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## A STUDY ON CONSUMER PERCEPTION TOWARDS ELECTRIC VEHICLE WITH REFERENCE TO BHAVANI TOWN, ERODE.

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### ABSTRACT

Transport is a fundamental requirement of modern life, but the traditional combustion engine is quickly becoming outdated. Petrol or diesel vehicles are highly polluting and are being quickly replaced by fully electric vehicles. The development of electric vehicles has driven the growth of the automobile industry. Battery charging mechanisms is very important for the advancement of electric vehicles and most of the vehicle user can switch over the E-Vehicle. This research mainly indicate that the awareness and perception to buying of the electric vehicle, switching normal vehicle to E-vehicle. As per the findings of the study, the public is fully aware of the environmental benefits. The study concludes adopting new technology which is evolution in the history of automobile which reduces the emission rate as well as noise pollution which will be environment friendly.

Index Terms: Automobile industry growth, Performance of battery, Switching to e-vehicle.

“Auto racing began five minutes after the second car was build”-Henryford.

### INTRODUCTION

Pollution free environment is currently a global concern. Emission from internal combustion engines is one of the primary air pollutants. One of the most significant breakthroughs in EV battery technology is the evolution of battery chemistry. Researchers and engineers are continuously fine-tuning the chemistry of lithium-ion batteries to improve their efficiency, energy density, and longevity. Governments are encouraging people to switch to electric vehicle by incentivizing. But in India there is slow increase in growth of e-vehicle industries. Standard e-bikes with 400-500 W batteries would ride up to 100-120 km on one charge. The average speed of e-bikes 45 km/h. Standard e-car with 800W batteries would ride up to 200-500km on single charge. The average speed of e-car would normally 160-250 km/h.

By reducing types of air pollution, such as [nitrogen dioxide](#), EVs could prevent hundreds of thousands of early deaths every year, especially from trucks and traffic in cities. The full environmental impact of electric vehicles includes the life cycle impacts of carbon and sulfur emissions, as well as toxic metals entering the environment. Rare-earth metals ([neodymium](#), [dysprosium](#)) and other mined metals (copper, nickel, iron) are used by EV motors, while lithium, cobalt, manganese are used by the batteries. In

2023 the US State Department said that the supply of lithium would need to increase 42-fold by 2050 globally to support a transition to clean energy.<sup>[145]</sup> Most of the lithium ion battery production occurs in China, where the bulk of energy used is supplied by coal burning power plants. A study of hundreds of cars on sale in 2021 concluded that the life cycle GHG emissions of full electric cars are slightly less than hybrids and that both are less than gasoline and diesel fuelled cars.

## REVIEW OF LITERATURE

**(Pretty Bhalla, 2018) A Study of Consumer Perception and Purchase Intention of Electric Vehicles: Pretty Bhalla, InassSalamah Ali, AfrozeNazneen:** Environmental concerns, cost, comfort, trust, technology, societal acceptance, and infrastructural availability all influence car selection. These arguments have been put to the test in both conventional and electric vehicles. They believe that these elements have a direct impact on an individual's vehicle choice. They discovered that EV producers and governments must invest more in social acceptability of the car by expanding infrastructure and emphasising technology to build trust. According to the findings, the general public is fully aware of the environmental benefits. The government and manufacturers share responsibility for investing in car manufacturing.

**(Janardan Prasad Kesari, 2019) Opportunities and Scope for Electric Vehicles in India: by Janardan Prasad Kesari, Yash Sharma, ChahatGoel:** Developing an aggressive plan for EV adoption in India and assuring a well-executed implementation is a difficult task for the government, but it is critical. India's geography and diversity will bring challenges that would necessitate smart answers. With the acquisition of four-wheeled cars for government offices, three-wheeled vehicles, and buses for public transportation, public procurement is likely to be a major driver of EV growth. The initial expansion of two- and four-wheeled electric cars is likely to be boosted by investments from fleet operators such as Ola and Uber, as well as operators of food distribution services. However, it may take 5-6 years for private EVs to attain popularity and acceptance

**(Tornekhar, 2020)** stated the eight possible reasons for the slow growth of EVs in India. He mentioned charging time, price of an EV, range depending on battery capacity, charging infrastructure, limited life of batteries, fear of new technology, government incentives, lack of advertisements, and awareness campaigns as the obstacles to EVs growth in India.

**(Nath, 2021)** his journal mentioned the government of India amended the current FAME-II (Faster Adoption and Manufacturing of Electric Vehicles-II) initiative in June of this year. The government narrowed the price difference between petrol-powered two-wheelers and electric two-wheelers by boosting the subsidy rate for electric two-wheelers from Rs 10,000/kWh to Rs.15,000/kWh, as well as capping incentives at 40% of vehicle costs, rather than 20% previously. This policy also supports about 2,700 charging stations in the largest cities, other cities with over a million in population, smart cities, and cities in hilly states across the country, with the objective of having at least one charging station in every 3 km x 3km grid. In addition, charging stations are planned for every 25 km on highways.

**(Kalra, 2022)** studied 63 percent of consumers assuming that an EV is out of their budget, the capital cost has always been a big issue in EV purchasing decisions. Our country's lack of suitable charging infrastructure is a major

order to lessen dependency on imports and achieve the government's 50 percent localization requirement for government subsidies. However, he also mentioned a comprehensive infrastructure that is inexpensive, accessible, and supports all consumer groups, along with a solid finance environment, governmental incentives, and technology developments are anticipated to position the electric vehicle industry for major expansion over the next decade.

## STATEMENT OF THE PROBLEM

A few studies have been conducted on Consumer Behaviour towards Electric vehicles. This research is based on consumer perception in Bhavani town. In this research attempt is made to examine the Consumers towards electric vehicles. Due to evolution in the sector of automobile it is seen that the shift of consumers from conventional to non-conventional type of vehicle which is very necessary for the next generation due to aspects like emission and decreased in rate of resources which is being a main impact on consumers today. The overall project on consumer behaviour was done in Bhavani town. Hence, a study on consumer perceptions towards EV in Bhavani town is carried out.

## OBJECTIVES OF THE STUDY

1. To understand the perception of the consumers about e-vehicles.
2. To identify the factors to be considered while buying e-vehicle.
3. To analyse the consumer parameter of switch to e-vehicle from petrol vehicle.

## RESEARCH METHODOLOGY

A Research methodology is usually a guide system for solving problems with specific components such as phases, tasks, methods, techniques, and tools. Research methodology is a method of systematically solving research problems. Simply put, it describes how the study was done. It covers general survey design, purpose setting, data collection formats, data collection methods, sample designs, various tools and techniques used to present data, and finally, the procedure of analysis.

### 1. Research Design:

The research design revolved around the Bhavani town and it was used as the main source to collect information and for collection of reviews from the owner of vehicles in Bhavani town and to find out their perception and point of view about the electrical vehicles .

### 2. Selection of Sample:

Size of the sample was 80 were taken into account from primary data to carry out the study and Convenience sampling method were used for selection of sample.

### 3. Sources and collection of Data:

Primary data were used to by well structured questionnaires. Questionnaire were divided into three parts

1. The personal information of the respondent.
2. The point of view of the respondent towards electronic vehicle..
3. Reason for respondents switch to an electronic vehicle

Secondary data were used to derive interpretation and collected from different websites and magazines.

**4. Tools used:** Simple percentage analyses were applied to analyse the data.

## LIMITATIONS OF THE STUDY

1. No lengthy period of survey was conducted.
2. The study is limited with 80 samples as there is lesser accessibility in E-vehicle industries.
3. Only consumer perspectives were included in the survey, industries were not involved in any way.

## DATA ANALYSIS AND INTERPRETATION

It presents the findings of the study based on the data collected from the respondents in relation to the objectives of the study. The objectives of the study were to understand the consumer perception towards electronic vehicle.

The questionnaire was formed keeping in mind the likes and dislikes form the consumers of vehicle and their willing to change to electronic vehicle.

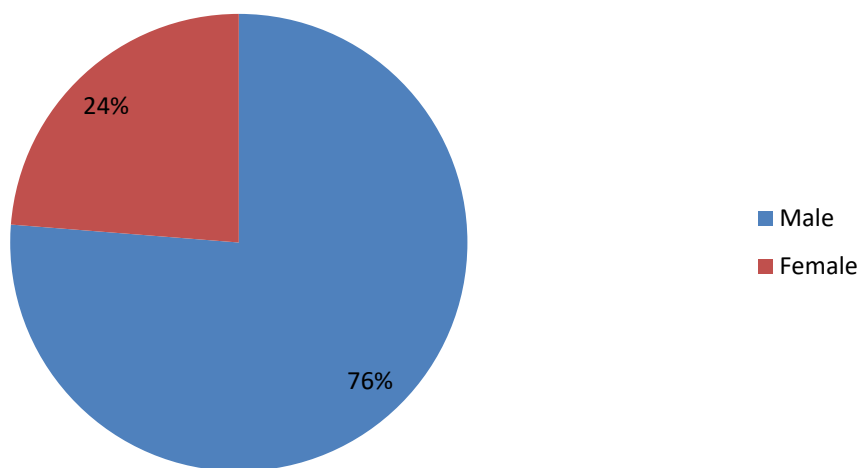
### I - The personal information of the respondent

**Table:1 Gender of the respondent**

S.NO	GENDER	FREQUENCY	PERCENTAGE(%)
1	Male	61	76.25
2	Female	19	23.75
	Total	80	100

In Table 1, the respondent was divided into 2 groups based Gender. The frequency and percentage of the respondents are shown in table 1. Out of 80, 61 respondents (76.25%) are male and 19 respondents (23.75%) are female. This has been explained in the graph:1 below.

### Gender of the respondents

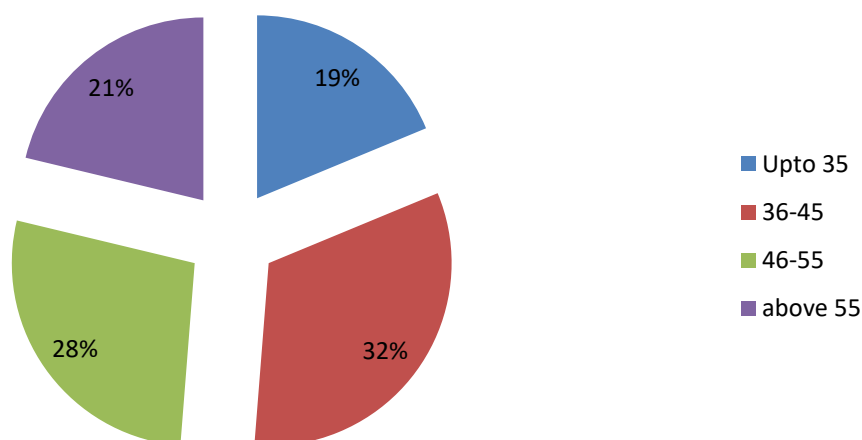


**Table: 2 Age of the respondents**

S.NO	AGE	FREQUENCY	PERCENTAGE(%)
1	Upto 35	15	18.75
2	36-45	26	32.50
3	46-55	22	27.50
4	Above 55	17	21.25
	Total	80	100

In Table 2, the respondents were divided into 4 groups based their age. Out of 80 respondents, 15 respondents (18.75%) were upto 35 years, 26 respondents (32.50%) were in the age between 36-45 years, 22 respondents (27.50%) were in the age between 46-55 years, 17 respondents (21.25%) were in the age above 55.

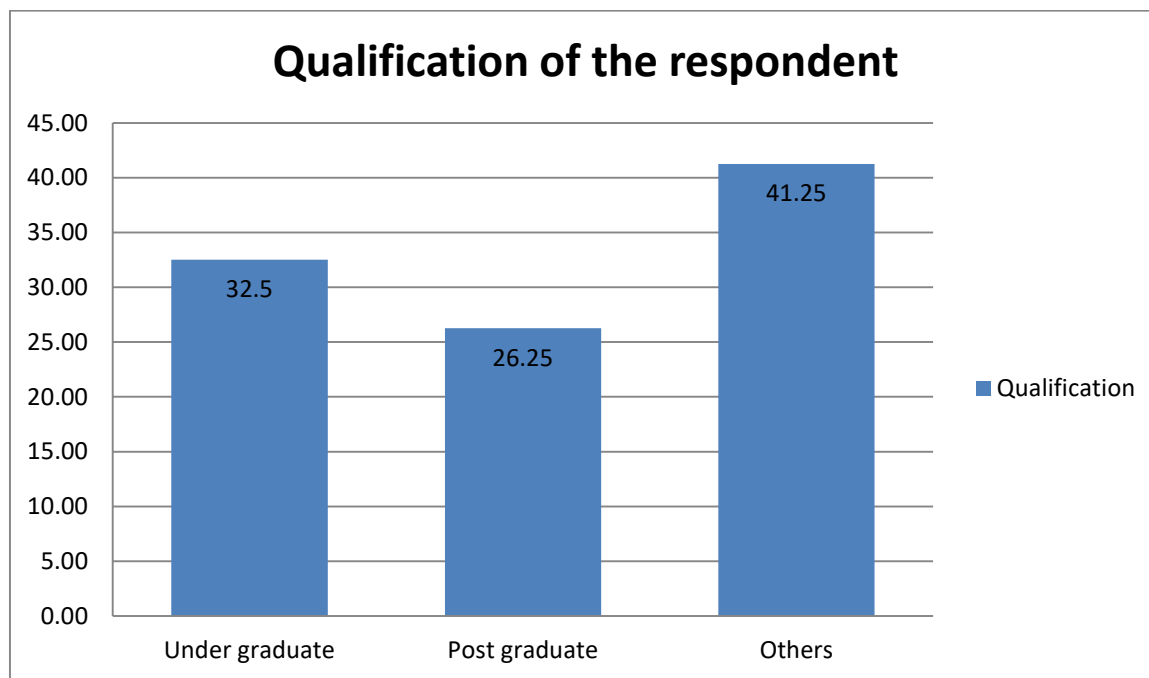
### Age of the respondents



**Table: 3**  
**Qualification of the respondent**

S.NO	QUALIFICATION	FREQUENCY	PERCENTAGE(%)
1	Under graduate	26	32.50
2	Post graduate	21	26.25
3	Others	33	41.25
	Total	80	100

In Table 3, the respondents were divided into 3 groups based on their Qualification. Out of 80 respondents, 26 respondents (32.50%) were having Undergraduate degree, 21 respondents (26.25%) were having Postgraduate degree and 33 respondents (41.25%) were having other qualification (secondary school education, diploma).



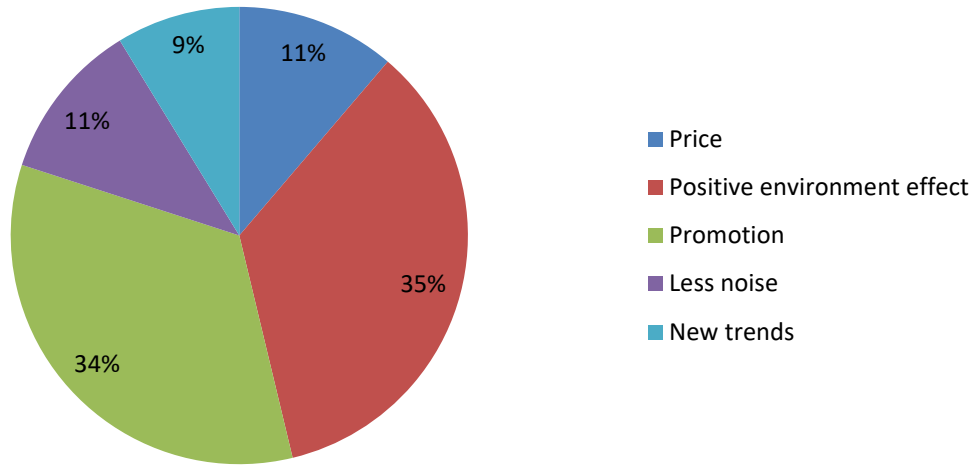
## II. Reason for respondents switch to an electronic vehicle.

**Table: 4**  
**Factors considered to buy E-vehicle**

S.NO	Factors	FREQUENCY	PERCENTAGE(%)
1	Price	9	11.25
2	Positive Environment Effect	28	35
3	Promotion	27	33.75
4	Less noise	9	11.25
5	New Trends	7	8.75
	Total	80	100

In Table 4, the respondent was divided into 5 groups based on the factors to buy an electronic vehicle. Out of 80 respondents, 9 respondents (11.25%) are considered price, 28 respondent (35%) are positive environment effect, 27 respondents (33.75%) are considered promotion, 9 respondents (11.25%) are less noise, 7 respondents (8.75%) are new trends.

### Factor considered to buy EV

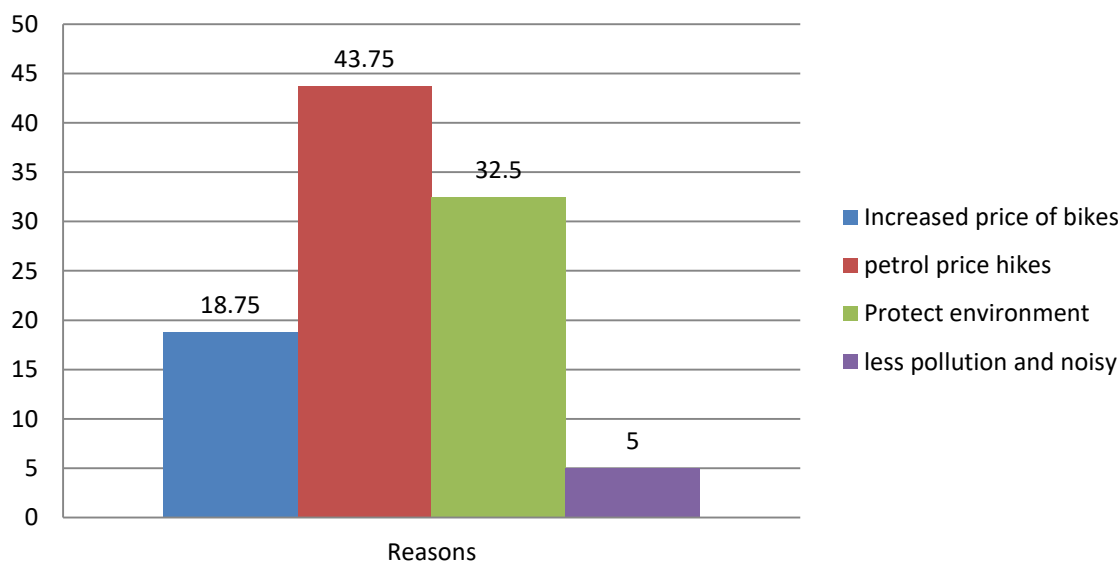


**Table: 5 Reason for the respondent is willing to switch to an e- vehicle.**

S.NO	REASON	FREQUENCY	PERCENTAGE(%)
1	High price of bikes	15	18.75
2	Petrol price hikes	35	43.75
3	To protect the environment	26	32.50
4	Less pollution and noisy	4	5
	Total	80	100

In table 5, the respondent was having multiple choice to select the reason for willing for switching to an EV. Out of 80 respondents, 15 of the respondents (18.75%) chose Increased price of bikes, 35 of the respondents (43.75%) chose Petrol price hikes, 26 of the respondents (32.50%) chose to protect the environment and 4 of the respondents (5%) chose Less pollution and noisy.

### Reason for switch to e-vehicle

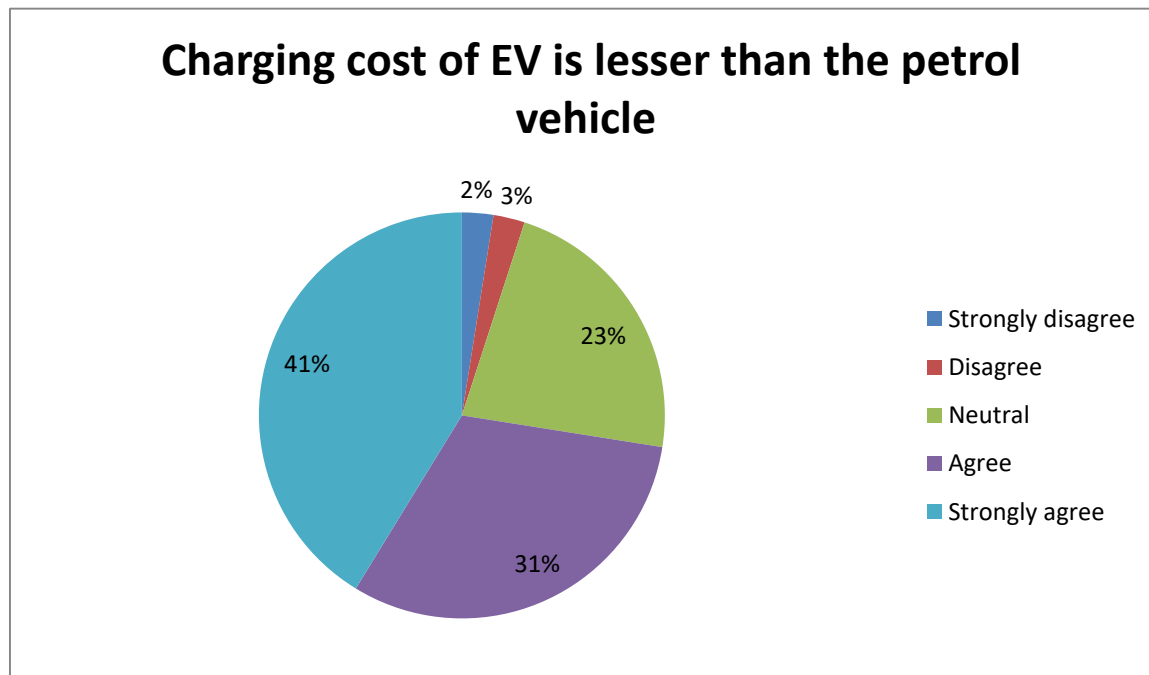


### III -Perception of the respondents towards electronic vehicle.

**Table :6****Cost to charge an E-vehicle is much less than the fuel cost**

S.NO	VIEWS	FREQUENCY	PERCENTAGE(%)
1	Strongly disagree	2	2.50
2	Disagree	2	2.50
3	Neutral	18	22.50
4	Agree	25	31.25
5	Strongly agree	33	41.25
	Total	80	100

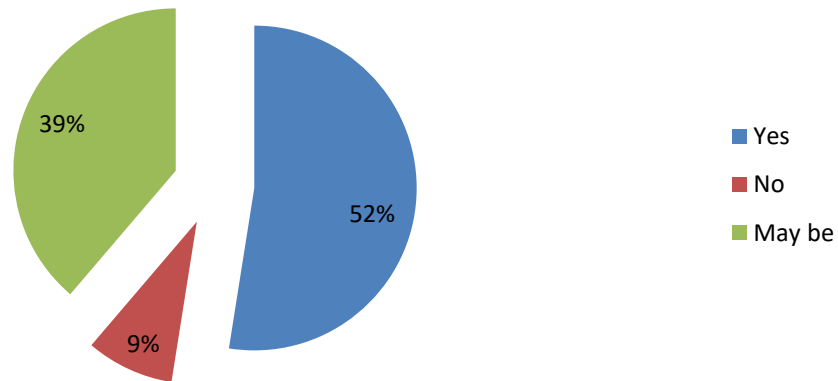
In table:6, the respondent was divided into 5 groups based on the respondent point of view towards the statement. Out of 80 respondents, 2 respondents (2.50%) were strongly disagreed with the statement, 2 respondent (2.50%) were disagreed with the statement, 18 respondents (22.50%) were neutral with the statement, 25 respondents (31.25%) were agreed with the statement and 33 respondents (41.25%) were strongly agreed with the statement.

**Table: 7****Willingness about switchover to E-vehicle if the company offers any exchange value**

S.NO	WILLINGNESS TO SWITCH	FREQUENCY	PERCENTAGE(%)
1	Yes	42	52.50
2	No	7	8.75
3	May be	31	38.75
	Total	80	100

In Table 7, the respondent was divided into 3 groups based on the willing to switch to an electric vehicle if the company offers them an exchange value. Out of 80 respondents, 42 respondents (52.5%) selected yes to switch, 7 respondents (8.75%) not ready to switch over to e vehicle and 31 respondents (38.75%) selected may be to switch in future.

## Willingness about switchover to E-vehicle if the company offers any exchange value



### FINDINGS AND SUGGESTIONS

The following are the major findings of the study.

1. Personal information:
  1. The majority (76 percent) of the selected vehicle users are male.
  2. The maximum (32 percent) of the respondent fall in age group is 36-45.
  3. The majority (41 percent) of the respondent are having secondary school and diploma level.
  4. And the majority of the respondents are belonging to the category of employees.
2. Respondents willingness to switchover to electric vehicle:
  1. The majority (35 percent) of the respondents are consider to positive environment effect.
  2. The most (44 percent) of the respondents is willing to switch an EV for the reason of petrol price hike.
3. Respondents perception towards electric vehicle.
  1. The majority (41 percent) of the respondent cost of the fuel is higher than cost of charging electric vehicle.
  2. The most (52 percent) of the respondent are willing to switch electric vehicle company offers an exchange value of owned vehicle.

The study suggest that the main reason for lack of e-vehicle industry is infrastructure and charging station. Better assistance in enlargement of industry, service quality, improvement of battery technology, fewer prices will favour the Indian automobile industry.

### CONCLUSION

Petrol price hikes is one of the significant reason to switch over EV and majority of the consumer is aware to buy. One who are interested and likely to buy an EV if the company offers an exchange value on their owned vehicle, they viewed the change of electric vehicle is less than the fuel price of diesel and petrol vehicle, but they feel charging of electric vehicle is manic. This study reveals towards buying an electric vehicle and protects the environment from pollution. It concludes adopting new technology which is evolution in the history of automobile which reduces the emission rate as well as noise pollution which will be environment friendly.



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