A STUDY ON CUSTOMER KNOWLEDGE ON ELECTRIC VEHICLE

PROJECT REPORT SUBMITTED TO

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

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FOR THE AWARD OF THE DEGREE

BACHELOR OF COMMERCE

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SUBMITTED BY

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(Affiliated to Mahatma Gandhi University, Kottayam)

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DATE :31.3.2023

CERTIFICATE

This is to certify that this project entitled "A STUDY ON PREFERENCE OF CUSTOMER KNOWLEDGE ON ELECTRIC VECHICLE" is a bona fide record of work carried out by ELIZABETH VIJOY, M. S ANN MARIA, ANNA MARIA AND JULIA ROSE JOY under my supervision and guidance in partial fulfillment of the requirements for the award of the Degree of Bachelor of Commerce of the Mahatma Gandhi University. It has not previously formed the basis for the award of any Degree, Fellowship, Associateship etc. They are allowed to submit his Project Report.

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DECLARATION

We hereby declare that the project “A STUDY ON CUSTOMER KNOWLEDGE ON ELECTRIC VEHICLE” is our original work and has not been submitted earlier to the MG University or to any other universities.We have undertaken this project work in partial fulfillment of the requirements of B.com 2020-2023 in Bharata Mata College, Thrikkakara, Ernakulam affiliated to MG University Kottayam.

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Above all, we are thankful to the GOD Almighty, for his rays and timely & successful completion of our project.

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INTRODUCTION

INTRODUCTION:

Transportation plays a crucial role in our daily lives but the traditional combustion engine is becoming outdated. Petrol or diesel vehicles are highly polluting and expensive that made people think for a better option. Hence petrol or diesel powered vehicles are being replaced by electric vehicles.Electric vehicles (EVs) are vehicles that are powered by an electric motor and battery, instead of an internal combustion engine that runs on gasoline or diesel. They use electricity from an external power source to charge their batteries, which then powers the vehicle's motor.

Climatic changes have become a topic of discussion among the public. EV’s are defined as a possible solution in order to overcome the environmental concerns. Around 24% of CO2 emissions from fuel combustion are from the transport sector, out of which 80% is contributed by the road transportation. Air pollution and growing environmental concerns has led to a responsible action from the part of businesses and consumers. Many governments all around the world are trying to promote EV. In recent years, Plug-in Hybrid Electric Vehicle and Battery Electric Vehiclesare becoming more prominent for sustainable transportation.

The fuel efficiency of electric vehicles is also impressive when compared to petrol and diesel vehicles. According to the European Union, electric vehicles use up to 70% less energy than petrol and diesel vehicles, which can help reduce carbon emissions significantly. Not only that, electric vehicles are also quieter and smoother to run than petrol and diesel powered vehicles.

This project is a study conducted to analyse the scope of EVs in our society and the knowledge of customers concerning it and their preference.

SIGNIFICANCE:

Electric vehicles are becoming very common now-a-days. Every day we come across number of topics and articles that states the importance of E-Vehicles and how Governments are implementing policies to promote E-Vehicles in order to reduce the dependences on oil, decrease emission of greenhouse gasses and to improve air quality. Metropolitan cities are often the epicenter of air pollution and it is important for the people living in these cities to do their part in reducing the emission of these pollutants

This paper is aimed to capture the views, sentiments and perception on the awareness and likeliness to buy E-vehicles so that sustainability in environment can be maintained. This study mainly focuses on the customer's attitude towards electronic vehicles and the expectations of people about the same in the near future.

Here we have conducted a statistical study to know about the customers preferences towards electronic vehicles or fuel vehicles.It was helpful in getting a clear idea about the customer's preferences and perceptions.

OBJECTIVES OF THE STUDY

The objectives of a study on customer knowledge on electric vehicles (EVs) could include the following:

- To assess the level of knowledge that customers have about EVs, including their features, benefits, and drawbacks, as well as their perceptions of the technology.

- To identify the factors that influence customers' decisions to purchase or not purchase an EV, such as price, range, charging infrastructure, and environmental concerns.

- To explore the potential barriers to the adoption of EVs, such as the cost of the vehicles or the availability of charging infrastructure, and to identify strategies for addressing these barriers.

- To understand the attitudes and perceptions of customers towards EVs, including their perceived benefits and drawbacks, as well as their level of interest in the technology.

- To provide insights into the potential market demand for

EVs, and to identify opportunities for promoting their adoption.

SCOPE OF STUDY

The study's territorial focus is in the district of Ernakulam, Kerala. The survey was conducted within 3 months January to march. 250 individuals comprised the sample space.

Research methodology and study

1.6.1 TOOLS FOR DATA COLLECTION

- PRIMARY DATA

Primary data is the information that is gathered for the first time, usually for study purposes, through personal experiences or other tangible proof. It is also known as raw data or firsthand information. The primary data for this research is collected through questionnaire method.

- SECONDARY DATA

Secondary data is the information that has previously been gathered and documented by certain researchers for a specific reason. It is available in the form of information gathered from various sources, including government publications, censuses, internal records, books, journal articles, websites, and reports. The secondary data which is used in this research is collected through the Internet, articles, journals etc.

1.6.2 SAMPLING DESIGN

- SAMPLE SIZE

The sample size in statistics means the total number of samples adopted in an experiment. The sample size for this study is 250, representing the number of respondents from Ernakulam district ,kerala

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▪ STATISTICAL TOOL

The instruments used to apply statistical procedures are known as statistical tools. As they handle enormous data sets, statistical tools become crucial and facilitate data processing. Statistical tools like the percentage method ,pie chart and histograms are used for analysing and interpreting the data in this research.

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Limitations

- Time allotted for the study was limited.
- The accuracy of the study depends on the information given by the respondents.
- Lack of previous research studies on the topic.
- The study was limited to a specific area of the Ernakulam District
- As the sample size is small, it might affect the generalization of the findings.

1.8 CHAPTERISATION

● CHAPTER 1

The chapter deals with introduction to the topic electric vehicle and its preference. It also deals with their significance, statement of the problem, objectives, scope, methodology, and limitations.

● CHAPTER 2

- The second chapter deals with the review of literature done by other researchers on preference on EV.
- It also deals with theoretical framework

- CHAPTER 3

The third chapter deals with the analysis and interpretation of data collected from the individuals.

- CHAPTER 4

The fourth chapter deals with the finding and suggestions that we made from the analysis and interpretation of the data

Chapter 2

THEORETICLA FRAMEWORK AND REVIEW OF LITERATURE

A. THEORETICAL FRAMEWORK

Electric cars (EVs), are becoming notably more popular among consumers globally. Adoption of EVs provides environmentally friendly society with innovation as one of the long-term benefits. Despite having favourable environmental effects, there aren't enough electric vehicles on the road. Consumer views of EVs are one of the main factors contributing to their lack of widespread adoption. But in addition to taking into account consumer intents towards EVs, this particular research study provides an exhaustive explanation of the current barriers to consumer adoption of EVs and a framework of the theoretical viewpoints that were built for the adoption behaviour. It is possible to use the theme of this particular literature to gain additional insight into the attitudes and actions of customers towards the adoption of EVs. The issues relating to EV adoption and diffusion have received a lot of attention during the past few years.

Manufacturers have been obliged to offer electric vehicles all over the world because of factors including the rise in demand for low-emission transportation and government support for long-range, zero-emission vehicles through subsidies and tax breaks. As a result, the market demand for electric cars is increasing. Globally, countries have set emission targets based on their individual capacities.

The cost of EV batteries has decreased over past 10 years as a result of technological advancements and the mass production of EV batteries in enormous quantities. The price of EVs has decreased as a result, despite the fact that EV batteries are one of the most expensive components of the vehicle. Because of its better longevity and outstanding capacity to store energy,

with a self-discharge rate of just 5%, lithium-ion batteries are currently regarded to be the norm for modern battery electric cars, replacing the old lead acid or nickel metal hydride batteries.

2.1 History of EV

The history of electric vehicles (EVs) is lengthy and fascinating, going all the way back to the 19th century. The development of electric vehicles began in the middle of the 19th century, and numerous innovators are credited with its creation. Here are some significant turning points in the development of electric vehicles:

1832: Robert Anderson, a Scottish inventor, develops the first primitive electric carriage that uses non-rechargeable batteries.

1859: Gaston Planté, a French physicist, creates the first rechargeable lead-acid battery.

1881: French engineer Gustave Trouvé creates an electric tricycle that powers the lead-acid battery.

1891: William Morrison, a chemist from Des Moines, Iowa, creates the country's first commercially successful electric vehicle in the United States.

1897: In Connecticut, The Electric Vehicle Company is established, making it the country's first business to mass-produce electric automobiles.

1900s-1910s: Electric vehicles become popular in the United States, especially among women, due to their ease of use and lack of noise and vibration compared to gasoline-powered cars.

1912: The first electric starter is invented, making it easier to start gasoline-powered cars and contributing to the decline of electric vehicles.

1920s-1960s: Improvements in gasoline-powered cars and the availability of cheap gasoline lead to a decline in the popularity of electric vehicles.

1990: Air pollution and the greenhouse effect worries have renewed interest in electric vehicles.

1996: General Motors introduces the EV1, an innovative electric vehicle that is leasable in a few markets.

2000: The Nissan Leaf, the Tesla Roadster, and a number of other new electric automobiles are unveiled.

2010s: With numerous major automakers releasing electric models and governments offering incentives for EVs worldwide, electric vehicles are becoming more prevalent.

Electric vehicles are now seen as a crucial instrument in the campaign against climate change and the reduction of greenhouse gas emissions. As more people use EVs and the demand for environmentally friendly transportation rises, technology has advanced significantly since its early days and will likely continue to do so.

2.2 EV in India, the popularity of electric cars (EVs) is rising as the country tries to encourage green and sustainable transportation. The state of electric vehicles in India can be summarised in the following important points:

By 2030, the government wants to sell only electric vehicles. This is an ambitious objective. The National Electric Mobility Mission Plan (NEMMP), which was introduced by the government in 2013, intends to encourage the usage of electric vehicles in India and increase their market penetration. In addition, the government has provided buyers of electric vehicles with a number of incentives and subsidies, including a 5% GST (Goods and Services Tax) cut and the FAME (Faster

Adoption and Manufacturing of Hybrid and Electric Vehicles) subsidy programme.

Electric two-wheelers are currently the most common type of electric vehicle in India, with a number of major automakers and startups offering models in this category. Electric three-wheelers are also more common in India, especially for commercial use such as taxi and delivery services. Electric cars have been slower to gain traction in India due to factors like limited charging infrastructure and more expensive prices compared to conventional cars. But in recent years, a number of significant automakers have introduced electric vehicle models in India. The federal government is taking action to upgrade the infrastructure for electric vehicle charging, with plans to add charging stations beside key thoroughfares and in public areas like parking lots and stores. Due to decreased demand and supply chain interruptions, the COVID-19 pandemic has had an effect on the Indian market for electric vehicles, resulting in a decline in sales in 2020. The long-term picture for electric vehicles in India, according to many analysts, is still favourable.

2.3 Lithium Reserve and EV

Lithium reserves have just been found in India, with the potential to assist the nation's expanding electric vehicle market. For instance, the Mandya district of the southern state of Karnataka was the site of a huge lithium deposit, which the Indian government disclosed in March 2021. The deposit is thought to include 14,100 tonnes of lithium, which could provide all of India's needs for the metal for approximately a year. In addition to Karnataka, reports of lithium reserves have also been made for Rajasthan, Jharkhand, and Andhra Pradesh in India.

The discovery of these lithium reserves is an advantageous development for the Indian electric car industry since it helps to ensure the supply of vital raw materials for battery production and reduces the country's reliance on imports. But it's crucial to remember that these valuable resources must be developed responsibly, sustainably, and with consideration for social and environmental issues.

In general, it is anticipated that India's expanding lithium reserves, together with government incentives and policies to support electric mobility, will foster the adoption of electric vehicles in the nation and fuel the expansion of the electric vehicle sector.

2.4 Electric vehicles have several merits and demerits, which are summarised below:

Merits

Environmental benefits EVs emit fewer greenhouse gases than conventional automobiles do, which lessens air pollution and minimises the effects of climate change.

- Lower fuel costs: Electricity, which is typically less expensive than petrol or diesel fuel, may be used to charge EVs. Owners of EVs may experience significant cost savings as a result, particularly in the long run.
- Increased energy efficiency: EVs typically use less energy than traditional cars, allowing them to go farther on a single charge.
- Reduced noise pollution: Since EVs make less noise than conventional vehicles, they can help to lessen noise pollution in populous regions like cities.

- Government incentives: To promote the use of EVs, governments in many nations provide incentives including tax credits, refunds, and subsidies.

Demerits:

- Higher up-front costs: Due to the price of the battery and other components, EVs are often more expensive to purchase than conventional automobiles.
- Range anxiety: Drivers who worry about running out of battery charge before reaching their destination may experience anxiety due to the limited range of an EV.
- Charging infrastructure: In many locations, the infrastructure for charging electric vehicles (EVs) is less established than the infrastructure for charging petrol or diesel vehicles, which can make charging an EV on lengthy excursions challenging. Battery disposal: The disposal of batteries used in EVs can be environmentally damaging if not done properly.
- Limited availability: EV availability in some markets is lower than that of conventional vehicles, which might make it challenging for people to buy an EV if they are interested in doing so.

2.5 EV company and models

There are several companies producing electric vehicles in India, and the number is growing rapidly as the demand for electric mobility increases. Some of the leading EV companies and models in India include:

- Tata Motors - Nexon EV, Tigor EV
- Mahindra Electric - eKUV100, e-Verito, e2oPlus
- MG Motor India - ZS EV
- Hyundai - Kona Electric
- Renault - Kwid Electric
- Ather Energy - 450X, 450 Plus
- Okinawa Autotech - iPraise+, Praise Pro, Ridge+
- Hero Electric - Optima HX, Nyx HX, Photon LP

In addition to these established players, several new startups and international companies are also entering the Indian electric vehicle market, which is expected to become one of the largest in the world in the coming years.

B. LITERATURE REVIEW:

- Karwa (2016) in his paper he proposes the idea of educating and training electric vehicle dealers. Transferring knowledge from the dealers to the customers is the barrier to acceptance for electric vehicles The dealer sales staff is the main direct contact with the customer. The dealership personnel were able to better comprehend the value proposition of electric vehicles as a result of their regular use, and they were able to engage with potential customers. The service area and the front of the dealership should both have electrical infrastructure installed. Regular EVSES training should be provided for dealership workers. Training should include multimedia resources and condensed one-page materials that illustrate the benefits, local incentives and fuel savings of

EVs.

- Nazneen (2018) and colleagues in their study sought to understand how customers saw the advantages of EVs in terms of the environment, automotive costs, comfort, trust, technology, infrastructure, and social acceptance. Consumers are fully aware of the benefits to the environment. More infrastructure facilities are needed by the government. Governments and manufacturers must invest to shape consumer perceptions and deliver the expected characteristics.

- Monica and Mifzala (2019) investigated customer perceptions in Banglore by learning about their attitudes, feelings, and perceptions. The study determined the extent of EV knowledge and the factors affecting customer purchase decisions. The majority of buyers are aware of the advantages that electric vehicles have for environment. As a result, half of the customers were environmentally sensitive and may like to adopt it. They believe that installing charging stations will aid in the growth of EV sales.

- Authors Rakesh Kumar and Dr. Sanjeevikumar (2019) looked into the issues with electric automobiles in India. Customers will experience range anxiety as a result of the lack of on-street charging infrastructure because the vehicle may not be able to run for a long time. The most essential part of the battery pack in an electric vehicle is the battery cell. A module is made up of many battery cells, whereas a battery pack is made up of many modules. In electric vehicles, the batteries are the most expensive part. They are about half as expensive as electric cars.

- In their 2020 study, Selva and Arunmozhi sought to understand how consumers felt about electric vehicles, the global market, and how effective these factors were. Currently, 66% of the world's EV market is made up of BEVs (all-electric cars). Sales of BEVs are increasing more quickly than PHEV sales. To increase customer awareness and create new products, organisations are working on electric vehicles. This method is low-cost and has a higher effect on customers since people trust their friends and family more than corporate marketing.

- In her research, Ankita Nagpal (2020) seeks to understand how Indian consumers perceive electric vehicles. The purpose of the study is to examine the factors that affect consumers' intentions to make purchases. Higher purchase intent is influenced by reduced carbon emissions, cheap maintenance costs, and government incentives for consumers. Television advertisements, after -sales support, and the richness of knowledge and information on the internet are other factors that influence the buyer. The availability of charging stations and infrastructure, as well as increased discretionary income, are factors that influence people's choices to purchase electric vehicles.

- Rajper S. Z. and colleagues (2020) examined the literature on the possibilities for electric vehicles in developing countries. The study investigated hybrid cars, electric four-wheelers, and electric two-wheelers (E2Ws). Due to its inexpensive purchase and running costs, E2Ws are more accessible to poor nations. The E2Ws could be a practical solution in developing nations with a large number of

gasoline-powered two-wheelers on the road. Deployment of E4Ws in underdeveloped nations should be postponed until economies of scale can lower the various expenses related to E4Ws. HEVs could become more common in poor nations because they are less expensive to buy than E4Ws.

- In the study consumer perception of electric automobiles, Shweta Kishore (2021) and others tried to ascertain how consumers felt about electric cars. The majority of consumers, according to the report, prefer vehicles that are ecologically friendly and cost between Rs. 5 lakhs and Rs. 10 lakhs. They favour electric vehicles (EVs) since they produce less carbon dioxide, but one of their findings was that EVs require more time to charge and have fewer charging stations.

- Zulfiqar Ali Lashari (2021) and coworkers made an effort to look into factors influencing consumers' intentions to use EV, such as innovative, technological, environmental, and financial benefits. The results show that consumers' own views and opinions have an effect on their choice to buy electric cars.

- In their article "Customer Perception of Electric Vehicles," academics Parmar and Pradhan (2021) present consumer awareness and decision-making factors for buying an electric vehicle. They found that most consumers are aware of the internet as a major information source in addition to television and print. Consumers are driven by a range of factors, such as environmental awareness, low noise levels, cost, and

emerging trends. Consumers should be able to purchase electric automobiles for less money. The need for additional advertising for government subsidies arises from consumers' lower awareness of them.

Chapter 3

DATA ANALYSIS AND INTERPRETATION

DATA ANALYSIS AND INTERPRETATION:

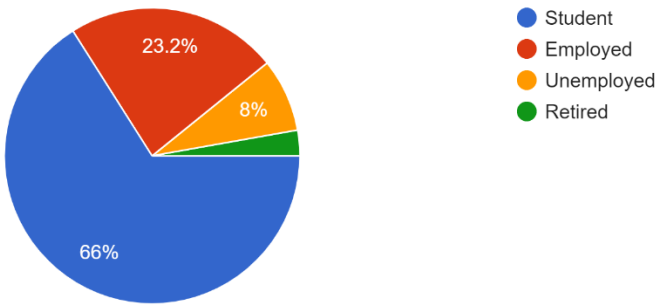
Data analysis and interpretation is the process of assigning meaning to the collected information and determining the conclusions, significance and implications of the findings. It assists researchers in categorizing, manipulating, and summarizing data to answer critical questions. Data collected are presented by ways of pie chart and histograms.

The analysis and interpretation for the conducted survey is the following:

*** The following observations are based upon the 250 responses from the survey.*

1. Occupation

3.1 Diagrammatic representation :



3.1 Tabulation of data:

Occupation	Response	Percentage
Student	165	66
Employed	58	23.2
Unemployed	20	8
Retired	7	2

Analysis:

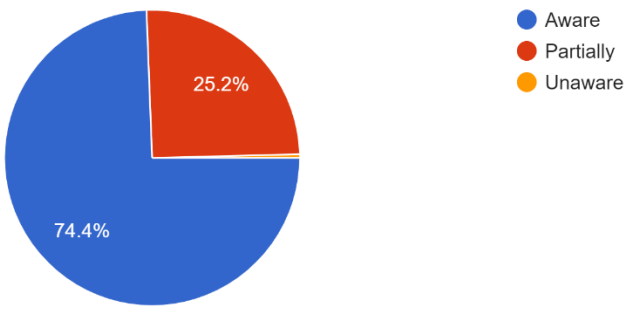
1. The survey shows that 66% of the respondents are students.
2. The survey shows that 23.2% of the respondents are employed people.
3. The survey shows that 8% of the respondents are unemployed people.
4. The survey shows that about 2% of the respondents are retired people.

Interpretation:

According to the above result, it is observed from the survey that majority of the respondents are students.

2. Are you aware of Electric Vehicles?

3.2 Diagrammatic representation :



3.2 Tabulation of Data:

Level of awareness	Response	Percentage
Aware	168	74.4
Partially	63	25.2
Unaware	1	0.4

Analysis:

1. The survey shows that 74.4% of the respondents are aware about Electric Vehicle.
2. The survey shows that 25.2% of the respondents are partially aware about Electric Vehicle.
3. The survey shows that 0.4% of the respondents are unaware of the Electric Vehicle.

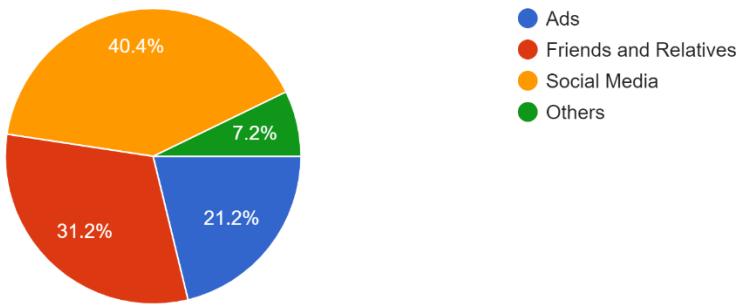
Interpretation:

1. According to the above result it is observed that more than 99% of the respondents are aware, either partially or fully, of Electric Vehicle.
2. The knowledge regarding EV among public has gained much attention.
3. About 25% of the respondents are partially aware of Electric Vehicle which indicates that still EVs lack popularity among public.
4. About 0.4% of the respondents are unaware of Electric Vehicle which indicates that the promotion policies of EV are inadequate that there is still a group of people who are

unaware of Electric Vehicle.

3. How did you come to know about Electric Vehicle?

3.3 Diagrammatic representation :



3.3 Tabulation of Data:

Source	Response	Percentage
Social media	101	40.4
Friends and Relatives	78	31.2
Ads	53	21.2
Others	18	7.2

Analysis:

1. The survey shows that 40.4% of the respondents came to knowabout EV through social media.

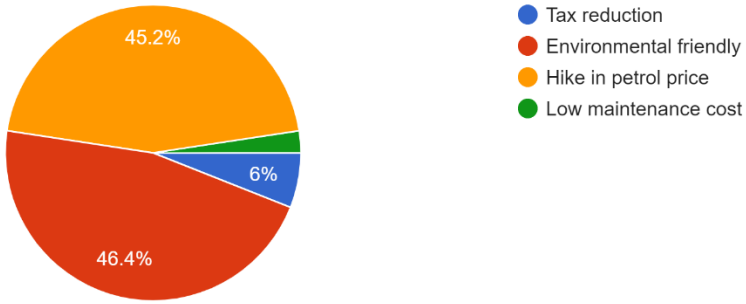
2. The survey shows that 31.2% of the respondents came to know about EV through friends and relatives.
3. The survey shows that 21.2% of the respondents came to know about EV through advertisement.
4. The survey shows that 7.2% of the respondents came to know about EV through other sources.

Interpretation:

1. The social media plays an important role in educating public about EV.
2. Friends and relatives sharing their knowledge about EV helped in gaining much knowledge about EV.
3. The role of advertising in educating public about EV is significant
4. Public also reply on other sources for gaining knowledge about EV.

4 Which attribute of EV attracted you the most?

3.4 Diagrammatic representation :



3.4 Tabulation of Data:

Attribute	Response	Percentage
Environmentalfriendly	116	46.4
Hike in petrol price	113	45.2
Tax reduction	15	6
Low maintenance cost	6	2

Analysis:

1. The survey shows that 45. 2% of the respondents are attracted to EV because of hike in petrol price.
2. The survey shows that the factor of EV being environment friendly has attracted 46.4% of the respondents towards it.
3. The survey shows that the factor tax reduction has attracted 6% of the respondents towards EV.
4. The survey shows that the factor low maintenance cost has attracted only 2% of the respondents towards EV.

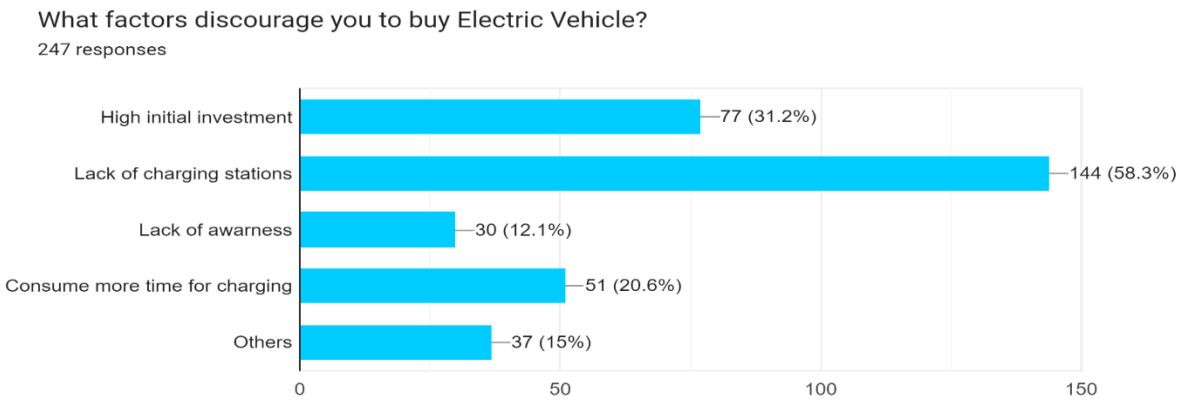
Interpretation:

1. The increase in the price of petrol has made people to think about an alternative transportation system.

2. The environment friendly factor of EV is a major characteristics which attract people to the same.
3. The tax reduction factor is not much aware among public.
4. The low maintenance cost of EV is unpopular among the public

5 .What factors discourage you to buy Electric Vehicle?

3.5 Diagrammatic representation :



3.5 Tabulation of Data:

Attribute	Response	Percentage
High initial investment	77	31.2%
Lack of charging stations	144	58.3%
Lack of awareness	30	12.1%
Consume more time for charging	51	20.6%
Others	37	15%

Analysis:

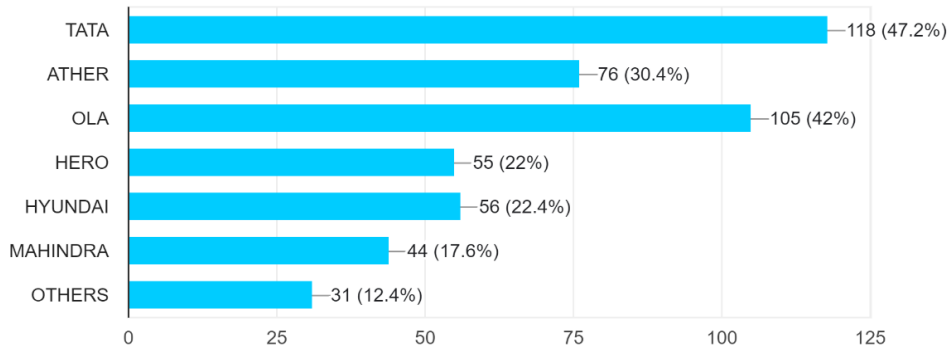
1. Based on study 31.2% of respondent choose high initial investment as a barrier to adoptEV's.
2. . Based on study 58.3% of respondent choose lack of charging stations as a barrier to adopt EV's.
3. Based on study 12.1% of respondent choose lack of awareness as a barrier to adopt EV's.
4. Based on study 20.6% of respondent choose consume more time for charging as a barrier to adopt EV's.
5. Based on study 15% of respondent choose others as a barrier to adopt EV's.

Interpretation:

Based on the data provided, it can be concluded that the top three barriers to the adoption of electric vehicles (EVs) are the lack of charging stations (58.3%), high initial investment (31.2%), and the time it takes to charge the vehicle (20.6%).The lack of charging stations is a significant concern for prospective EV buyers, as it can limit the range of the vehicle and make it difficult to find a place to charge when needed. This highlights the need for the government and private companies to invest in expanding the charging infrastructure to encourage more people to adopt EVs.High initial investment is another significant barrier to EV adoption, which can be attributed to the higher cost of batteries and other components used in EVs.

6. Which brand of EV are you familiar with?

3.6 Diagrammatic representation :



3.6 Tabulation of Data:

Brand	Responses	Percentage
Tata	118	24.3%
Ather	76	15.6%
Ola	105	21.6%
Hero	55	11.3%
Hyundai	56	11.5%
Mahindra	44	9.07%
Others	31	6.63%

Analysis:

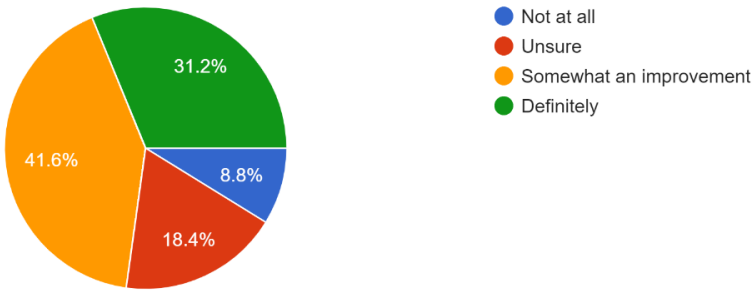
1. 24.3% of the respondents are familiar with the brand TATA.
2. 15.6% of the respondents are familiar with the brand ATHER.
3. 21.6% of the respondents are familiar with the brand OLA.
4. 11.3% of the respondents are familiar with the brand HERO.
5. 11.5% of the respondents are familiar with the brand HYUNDAI.
6. 9.07% of the respondents are familiar with the brand MAHINDRA.
7. 6.63% of the respondents are familiar with OTHER BRANDS.

Interpretation:

These figures suggest that TATA is the most familiar brand among the respondents, followedbyOLA, ATHER, HYUNDAI, HERO, MAHINDRA, and OTHER BRANDS, in descendingorder offamiliarity. It is important to note that the study does not provide any information about therespondents' demographics, geographic location, or other factors that may influence brandfamiliarity, so the data should be interpreted with caution.

7. Electric vehicle can protect from global warming.

3.7Diagrammatic representation :



3.7 Tabulation of Data:

Attribute	Responses	Percentage
Not at all	22	8.8%
Unsure	46	18.4%
Somewhat an improvement	104	41.6%
Definitely	78	31.2%

Analysis:

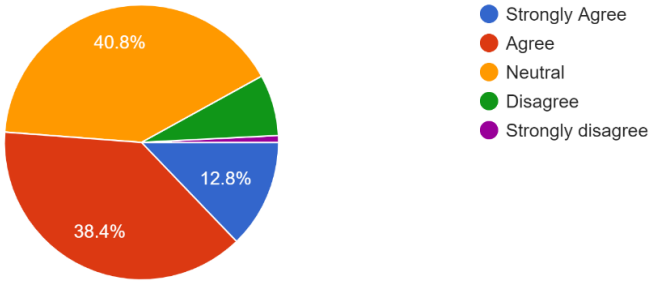
1. This study shows that 8.8% of the respondents are NOT AT ALL with this statement.
2. This study shows that 18.4% of the respondents are UNSURE with this statement.
3. This study shows that 41.6% of the respondents are SOMEWHAT AN IMPROVEMENT withthis statement.
4. This study shows that 31.2% of the respondents are DEFINITELY with this statement.

Interpretation:

Overall, the data suggests that the respondents have a range of opinions regarding the potential of electric vehicles to protect against global warming. While a significant portion of respondents definitely agree with the statement, others are less certain or disagree entirely. This could be due to a variety of factors, including differing levels of knowledge or awareness about the issue, varying attitudes towards electric vehicles, or differing beliefs about the causes and effects of global warming.

8. Electric cars can replace regular cars in terms of satisfying consumer needs.

3.8 Diagrammatic representation :



3.8 Tabulation of Data:

Attribute	Responses	Percentage
Strongly Agree	32	12.8%
Agree	96	38.4%
Neutral	102	40.8%
Disagree	18	7.2%
Strongly disagree	2	0.8%

Analysis:

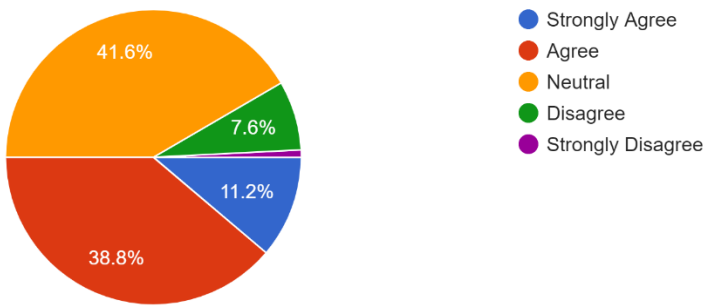
1. This study shows that 12.8% of the respondents are STRONGLY AGREE with this statement.
2. This study shows that 38.4% of the respondents are AGREE with this statement.
3. This study shows that 40.8% of the respondents are NEUTRAL with this statement
4. This study shows that 7.2% of the respondents are DISAGREE with this statement.
5. This study shows that 0.8% of the respondents are STRONGLY DISAGREE with this statement.

Interpretation

The data suggests that there is some support for the idea that electric cars can replace regular cars in terms of meeting consumer needs, with a significant portion of respondents either agreeing or strongly agreeing with the statement. However, there is also a significant portion of respondents who are neutral or unsure about the proposition, indicating a need for more information or clarity on the issue. The smaller percentage of respondents who disagree or strongly disagree with the statement may have concerns about the limitations of electric cars, such as range anxiety or charging infrastructure.

9. Electric vehicles are expensive.

3.9 Diagrammatic representation :



3.9 Tabulation of Data:

Attribute	Responses	Percentage

Strongly Agree	28	11.2%
Agree	97	38.8%
Neutral	104	41.6%
Disagree	19	7.6%
Strongly disagree	2	0.8%

Analysis:

1. 11.2% of the respondents STRONGLY AGREE with the statement, indicating a high level of belief that electric vehicles are expensive.
2. 38.8% of the respondents AGREE with the statement, indicating a general agreement or acceptance of the proposition, but not necessarily as strongly as the first group of respondents.
3. 41.6% of the respondents are NEUTRAL towards the statement, indicating a lack of a clear opinion or uncertainty about the proposition.
4. 7.6% of the respondents DISAGREE with the statement, indicating a belief that electric vehicles are not expensive.
5. 0.8% of the respondents STRONGLY DISAGREE with the statement, indicating a strong opposition to the proposition that electric vehicles are expensive.

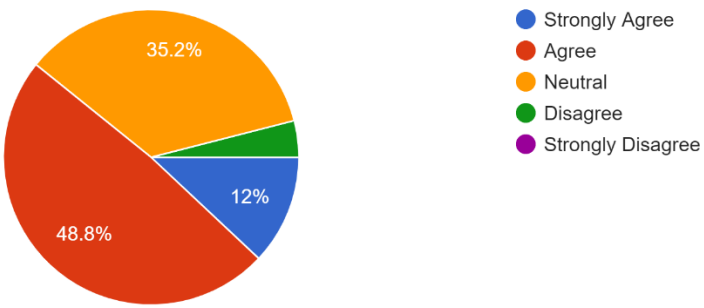
Interpretation:

The data suggests that there is some belief among respondents that electric vehicles are expensive, with a significant portion either agreeing or strongly agreeing with the statement. However, there is also a significant portion of respondents who are neutral or unsure about the proposition, indicating a need for more information or clarity on the issue. The smaller percentage of respondents who disagree or strongly disagree with the statement may have a different

perspective on the cost of electric vehicles or may have more information about their affordability. It is worth noting that the cost of electric vehicles can vary widely depending on the make and model, and may also be influenced by government incentives and subsidies.

10. Electric vehicles can save a lot of money.

3.10 Diagrammatic representation :



3.10 Tabulation of Data:

Attribute	Responses	Percentage

Strongly Agree	30	12%
Agree	122	48.8%
Neutral	88	35.2%
Disagree	10	4%
Strongly disagree	0	0

Analysis:

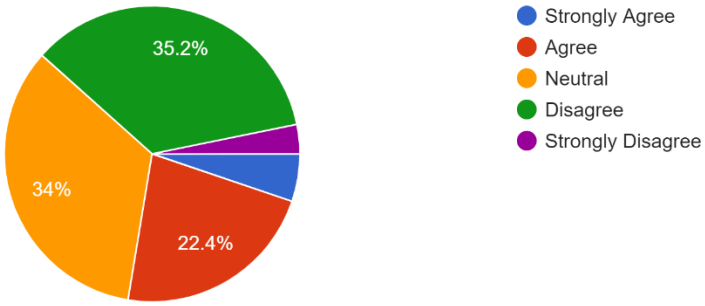
1. This study shows that 12% of the respondents are STRONGLY AGREE with this statement.
2. This study shows that 48.8% of the respondents are AGREE with this statement.
3. This study shows that 35.2% of the respondents are NEUTRAL with this statement
4. .This study shows that 4% of the respondents are DISAGREE with this statement.
5. This study shows that 0% of the respondents are STRONGLY DISAGREE with this statement.

Interpretation:

Based on the given data, it can be interpreted that a majority of the respondents agree that electric vehicles can save a lot of money. Specifically, 12% of the respondents strongly agree with the statement, while 48.8% agree. On the other hand, 35.2% of the respondents are neutral on this statement, and only 4% disagree. None of the respondents strongly disagree with the statement. Overall, the data suggests that there is a positive perception among the respondents that electric vehicles can save money.

11. Are you able to find charging stations nearby your location.

3.11 Diagrammatic representation :



3.11 Tabulation of data:

Attribute	Responses	Percentage
Strongly Agree	13	5.2%
Agree	56	22.4%
Neutral	85	34%
Disagree	88	35.2%
Strongly disagree	8	3.2%

Analysis :

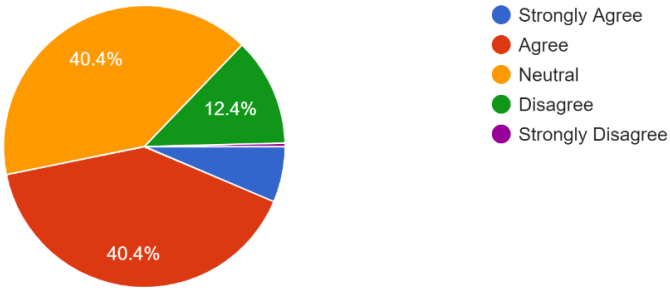
1. This study shows that 5.2% of the respondents are STRONGLY AGREE with this statement.
2. This study shows that 22.4% of the respondents are AGREE with this statement.
3. This study shows that 34% of the respondents are NEUTRAL with this statement.
4. This study shows that 35.2% of the respondents are DISAGREE with this statement
5. This study shows that 3.2% of the respondents are DISAGREE with this statement

Interpretation:

Based on the given data, it can be interpreted that a significant proportion of the respondents disagree with the statement that they are able to find charging stations nearby their location. Specifically, 35.2% of the respondents strongly disagree with the statement, while 22.4% agree. On the other hand, 34% of the respondents are neutral on this statement. Only a small percentage (5.2%) of the respondents strongly agree with the statement. Overall, the data suggests that there is a negative perception among the respondents that they are able to find charging stations nearby their location.

12. The promotion policies of the EVs are good enough to convince customers

3.12 Diagrammatic representation :



3.12 Tabulation of data :

Attribute	Responses	Percentage
Strongly Agree	16	6.4%
Agree	101	40.4%
Neutral	101	40.4%
Disagree	31	12.4%
Strongly disagree	16	6.4%
Total	250	100

Analysis :

1. This study shows that 6.4% of the respondents are STRONGLY AGREE with this statement.
2. This study shows that 40.4% of the respondents are AGREE with this statement.
3. This study shows that 40.4% of the respondents are NEUTRAL with this statement.
4. This study shows that 12.4% of the respondents are DISAGREE with this statement.
5. This study shows that 6.4% of the respondents are DISAGREE with this statement.

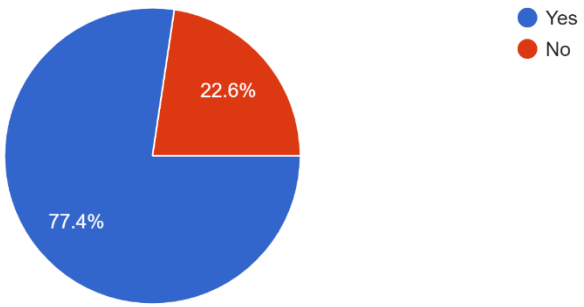
Interpretation:

The data shows that opinions are divided regarding the effectiveness of promotion policies for electric vehicles. While

47% of respondents either strongly agree or agree that the promotion policies are good enough to convince customers, 19% are in disagreement. A large proportion of respondents (40%) are neutral, indicating that they are unsure or have no strong opinion on this matter. It is important to note that this study only reflects the opinions of the surveyed group and may not represent the views of the general population.

13.Everyone is slowly shifting to EV's. Would you dare to take a change?

3.13 Diagrammatic representation :



3.13 Tabulation of data:

Attribute	Responses	Percentage
YES	188	77.4%
NO	55	22.6%

Analysis:

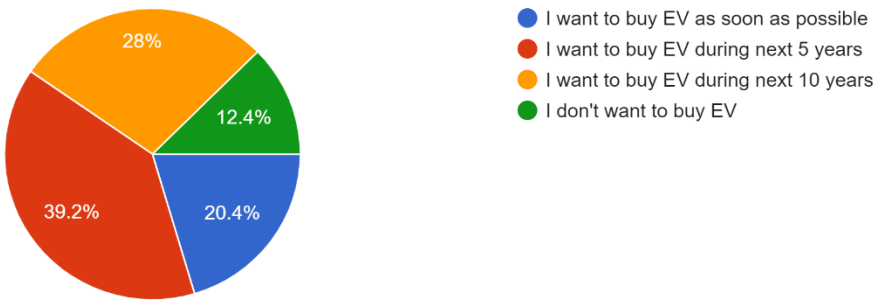
- The study shows that 77.6% are willing to shift to EV
- The study shows that 22.6% are willing to shift to ev

InterpretationofData:

Based on the data provided, it appears that a large majority of respondents (77.6%) are willing to shift to electric vehicles, while a smaller percentage (22.6%) are still uncertain or hesitant about making the switch. This suggests a growing interest and acceptance of EVs among the general population. However, it's important to note that this study represents a specific sample of respondents and may not necessarily reflect the attitudes and behaviours of the broader population. Additionally, willingness to shift to EVs does not necessarily equate to immediate action, as factors such as cost and accessibility of charging infrastructure may still present barriers to adoption.

14. How likely that your next vehicle will be electric?

3.14 Diagrammatic representation :



3.14 Tabulation of data

Attribute	Responses	Percentage
I want to buy EV as soon as	51	20.4%

possible		
I want to buy EV During next 5 years	98	39.2%
I want to buy EV during next 10 years	70	28%
I don’t want to buy EV	31	12.4%

Analysis:

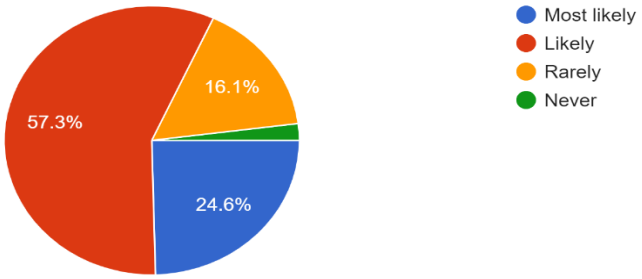
1. This study shows that 20.4% of the respondents are willing to buy EV as soon as possible.
2. This study shows that 39.2% of the respondents are willing to buy EV within the next 5 years.
3. This study shows that 28% of the respondents are willing to buy EV within the next 10 years.
4. This study shows that 12.4% of the respondents are not interested in buying an EV.

Interpretation of data:

The data suggests that a significant portion of the respondents are willing to consider purchasing an electric vehicle in the near future. About 20.4% of the respondents are willing to purchase an EV as soon as possible, while 39.2% are willing to purchase one within the next 5 years, and 28% are willing to purchase one within the next 10 years. Only 12.4% of the respondents are not interested in purchasing an EV. This indicates a growing interest in EVs among consumers, which could have a positive impact on the adoption and growth of EVs in the market

15.*How likely would you recommend electric vehicles to others?*

3.15 Diagrammatic representation :



3.15 Tabulation of Data:

Attribute	Responses	Percentage
Most likely	61	24.6%
Likely	142	53.2%
Rarely	40	16.1%
Never	5	2%

Analysis

1.This data shows that 24.6% of respondent are most likely to recommend EV's to others

2. This data shows that 57.3% of respondent are likely to recommend EV's to others

3.This data shows that 16.1% of respondent are rarely to recommend EV's to others

4.This data shows that 2% of respondent are never to recommend EV's to others

Interpretation:

These data points suggest that a majority of respondents are

either likely or highly likely to recommend EVs to others. However, a significant minority (about 16%) may have some reservations about EVs, indicating the need for more information or education on the benefits of EVs.

Chapter 4

FINDINGSSUGGESTIONSAND CONCLUSION

4.1 FINDINGS:

This survey provides valuable insights into people's opinions and attitudes towards electric vehicles (EVs). Some key findings of the survey include:

- 66% of the respondents are students, and 23.2% are employed people.
- 74.4% of the respondents are aware of electric vehicles, and 25.2% are partially aware of them, while only 0.4% are unaware.
- 40.4% of the respondents learned about EVs through social media, 31.2% through friends and relatives, and 21.2% through advertisement.
- 45.2% of the respondents are attracted to EVs because of the hike in petrol price, while 46.4% are attracted to the fact that they are environment-friendly.
- 8.8% of the respondents are not at all in agreement that EVs are expensive, while 18.4% are unsure, 41.6% somewhat agree, and 31.2% definitely agree with the statement.
- 77.6% of the respondents are willing to shift to EVs, and 20.4% are willing to buy EVs as soon as possible.

These findings shows that there is a significant awareness and interest in electric vehicles among the respondents, with many attracted to their environmental benefits and the cost savings they offer. However, there is still some uncertainty and disagreement regarding the perceived cost of EVs. Overall, the survey provides valuable insights into the public's perception of EVs, which could be used to inform policy and marketing strategies for promoting the adoption of EVs.

4.2 SUGGESTIONS:

0n the basis of the study, the following suggestions were formed for increasing the customer knowledge on Electric Vehicle.

- Awareness of EV among public has to be increased. This can be done by increasing the promotional activities by companies.
- Majority of the respondents are unable to find charging stations nearby their location which discourage them to buy EV. So making available charging points at every re mote location will affect the buying behaviour of customers positively.
- There is still a majority of people who are not interested in buying EV. This is because they are not much aware about it. So companies have to educate the consumers about EV.
- Only a small majority of people are aware about the tax reduction and subsidy provided by government to EVs. Government has to take more initiative in providing these financial aids and its awareness through various platforms to consumers.
- Government had to encourage green transportation. This will help public to shift towards EV.
- The promotion of EV is very low. Aggressive advertisement and other promotional methods have to be adopted by companies
- Cost of maintaining an EV is very low. But this is unknown to public. Better demonstrations have to be made by companies to encourage customers.

4.3 CONCLUSIONS :

The purpose of the study was to find out the knowledge among customers regarding Electric Vehicle. The study was conducted during the academic year 2022-2023. The sample for this study was 250 responses from the survey among public.

The use of Electric Vehicle is gaining importance in the modern world. Today's scenario of increasing price of petrol and diesel, increased environmental pollution, concept of sustainable development etc has paved way for a shift towards EVs. The survey conducted shows the rising demand for EVs. Majority of the customers are aware about EV. They are interested in purchasing an EV. The factors like increased price of petrol, environmentally friendly, low maintenance cost have attracted customers towards EV whereas, some factors like high initial investment, lack of charging points and lack of awareness discourage them to buy an EV. Companies have to take more initiative in promoting EVs. Aggressive promotion policies will help to increase the scope for EV. Overall, from this study we can reach to a conclusion that EVs have a bright future in our society. The EVs will replace the traditional gasoline vehicles soon.

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APPENDIX

A STUDY ON CUSTOMER KNOWLEDGE ON ELECTRIC VEHICLE

QUESTIONNAIRE

Name:

Email id:

Occupation:

- o Student
- o Employed
- o Unemployed
- o Retired

Are you aware of electric vehicles?

- o Aware
- o Partially
- o Unaware

How did you come to know about electric vehicles?

- Ads
- Friends and relatives
- Social media
- Others

Which attribute of EV attracted you the most?

- Tax reduction
- Environmental friendly
- Hike in petrol price
- Low maintenance cost

What factors discouraged you to buy electric vehicle?

- High initial investment
- Lack of charging stations
- Lack of awareness
- Consume more time for charging
- Others

Which brand of EV are you familiar with?

- Tata
- Ather
- Ola
- Hero

- Hyundai
- Mahindra
- Others

Electric vehicles can protect from global warming.

- o Not at all
- o Unsure
- o Somewhat an improvement
- o Definitely

Electric car can replace regular cars in terms of satisfying consumer needs.

- o Strongly agree
- o Agree
- o Neutral
- o Disagree
- o Strongly disagree

Electric vehicles are very expensive.

- o Strongly agree
- o Agree
- o Neutral
- o Disagree

- o Strongly disagree

Electric vehicle can save a lot of money to the owner.

- o Strongly agree
- o Agree
- o Neutral
- o Disagree
- o Strongly disagree

Are you able to find charging stations nearby your location?

- o Strongly agree
- o Agree
- o Neutral
- o Disagree
- o Strongly disagree

The promotion polices of EVs are good enough to convince customers

- o Strongly agree
- o Agree
- o Neutral

- o Disagree
- o Strongly disagree

Everyone is slowly shifting toEVs would you dare to take a change?

- o Yes
- o No

How likely that your next vehicle will be electric?

- o I want to buy EV as soon as possible
- o I want to buy EVduring the next 5 years
- o I want to buy EVduring the next 10 years
- o I don’t want to buy EV

How likely would you recommend EVs to others?

- o Most likely
- o Likely
- o Rarely
- o Never

…THANK YOU…