

# Student's Perception on Electronic Vehicle: A Study in Indian Prospective

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**Abstract**—The world across the global is witnessing new change in technology after every short interval and the transition from previous technology to new technology has also accelerated. People are easily shifting towards new technology which somewhere or the other making the human lives better. Today, due to extreme environment deterioration cause by burning fossil fuels, alternative solutions to save environment becomes need of the hour. Transport sector accounts for 18% of total consumption in India. Since, the nation does not produce oil; instead, it imports crude oil from other countries and refines the fuels into gasoline and diesel. The globe is heading towards the EV (Electric Vehicle) age, taking into account the global crisis, pollution, and limited resources. Many nations have begun to entirely switch to electric vehicles, but India, with its large population, has significant hurdles in making the shift smoothly. Many states have implemented EV policies to attract EV manufacturers, allowing for mass production and consumption and also ensuring awareness across country. This research study through survey methodology will take a glance at the student's perception on electronic vehicle and will also explore their awareness level regarding EV vehicle.

**Keywords:** *Electric Vehicles, Global Crisis, EV policies*

## I. INTRODUCTION

The transportation system accounts for 18% of India's overall energy usage. This equates to about 94 million tonnes of oil equivalent energy (MTOE). If India continues on its present path of energy consumption, it would need an estimated 200 MTOE of energy supply yearly to satisfy this sector's demand by 2030. At the present, this need is fulfilled mostly via imported crude oil, making this sector highly susceptible to fluctuations in international crude oil prices. Additionally, the industry produces an estimated 142 million tonnes of CO<sub>2</sub> emissions yearly, with the road transport segment alone contributing 123 million tonnes. [1]

While pondering upon the current scenario, government is making every possible effort to explore alternative modes of transportation along with the aim to meet the Sustainable Development Goal by 2030. Government is ensuring to promote EV vehicles across the country. Many states in the country have come up with Electronic vehicle policy and other business friendly policies to attract investment and manufacturers of EV vehicle. When combined with creative pricing strategies, suitable technology, and support infrastructure, electric mobility offers a viable option to

solving these problems, and has therefore been on the Government of India's radar. [2]

Additionally, electric transportation will help balance of required energy demand, storage of energy, and sustainability of environmental sustainability. More dependency on the electric vehicle will reduce the fossil fuel consumption and support in smooth transition of commuting from one place to other place by saving money and environment. When electric automobiles are paired with decarbonization of the power sector, they can help keep the world on track to meet its common climate goals.

Currently, conventional vehicles dominate Indian roadways, but recently in 2021 the electronic vehicle have witnessed a massive surge in sale of over 168% and around 3.5 lakh car sold in Indian market. Though many initiatives are been taken by the State and Central Government but still EVs have to face various hurdles to rule the Indian market due to many constraints like adequate charging station, pricing and reliability. This research paper will explore the perception of Indian Students on transition from Conventional vehicle to EV vehicle and also their opinion of understanding the current environment of EV vehicles.

## II. REVIEW OF LITERATURE

**Holms et al., (2010)** Transportation-related activities have highlighted the need of highly efficient, safe, and low-emission transportation. Electric cars have been suggested to eventually replace conventional automobiles, and they examined in a number of countries, financial incentives and social considerations impact customer acceptability. Many governments have begun to establish financial policies to encourage the adoption of electric cars, but decision makers must keep a long-term perspective to guarantee that they are carried out efficiently. [3]

**Sierzchula et al. and X Zhang et al., (2014)**- The demand for hybrid automobiles in India's metropolises Analyzed. Due to the depletion of fossil fuel sources, environmental degradation, and global warming, alternative fuels are needed for sustainability. According to the research, individuals with traditional thinking are more worried about the environment, and Indian customers are willing to pay a premium for an environmentally friendly vehicle. [4]

**Brady and Mahony (2016)** investigated an electric vehicle's stochastic modelling approach for developing a dynamic trip

itinerary and charging profile for EV propulsion in the real world. They came to the conclusion that if the parking time distribution circumstances were modified, the parking time distribution accuracy, as well as the model's overall accuracy, would improve. [5]

**Dash P. K., (2012)** Rather than making a massive adjustment, India can engage in small-scale reinforcements to address load difficulties locally. Charging at home should be promoted. Before constructing the large scale charging infrastructure, proper planning of location, population, traffic density, and safety should be addressed. It is critical to integrate efforts in the energy and transportation industries. Drivers of electric cars are provided a financial consumer incentive, such as tax credits, purchase subsidies, discounted tolls, free parking, and access to limited highway lanes, which will assist the industry expand. [6] [7]

### III. OBJECTIVES OF THE STUDY

1. To understand the perception of students on the prospective of EV vehicle in India.
2. To know the awareness level regarding EV vehicles among students.

### IV. RESEARCH METHODOLOGY

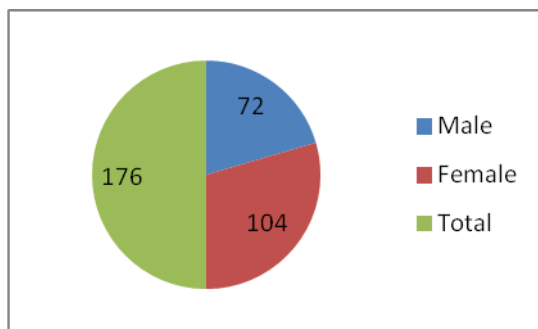
Descriptive research methodology is used to explore the student's perception regarding the Electronic Vehicle. Primary data of a sample population of 176 is collected using online questionnaire.

### V. DATA ANALYSIS

TABLE 1: GENDER REPRESENTATION OF THE RESPONDENTS

	Frequency	Percent
Male	72	40.9
Female	104	59.1
Total	176	100.0

Fig 1: Gender representation of the respondents

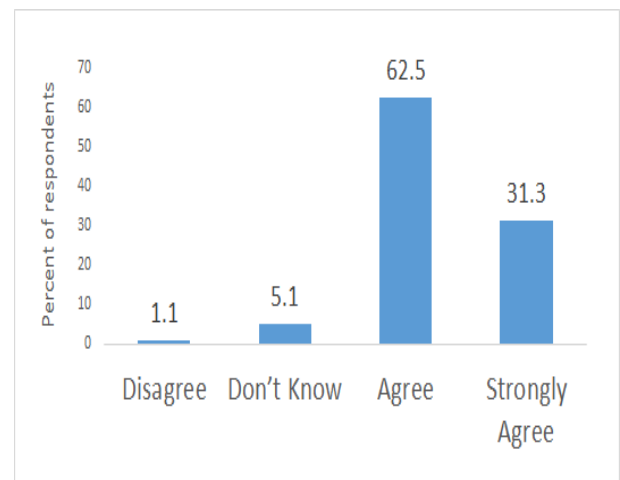


As per the figure and table 1 there are 59% of the female responses and 41% of the male responses. The on the recorded responses the data is derived.

TABLE 2: DO YOU KNOW THAT ELECTRIC VEHICLES (EV) ARE, BOTH, ECONOMICAL AND ECOLOGICALLY SUPERIOR TO CONVENTIONAL VEHICLES?

	Frequency	Percent
Disagree	2	1.1
Don't Know	9	5.1
Agree	110	62.5
Strongly Agree	55	31.3
Total	176	100.0

Fig 2: Do you know that Electric Vehicles (EV) are, both, economical and ecologically superior to conventional vehicles?



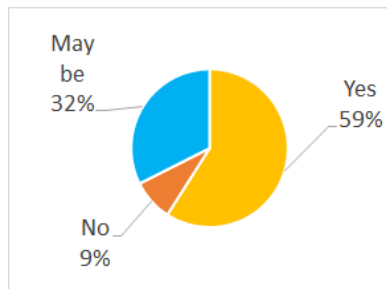
As per the table 2 and figure 2, the data explicits that 31.3 percent people strongly agree and 62.5 people agree that Electric Vehicles (EV) are, both, economical and ecologically superior to conventional vehicles. This clearly indicates that majority of the respondents knows that about the USPs of Electric Vehicle. Whereas only 5.1 percent of the people are unaware and only distinguish between the EV and Conventional vehicles features and mere 1.1 percent of the respondents disagree with the above statement.

TABLE 3: IF GIVEN A CHOICE, WOULD YOU PREFER TO BUY AN EV OVER CONVENTIONAL VEHICLE (PETROL/DIESEL) CONSIDERING ITS PRICE DIFFERENCE?

	Frequency	Percent
Yes	104	59.1
No	15	8.5
May be	57	32.4

<b>Total</b>	<b>176</b>	<b>100.0</b>
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Fig 3: If given a choice, would you prefer to buy an EV over conventional vehicle (Petrol/Diesel) considering its price difference?

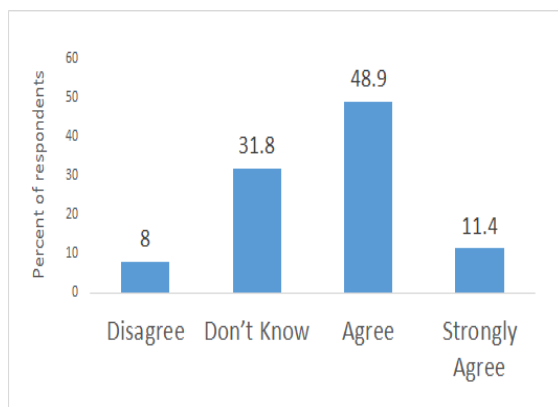


As per the table 3 and figure 3 in which the data explicits that the 59.1 percent people believe that if given an option they would prefer to buy EV vehicles over conventional mode of (Petrol/Diesel) considering its price difference whereas 8.5 percent respondents said no and 32.4 percent of the respondents were not able to make choice in selecting between the EV vehicles and conventional vehicle.

TABLE 4: DO YOU THINK THAT INDIA WILL BE ABLE TO MAKE A 50% TRANSITION FROM CONVENTIONAL VEHICLES TO EVs BY 2030?

	Frequency	Percent
<b>Disagree</b>	<b>14</b>	<b>8.0</b>
<b>Don't Know</b>	<b>56</b>	<b>31.8</b>
<b>Agree</b>	<b>86</b>	<b>48.9</b>
<b>Strongly Agree</b>	<b>20</b>	<b>11.4</b>
<b>Total</b>	<b>176</b>	<b>100.0</b>

Fig 4: Do you think that India will be able to make a 50% transition from conventional vehicles to EVs by 2030?



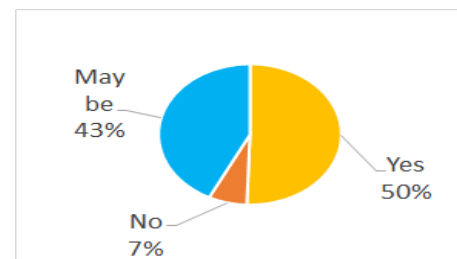
As per the table 4 and figure 4, the data reveals that the 48.9 percent people agree and 11.4 percent people strongly agree that 50% transition from the conventional to EV vehicle is possible by 2030. Whereas 31.8 percent

people are confuse or not sure about the transition and mere 8 percent disagree with the above statement.

TABLE 5: DO YOU THINK EV OWNERS WILL FACE TROUBLE FINDING CHARGING STATIONS?

	Frequency	Percent
<b>Yes</b>	<b>89</b>	<b>50.6</b>
<b>No</b>	<b>12</b>	<b>6.8</b>
<b>May be</b>	<b>75</b>	<b>42.6</b>
<b>Total</b>	<b>176</b>	<b>100.0</b>

Fig 5: Do you think EV owners will face trouble finding charging stations?

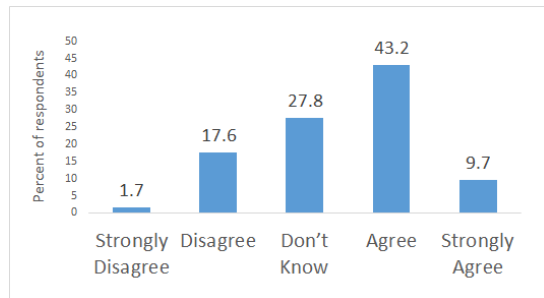


As per the table 5 and figure 5, 50.6 percent of the respondents believe that EV owner will face trouble finding charging station and 42.6 percent respondents are not sure with the above statement and mere 6.8 percent respondents believe that EV owners will not face any trouble charging station.

TABLE 6: DO YOU THINK THAT THE GOVERNMENT CONSIDERABLY PROMOTING THE USE OF EVs?

	Frequency	Percent
<b>Strongly Disagree</b>	<b>3</b>	<b>1.7</b>
<b>Disagree</b>	<b>31</b>	<b>17.6</b>
<b>Don't Know</b>	<b>49</b>	<b>27.8</b>
<b>Agree</b>	<b>76</b>	<b>43.2</b>
<b>Strongly Agree</b>	<b>17</b>	<b>9.7</b>
<b>Total</b>	<b>176</b>	<b>100.0</b>

Fig 6: Do you think that the government considerably promoting the use of EVs?

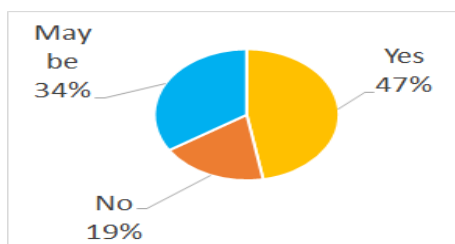


In table 6 and figure 6, the data revealed through the likert scale that 43.2 respondents strongly agree and 9.7 percent agree that government is considerably promoting the use of EV to mass audience. Whereas 27.8 percent people are not of the same opinion whereas 17.6 percent respondents disagree and 1.7 percent respondents strongly disagree with the above statement.

TABLE 7: WOULD YOU RECOGNIZE AN EV IF IT DROVE PAST YOU?

	Frequency	Percent
Yes	83	47.2
No	33	18.8
May be	60	34.1
Total	176	100.0

Fig 7: Would you recognize an EV if it drove past you?

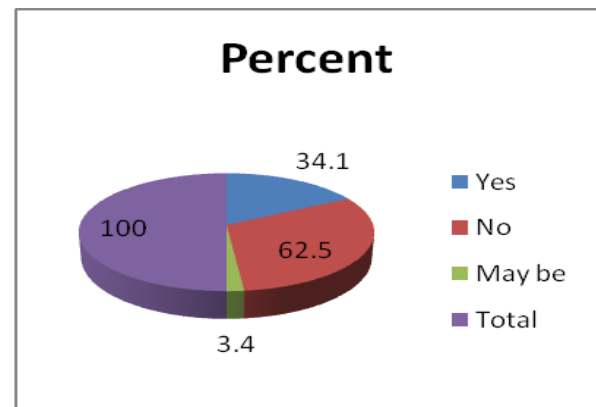


As per the table and figure 7, the data reveal that 47 percent respondents said that they can recognize the EV if passes through. Whereas 34 percent respondents are confuse regarding the recognition of the Electric Vehicle. Whereas 19 percent respondents said they cannot recognize the EV vehicle immediately and cannot differentiate between the conventional vehicle and EV vehicle.

TABLE 8: DO YOU PERSONALLY KNOW WHO OWN AN EV?

	Frequency	Percent
Yes	60	34.1
No	110	62.5
May be	6	3.4
Total	176	100.0

Figure-8



As per the table and figure 8, the data explicits that majority of the respondents 62.5% respondents don't know people personally who own an Electric Vehicle. Whereas 34.1% people have common link who own an EV vehicle whereas mere 3.4% of the respondents are not sure.

## VI. FINDINGS OF THE STUDY

1. The study explicits that majority of the respondent students are aware about the Electronic Vehicle and their associated benefits over conventional vehicles.
2. The study the reveals that as per the respondents perception 50% of the transition from conventional vehicle to EV vehicle is possible by the year 2030.
3. The study explicits that 59.1% respondents believe that if given an option they will switch to EV vehicle.
4. The study reveals that 52% of the respondents believe that government is promoting EV vehicle and also creating a harmonius environment for the EV manufacturers.
5. The study reveals that the issue of EV charging station is real which is hampering the growth of EV vehicles.

## CONCLUSION

The results of this survey show that the majority of the participants had a good attitude toward electronic cars. It is observed that many individuals are prepared to switch to electronic automobiles in the near future as they become more aware of their environmental effect. The research concludes that the majority of the students are aware about Electronic Vehicles but still as per the recorded responses it is observed that more emphasis is yet to be given to ensure inclusive awareness regarding EV vehicles by the Government Institutions. Along with this, it was also observed that in last 2 years an increase in the EV vehicle is subsequently visible and the transition from conventional vehicle to EV vehicle still has a long distance to travel. As per the students responses 59% respondents believes that the transition from conventional to EV is significantly possible in year 2030.

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