transportation. Understanding consumer attitudes, preferences, and concerns regarding EVs is essential for automakers, policymakers, and other stakeholders to effectively promote and support the transition to a sustainable transportation system. Consumer perception encompasses various aspects such as beliefs, attitudes, opinions, and behaviours towards a particular product or service. There were no much research has been done on the consumer perception towards electric vehicles in Bengaluru city. Therefore, the present research has been taken up.

4. OBJECTIVES OF THE STUDY

1) To examine the consumer's impact of perceived factors on consumer's Perception towards buying electric vehicles.
2) To explore the influence of technological factors and consumer's Perception towards buying electric vehicles.

5. SCOPE OF THE STUDY

This study has focused on both primary and secondary data of electric vehicles in India. though the research found a potential scope of electric vehicles in India, still there is a scope for in-depth study with greater number of samples and more factors. The present article is confined to study the consumer perceived factors, technological factors leading to perception towards buying electric vehicles.

6. HYPOTHESIS

H01: There is no significant impact of consumer perceived factors on consumer's Perception towards buying electric vehicles.

H1: There is a significant impact of consumer perceived factors on consumer's Perception towards buying electric vehicles.

H02: There is no significant impact of technological factors on consumer's Perception towards buying electric vehicles.

H2: There is a significant impact of technological factors on consumer's Perception towards buying electric vehicles.

7. METHODOLOGY

The study is guided by a descriptive research methodology. Descriptive research is usually defined as a type of quantitative research; though qualitative research can also be used for descriptive purposes. The research design is developed to ensure that the results are valid and reliable. Regression analysis was used to find out the impact of consumer perception on the perception towards buying electric vehicles.

1) Primary data

The first time data has been through a self-administered structured questionnaire, which was developed and asked to be filled out. Personal interviews were also done with respondents. A structured questionnaire was prepared containing the statements ratings with five-point scale ranging from strongly disagree to strongly agree. "Strongly agree" was assigned a score of 5, "agree" a score of 4, "can't say" a score of 3, "disagree" a score of 2, and "strongly disagree" a score of 1 for conducting regression analysis.

2) Secondary Data

The following are the sources from which the secondary data was collected, such as information that has been gathered from selected peer-reviewed articles from bibliographic databases (Emerald, Sage journals online, Science Direct, Scopus, Taylor & Francis online, Web of Science, and Wiley (online library). Peer-reviewed journals were considered based on their knowledge validity and their highest impact on the research field. Online E-Sources, Published reports, journals, theses, magazines, research articles, newspapers, etc.

8. SAMPLE SIZE

It indicates the numbers of people to be surveyed. Though samples give more reliable results than small samples but due to constraint of time and money, the sample size was restricted to 145 respondents. The respondents are the users of Electric Vehicles in Bengaluru district. Convenience sampling techniques was used in the present study which helped in saving time and resources.

9. RESPONDENTS

The interaction was made with respondents who are users of Electric Vehicles in Bengaluru districts. This survey was implemented by identifying the customers at the shopping malls and especially in parking places. Users of Electric Vehicles were requested to rate their perception on the towards buying Electric Vehicles. A structured questionnaire has been issued to the respondents to collect the data.

10. SCOPE OF THE STUDY

The study is particularly to know the influence of find out the impact of consumer factors and technological factors on the perception towards buying electric vehicles in Bengaluru district. The data collected for the analysis is from the financial year 2023-24. This research has been narrowed down to the study of consumer factors and technical factors affecting perception of consumers especially users of electric vehicles. The study has been conducted in some of the selected areas of Bengaluru such as South, North West and East Bengaluru.

11. DATA ANALYSIS—RESULTS AND DISCUSSIONS

11.1. CONSUMER PERCEIVED FACTORS AND CONSUMER'S PERCEPTION

The linear regression analysis was run by using SPSS software to test the data collected for the analysis purpose. The data were measured by using a five-point Likert scale.

H01: There is no significant impact of consumer perceived factors on consumer's Perception towards buying electric vehicles.

H1: There is significant impact of consumer perceived factors on consumer's Perception towards buying electric vehicles.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.975[a]	.950	.944	.26210

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	168.941	15	11.263	163.951	.000[a]
	Residual	8.862	129	.069		
	Total	177.802	144			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.499	.129		-3.877	.000
	Bringing down the air pollution and emissions of greenhouse gases	.189	.070	.146	2.705	***.008***
	Gender	-.154	.048	-.140	-3.226	***.002***
	Educational background	-.013	.033	-.013	-.404	.687
	City roaming purpose	-.033	.042	-.033	-.776	.439
	Refuelling behaviour	.065	.034	.066	1.936	***.055***
	Influence of government incentives and financial gains	.077	.026	.080	2.931	***.004***
	Rising awareness of the environmental footprint	.002	.036	.002	.070	.944
	Personality trait	.005	.057	.005	.093	.926
	Curiosity	.067	.029	.074	2.324	***.022***
	Exposure to media sources and references	.364	.044	.307	8.196	***.000***
	Heterophily and acting as a source of information	.216	.044	.250	4.924	***.000***
	Hike in oil prices	-.089	.049	-.111	-1.807	.073
	Affordability-price range and vehicle range	.103	.037	.118	2.821	***.006***
	Design and style	.262	.049	.366	5.398	***.000***
	Branding	.029	.051	.027	.567	.572

a. Dependent Variable: Perception Towards Electric Vehicles

A multiple regression analysis was used to investigate the effect of 15 variables of consumer perceived factors on consumer's Perception towards buying electric vehicles. From the above table it is understood that, that consumer perceived factors (R = 0.975 indicating high degree of correlation among the variables, t =-3.877, p <.01) had a positively significant effect on consumer's Perception towards buying electric vehicles. Hence, it can be concluded that if the average level of consumer perceived factors were high, the average level of consumer's Perception towards buying electric vehicles would also be high. The analysis also reveals that consumer perceived factors were able to explain the total variation in customer satisfaction by the regression model about R^2 = 95% being high indicating model fits the data well. Thus answering the hypothesis H1: There is significant impact of consumer perceived factors on consumer's Perception towards buying electric vehicles, posited for this research is accepted. The coefficient table shows the contribution of each consumer perceived factors of consumers. From the above table the beta values demonstrate the unique contribution for the variables such as Bringing down the air pollution and emissions of greenhouse gases (β=.189,

p <.008), followed by Gender (β=-.154, p < .002), Refueling behaviours (β=.065, p <.055), Influence of government incentives and financial gains (β=.077, p <.004), Curiosity (β=.067, p <0.022), Exposure to media sources and references (β=.364, p <.000), Heterophily and acting as a source of information (β=.216, p <.000), Affordability-price range and vehicle range (β=-.103, p <.006), Design and style (β=.262, p <.000), in predicting consumer's Perception towards buying electric vehicles.

11.2. TECHNOLOGICAL FACTORS AND CONSUMER'S PERCEPTION

H02: There is no significant impact of technological factors on consumer's Perception towards buying electric vehicles.

H2: There is significant impact of technological factors on consumer's Perception towards buying electric vehicles.

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.973[a]	.946	.941	.26923		
ANOVA[b]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	168.162	11	15.287	210.909	.000[a]
	Residual	9.640	133	.072		
	Total	177.802	144			

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.633	.116		-5.449	.000
	Technical innovation in the world	.002	.030	.002	.052	.959
	Disruptive innovation	.320	.043	.270	7.484	***.000***
	Improvements to battery technology	.195	.041	.226	4.719	***.000***
	Reductions in price premiums	-.140	.050	-.174	-2.792	***.006***
	Excellent service for an e-vehicle	.097	.040	.111	2.404	***.018***
	Low noise levels	.205	.045	.286	4.511	***.000***
	High distance coverage with efficiency and comfort	.011	.054	.010	.204	.839
	Technology towards low carbon trajectory	.078	.058	.061	1.347	.180
	Operating costs	.144	.031	.138	4.685	***.000***
	Innovators and early adopters	.027	.056	.030	.487	.627
	Energy independence by reducing oil imports	.194	.054	.178	3.568	***.001***
a. Dependent Variable: Perception Towards Electric Vehicles						

A multiple regression analysis was used to investigate the effect of 11 variables of consumer technological factors on consumer's Perception towards buying electric vehicles. From the above table it is understood that, that technological factors (R = 0.973 indicating high degree of correlation among the variables, t =-5.449, p <.01) had a positively significant effect on consumer's Perception towards buying electric vehicles. Hence, it can be concluded that if the average level of technological factors were high, the average level of consumer's Perception towards buying electric vehicles would also be high. The analysis also reveals that technological factors were able to explain the total variation in customer satisfaction by the regression model about R^2 = 94.6% being high indicating model fits the data well. Thus answering the hypothesis H2: There is significant impact of technological factors on consumer's Perception towards buying electric vehicles, posited for this research is accepted. The coefficient table shows the contribution of each technological factors. From the above table the beta values demonstrate the unique contribution for the variables such as Disruptive innovation (β=.320, p <.000), followed by Improvements to battery technology (β=-.195, p < .000), Reductions in price premiums (β=-.140, p <.006 Excellent service for an e-vehicle (β=.097, p <.018), Low noise levels (β=.205, p <0.000),

Operating costs (β=.144, p <.000), Energy independence by reducing oil imports (β=.194, p <.001), in predicting consumer's Perception towards buying electric vehicles.

12. RESEARCH FINDINGS

Consumer perceived factors such as bringing down the air pollution and emissions of greenhouse gases, gender, refuelling behaviours, influence of government incentives and financial gains, curiosity, exposure to media sources and references, heterophily and acting as a source of information, affordability-price range and vehicle range, design and style, are the variables have the positive relationship with consumer's Perception towards buying electric vehicles.

Technological factors such as disruptive innovation, improvements to battery technology, reductions in price premiums, excellent service for an e-vehicle, low noise levels, operating costs, energy independence by reducing oil imports are the variables have the positive relationship with consumer's Perception towards buying electric vehicles.

13. SUGGESTIONS

1) It is advised that businesses have adequate infrastructure available so they can meet the needs of e-vehicles from throughout the nation.
2) Electric cars are easier to use, and everyone should be aware of the rumours and user evaluations. Raise awareness of global issues.
3) spreading the word and raising awareness before urging people to switch to electric automobiles from combustion-powered ones.
4) It is proposed that the government should implement suitable policies to promote the manufacture and use of e-vehicles.
5) The e-vehicle manufacturer asked to speak with the government about obtaining incentives and benefits for e-vehicles. It is also suggested to the government that to generate and supply adequate electricity power to encourage and manage e-vehicle.
6) The study's participants recommended that the establishment of e-vehicle infrastructure, including charging stations, should be based on the principles of cost and accessibility.
7) To engage and convince potential customers to embrace a new product or service, five adopter groups and unique marketing strategies are required.
8) From the standpoint of the consumer, list the main advantages and disadvantages of electric cars, including reduced fuel expenses, environmental friendliness, a shorter driving range, and higher initial expenditures.
9) Assess how government initiatives like tax breaks, subsidies, and infrastructure spending could promote or inhibit the use of electric cars. Analyze the potential effects of these regulations on consumers' opinions of electric cars as a practical mode of transportation.
10) By increasing the number of charging stations, more people will be interested in purchasing electric vehicles.
11) The price of gasoline is steadily rising. The problem of rising gas costs may be resolved by using electric cars. The government's encouragement of electric vehicles will help the country's future growth.
12) The market for electric vehicles will grow in the near future as a result of price reductions.
13) By reducing the need for crude oil and its exorbitant price, the government also gains from the development of electric vehicles.
14) Businesses should place a high premium on educating the public about new electric vehicle modes.
15) To help minimize environmental pollution, the government should offer incentives, tax breaks, and other measures to encourage the use of electric cars.
16) It is recommended that firms make adequate infrastructure available so they can meet the needs of EV vehicles nationwide.
17) Since the majority of customers don't drive electric cars, it would be beneficial to increase consumer test drives so they can learn more about and experience them.

18) Since customers are still unaware about electric vehicles, it is necessary to update or modify the advertising plan to encourage the adoption of electric vehicles through internet media and advertising campaigns.

14. LIMITATION

The firms might have been selected from other states of the country to achieve more reliability in the study. Objective measures would have been used to measure the variables selected instead of measuring the construct using subjective measures. Advanced statistical tools such as the chi square test, structure equation model, and Mann-Whitney "U" test might have been used to study the significant impact of consumer perceived factors and technological factors on consumer's Perception towards buying electric vehicles. The study is confined to finding out the influence of consumer perceived factors and technological factors on consumer's perception towards buying electric vehicles. There are other factors such as personal and marketing factors affecting buying pattern of customers towards Electric Vehicles that are not taken into consideration for the study. The samples are selected only from Bengaluru District.

15. DIRECTIONS FOR FUTURE RESEARCH

Other product categories such as renewable energy, electrics, eco-friendly cosmetics, eco-friendly food and beverages, Electric Vehicles can be taken into consideration to find out the significant relationship of the concerned variables with consumer's perception towards buying behaviour of the above listed products. The variables related to consumer's personal factors and marketing factors can be tested on the satisfaction level of eco-friendly products users. Along with legal policies of the government, other variables such as external market environment, pricing, eco-friendly products promotion intensity, and integrated marketing communication related to eco-friendly products can be taken into consideration to build an integrated model for the consumer's perception towards buying eco-friendly products. Comparative analysis can be done between electric and combustion types of vehicle to study causes that make the manufacturers successful in marketing eco-friendly products.

16. CONCLUSIONS

Customers must be aware of the new technology and believe it offers greater value than the current technology in order for it to be accepted. There are advantages and disadvantages to both electric and hybrid vehicles, but how we choose to view them is up to us. For that reason, we are conducting this study to understand what consumers think and whether they are willing to contribute to the preservation of a sustainable environment. Consumer perceived factors related to electric vehicles such as Bringing down the air pollution and emissions of greenhouse gases, Gender, Educational background, City roaming purpose, Refueling behaviours, Influence of government incentives and financial gains, Rising awareness of the environmental footprint, Personality trait, Curiosity, Exposure to media sources and references, Heterophily and acting as a source of information, Hike in oil prices, Affordability-price range and vehicle range, Design and style and Branding were used to predict Perception towards buying electric vehicles. Technological elated to electric vehicles such as Technical innovation in the world, Disruptive innovation, Improvements to battery technology, Reductions in price premiums, Excellent service for an e-vehicle, Low noise levels, High distance coverage with efficiency comfort, Technology towards low carbon trajectory, operating costs, Innovators and early adopters, Energy independence by reducing oil imports were used to predict Perception towards buying electric vehicles. Multiple regression and was used to understand the results. By building more infrastructure and focusing more on technologies that can foster trust in electric vehicles, the Indian government and electric vehicle producers need to make greater investments in the societal acceptability of the vehicle. The outcome makes it abundantly evident that the public is fully aware of the advantages of the environment. The government and automakers now bear the responsibility of creating consumer perception by providing the aforementioned facilities in tandem with their investments in vehicle manufacturing. This will help turn dreams into reality, encourage people to switch to electric vehicles, and protect the future from a number of respiratory issues, such as lung cancer, asthma, and other fatal illnesses. Additionally, it is advised that the government work to change prospective buyers' perceptions about EVs and market them as the way of the future.

CONFLICT OF INTERESTS

None.

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