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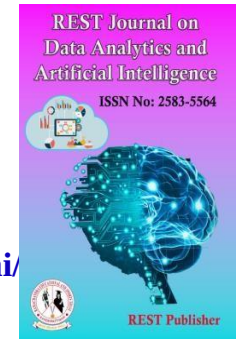

An Empirical study on- Perspective and attitude of people on Electric Vehicle in India

*Anisha Jain, Jinal Jain, Pallavi D.R.

CMS-JAIN Deemed-to-be University Bangalore, Karnataka,India.

*Corresponding author Email: anishajain2356@gmail.com

Abstract. *The Paper aims to look for aspects that influence a consumer's decision to acquire an electric vehicle. India has the greatest EV market in the world, particularly for two-wheelers. The penetration of electric vehicles has greatly increased over the past years as a result of numerous automakers releasing these vehicles at a quick rate. By 2025, the market for electric vehicles (EVs) is expected to be worth at least 475 billion, according to a recent study. By 2025, the percentage of electrified two-wheelers is predicted to increase to up to 15% from the current 1% penetration rate. Environmental pollution is currently a major problem worldwide. Toxic emissions from internal combustion engines are a major source of air pollution. The globe is actively promoting electric cars (EVs) to address environmental issues and counteract the consequences of fossil fuel pollution (ECs). The Indian government desires "only Electric Vehicles" to be on the roads by 2030.*

1. INTRODUCTION

The automobile industry, which has been around for over a century, is undergoing a metamorphosis. The rising cost of fossil fuels, along with the environmental consequences has led to changes in individual travel behaviour. People's perspective towards environment and electric vehicle is leading to a drastic change toward sustainable world. The internal combustion engines have propelled the industry forward, but it is moderately turning to electric vehicles (EVs). EVs are propelled by electric motors that are fuelled by a rechargeable battery or other portable energy storage device. They use less energy, emit less greenhouse gases (GHGs), and are quieter. Objectives of the Study Support 'Make in India' Knowing perspectives and Attitude of the People Spreading awareness on Environmental Concerns.

2. RESEARCH METHODOLOGY

A systematic questionnaire was used to obtain primary data from students, Professors, Businessmen, Housewives and persons from varied occupation. The sample were selected based on specific criteria, such as their age, gender, and educational background, to ensure the data collected is representative of the target population. The questionnaire included questions related to EV such as the EV range over motor cycle, EV preferences over motor cycle, technology improvement, buying preferences, usage and other related factors. The questionnaire was carefully designed to ensure the questions are clear and easy to understand, and it was administered with care to obtain accurate and reliable data. The process of obtaining informed consent and protecting the privacy of the participants was also carefully considered, and ethical considerations were addressed. Secondary data was gathered from multiple sources such as websites, journals, research papers, and books. A thorough review of the existing literature and research related to the topic, Perspective and attitude of people on Electric Vehicle in India. The search terms and keywords used to find relevant literature were carefully selected to ensure that the sources consulted were of high quality and relevance. The sources consulted were critically evaluated based of factors such as the credibility, reliability and relevance to the research questions. The information gathered from the secondary sources was used to inform the research questions and design, and to support the analysis and

interpretation of the primary data. Overall, both primary and secondary data sources were carefully selected and collected to ensure that the research questions are addressed accurately and reliably. The methods used to collect and analyse the data were designed with the aim of obtaining accurate and reliable results that can be used to draw valid conclusions about the perspective on electric vehicle adoption from an Indian context.

3. HISTORY AND BACKGROUND

The first electric vehicle was a three-wheeler by Scooter Pvt Ltd in 1996. A total of 400 vehicles were constructed and sold. BHEL launched an eighteen-seater electric bus in the year 2000, which was also a success. Then, in Delhi, 200 electric vehicles were created and put to use. Unfortunately, due to the battery's high cost and limited life, it did not do well on the market. The first electric automobiles arrived in the nineteenth century. They earlier underperformed in the market because to their high cost, limited speed, and short range. As a result, worldwide demand fell initially. Electric rickshaws controlled the whole market due to their tremendous appeal. In 2016-17, roughly 500000 e-rickshaws were sold in India. It provided a good service for the population's daily commute. These rickshaws are presently mostly used in Delhi. In order to increase the adoption of electric cars, the government is now focusing its efforts on extremely polluted cities. The FAME initiative, which stands for "Faster Adoption and Manufacture of Electric and Hybrid Vehicles in India," would offer subsidies to 11 cities in order to assist them introduce electric buses, taxis, and e-rickshaws. Cities targeted include Ahmedabad, Delhi, Bangalore, Jaipur, Mumbai, Lucknow, Hyderabad, and Indore. Purpose of the Study: Toxic emissions from internal combustion engines are a major source of air pollution. Electric vehicles (EVs) are being aggressively marketed across the world in order to educate and inform people, counteract the impacts of fossil fuel pollution, and address environmental issues. (ECs). Government is encouraging consumers to adopt electric vehicle by providing financial advantages as it is limited due to higher costing, lack of charging station, time and range concerns. The Indian government wants to implement “only Electric vehicles” on road by 2030. Current Structure of the Market: Companies all over the world have started working towards technology development and id innovations of electric vehicles. Nations all across the globe have set emission reduction targets based on their respective capacities. Increasing government expenditures in the creation of charging stations for electric vehicles and hydrogen fuelling stations, as well as buyer incentives, will create opportunities for OEMs to expand their income stream and geographical presence. The Asia Pacific market is predicted to expand moderately due to rising demand for low-cost, low-emission cars, whereas the European markets are likely to grow rapidly due to government efforts and the developing high-performance vehicle. Nevertheless, the scarcity of electric vehicle charging stations and fuel stations, as well as greater initial investment costs and performance limits, may stymie the global electric vehicle market's growth. Competitors Analysis: Positive achievements are being noticed in the expansion of charging infrastructure across the nation, with governments such as Andhra Pradesh, Uttar Pradesh, Bihar, and Telangana setting ambitious objectives for the deployment of public charging infrastructure to encourage the use of electric vehicles in India. Improved logistics, business facilitation, an investor-friendly government policy, local fiscal sops by easier access to authorities, supply chain connections, and the availability of adequate land are the primary reasons why certain states outperform others. Karnataka is the first state in India to pass full EV laws, and it has since become a hub for EV firms in terms of both EV and EV ancillary production, as well as R&D. Yet, while the electric sector is growing, it still has a long way to go before meeting the government's 2030 objective which is “Only Electric Vehicles”. The COVID-19 impact slowed the industry development and also impacted on broader market demand. Local vs National vs Global Analysis of Electric Vehicles: Electric vehicles (EVs) are transforming the world of road transport. Over the past five years, the global EV market has grown 43 percent yearly on average; in 2019, the percentage of EVs sold worldwide was 2.6%. The newly proposed plan in the United States and numerous COVID-19 recovery packages in nations like China, Germany, France, Canada, and others place a significant emphasis on electric vehicles. Only 600,000 copies were sold throughout the remainder of the world, with only 170,000 sold in India. However, India is interested in EVs. Road transportation is electrified for a variety of reasons. It is a green industrial policy that aids in the rehabilitation of the economy after an epidemic. It is intended to reduce oil imports and strengthen energy security. Legal Process to start the business of the Product/Service: Since the development of improved safety-critical parts can only be done after the standard has been published and the test facilities have been commissioned, the Indian government recognised the need for a permanent agency to speed up the publication of standards and the development of test facilities while the work on the standards was being done. The earlier era Because of the ease of use, abundance, and low cost of fossil fuels, the twentieth century has been referred to as the era of the internal combustion engine (ICE). Due to the speedy depletion of fossil fuels, the quick increase in energy prices, the environmental effect of transportation, and concerns about climate change, the switch to electric mobility has become essential. To promote dependable, reasonably priced, and efficient xEVs (electric and hybrid electric vehicles) that meet consumer performance and price expectations, the government wants to introduce programmes for the promotion and development of manufacturing capabilities, necessary infrastructure, consumer awareness, and technology. Latest Technology: The adoption of electric vehicles may be through wireless EV charging. A

powerful wireless EV charging system can be used to automatically charge vehicles while they are parked in designated pick-up and drop-off locations, which is the ideal option for public transport or advanced vehicles fuelled at all times. The system comprises multiple underground charging plates that interact automatically; it does not require a direct connection between the charger and the vehicle. Because a charging station is not required, public spaces are less cluttered and more convenient. Mobile charging, in which the chargers are "on the move" and do not require infrastructure investments, includes charging vans, portable chargers, and temporary chargers as examples. For fleet EVs that need speedy roadside charging one of the first uses for mobile charging vans—there are no longer any structural changes, significant financial outlays, or difficulties. To regulate demand and keep the stations operating even if the grid goes down, Volkswagen fitted the charging stations with sizable built-in batteries. To accommodate concertgoers at festivals or other events or to provide charging outlets in areas where large EV charging stations aren't practical, the charging stations can be installed anywhere, temporarily or permanently. The logical next step in addressing EV drivers' need for on-the-go charging is ultra-fast charging. Traditional gas-powered vehicles can be filled up at the gas station in only a few minutes, and EV drivers are asking for similar time savings. Drivers no longer have range anxiety thanks to ultrafast chargers, which can extend the range by 32 kilometres (20 miles) in just one minute. The expense of batteries and range anxiety are two barriers preventing the wider adoption of electric vehicles. On the other hand, modern battery technologies are in a position to tackle both issues at once.

4. RESEARCH GAP

The research focuses on the creation of novel vehicle control systems as well as the viewpoints of people and the economic, environmental, and sociological effects of transportation. Driving behaviour adjustments (such as eco-driving and eco-routing) and powertrain operation changes can be separated into two groups. (e.g., an optimal energy management strategy, or optimal EMS). One of the biggest barriers to the adoption of electric vehicles in India is range anxiety. Customers who purchase electric vehicles frequently worry about how far the car can travel before the battery dies. The inadequate charging infrastructure in India is directly connected to this problem. Due to the economic, environmental, and sociological implications of transportation, developing innovative vehicle control systems that produce improved fuel economy (FE) is a major research topic. This paper intends to look at the various aspects that influence a consumer's choice to buy an electric vehicle. Socio Economic and political determinants of the market (PESTLE Analysis): Political factors: government regulations and policies have a significant impact on how the EV business develops. It has put into place several initiatives to encourage the usage of EVs, like providing incentives for EV purchases and investing in India's charging infrastructure. Economic Considerations: The price of EVs plays a big role in determining how widely they are adopted. More people are anticipated to adopt EVs as EV prices continue to decline. Economic variables an important factor influencing the adoption of EVs is their price. More people are anticipated to adopt EVs as EV prices continue to decline. Social Factor: The development of the EV business is being fuelled by the public's growing consciousness of environmental problems and sustainability. Consumers are increasingly aware of their carbon footprint and how their choices affect the environment. Technological Factors: The development of the EV sector has been significantly influenced by technological advancements. EVs are now more effective because of the development of high-performance batteries, which have greatly improved both their performance and range. Consumers now find it simpler to refuel their electric vehicles because of the advancement of rapid charging technologies. Legal Factors: The development of the electric vehicle (EV) industry is significantly influenced by legal aspects. Governments all across the world have established laws and guidelines to encourage the usage of EVs. Environmental Factors: The demand for EVs has surged as a result of the growing concern over how transportation affects the environment. Because EVs emit fewer carbon emissions than conventional vehicles, both consumers and governments are becoming more interested in them.

5. REVIEW OF LITERATURE

Steinhilber, S., Wells, P., & Thankappan, S. (2013) Electric cars have been deemed a promising technology at repeated intervals throughout the previous century, but this promise has not been realised. It is widely agreed that electrification of the transport sector is one of several technical paths that might rectify some of the environmental difficulties connected with the development in travel demand, including climate change and oil consumption at a global scale, as well as air quality and noise pollution at the urban scale. P. Kumar & K. Dash (2013) This essay examines the issues associated with building an infrastructure for electric vehicle (EV), charging station (CS), and related technologies in the context of India. In order to move the dispersed exhaust pollution in megacities to centralised power plants in rural areas, battery electric vehicles (BEVs) are a potential class of drive trains in the next years, particularly in urban settings. Due to limited on-board energy, BEVs have a current range of 100 km per charge, which may be increased by introducing plug-in hybrid cars and real-time traffic management. The

Indian electricity market, transmission, and distribution, as well as market mechanisms relating to the distribution of energy, have all seen increased liberalisation, privatisation, and distributed and renewable power generation. R.G. Jungst & R.P. Clark This essay examines the issues associated with building an infrastructure for electric vehicle (EV), charging station (CS), and related technologies in the context of India. In order to move the dispersed exhaust pollution in megacities to centralised power plants in rural areas, battery electric vehicles (BEVs) are a potential class of drive trains in the next years, particularly in urban settings. Due to limited on-board energy, BEVs have a current range of 100 km per charge, which may be increased by introducing plug-in hybrid cars and real-time traffic management. The Indian electricity market, transmission, and distribution, as well as market mechanisms relating to the distribution of energy, have all seen increased liberalisation, privatisation, and distributed and renewable power generation. Patil, M., Bandhu Majumdar, B., & Kumar Sahu, P. (2022) To determine overall expenses and determine if electric two-wheelers are more economically viable than motorised two-wheelers, a comparison of total cost of ownership (TCO) is required. To assess the TCO of E2W and M2W under the current market conditions, two-wheeler-specific TCO models were created in this study. The purchase costs, operating costs, maintenance costs, and resale value make up the four cost components of the TCO model. The TCO was computed using 2021 as the base year and a 10-year evaluation period. The Indian market were divided into low-performance and high-performance two-wheelers. Rezvani Z., Jansson J., Bodin J (2015) Despite the alleged environmental benefits of electrifying the fleet of light duty cars, there are only a few electric vehicles (EVs) in use today. The fact that the widespread acceptability of EVs is largely dependent on how consumers perceive EVs is one explanation for the low adoption rates. This study provides a thorough assessment of the factors that promote and inhibit consumer adoption of plug-in electric vehicles (EVs), as well as a summary of the theoretical stances that have been used to interpret customer intents and adoption behaviour towards EVs. Moreover, we point out the shortcomings and gaps in the current. Ali I, Naushad M. (2022) The vast majority of people today, pollution is a major source of worry. Autos are the main source of pollution. Everyone desires to live in a society free of pollution. Yet, the number of cars registered in India is increasing quickly. The ecology will suffer as a result of more people driving. As a result, our modes of transportation must be environmentally responsible and sustainable. Electric vehicles are the answer to this problem. Although it is projected that the adoption of electric vehicles would increase over the next few years, it is not happening in India at a rate that is desirable. Electric vehicle production is increasing at a number of automakers. This study aims to identify the key variables that affect the adoption of electric vehicles. Financial incentives, charging infrastructure, social reinforcement, environmental concern, and price are five of the independent variables in this study. Adoption of electrical vehicles is the sole dependent variable. Shalender, K., Sharma, N. (2021) India faces significant pressure to lower its energy needs and greenhouse gas emissions because it is a big energy consumer. Electric vehicles (EVs), a green mode of transportation, have the potential to significantly reduce the nation's reliance on fossil fuels. To forecast the adoption intention of 326 customers towards the purchase of EVs, the study employs an enhanced TPB model. The sample of responders was drawn from 57 dealerships representing five different automakers. The study's empirical analysis demonstrates a favourable relationship between adoption intention of buyers and attitude, subjective norm, perceived behavioural control, moral norm, and environmental concern. The study's results also imply that the extended TPB model is suitable for forecasting customers' intentions to embrace EVs. The paper explores the implications for the uptake of EVs in India based on the findings and makes recommendations for further investigation. Khalid, A.M., Khuman, Y.S.C. (2022) the sustainable development goals include sustainable consumption as a key component. Worldwide, electric cars (EVs) are being marketed as an environmentally benign transportation choice and as a potential means of assisting countries in reducing their reliance on fossil fuels. The promotion and uptake of EVs is influenced by a variety of socio-technical and environmental factors, including governmental regulations, battery types, infrastructural accessibility, levels of knowledge and awareness, and psychological considerations, among others. This study focuses on India, which aspires to have 30% of its vehicles on the road by 2030 and is expected to become a global hub for EVs. First, a discussion of the variables that influence how EVs are perceived and adopted in India. Jaiswal, D., Kant, R., Singh, P.K. & Yadav, R. (2022) In order to reduce greenhouse gas emissions and energy costs, the use of electric vehicles has gained popularity. These vehicles are anticipated to play a significant role in the near future of developing mobility markets. This empirical study's goal is to examine how consumer adoption intention is predicted both directly and indirectly by consumer understanding about electric vehicles against the backdrop of a developing market. Das, P.K., Bhat, M.Y. (2022) India's current conventional car transportation system has run into difficulties because of the country's high levels of air pollution, human health risks, rising oil prices, low domestic reserves of fossil fuels, high import costs, energy insecurity, etc. The electrical vehicle (EV) is regarded as a substitute for conventional automobiles that can get around these drawbacks. The study's goal is to gain a general understanding of the government of India's and its state governments' policies on electric vehicles in order to determine their applicability and potential effects on EV adoption in India. In the current situation, exploratory research is used to do the investigation. The electric vehicle (EV) market in India is now in its infancy and is expanding. The Indian government has developed laws including

"NEMMP 2020," "FAME-I," and "FAME-II," as well as a vehicle scrappage policy. 17 of its state governments have established EV policies.

6. DATA ANALYSIS

The above table no.1 and figure no.1 represents the classification of respondents based on Gender. There are 51 Male respondents and 53 Females respondents. The female respondents are comparatively higher than the male respondents.

TABLE1. Classification of responses based on Gender

Gender	Frequency	Percentage
Male	51	49%
Female	53	51%
Total	104	100%

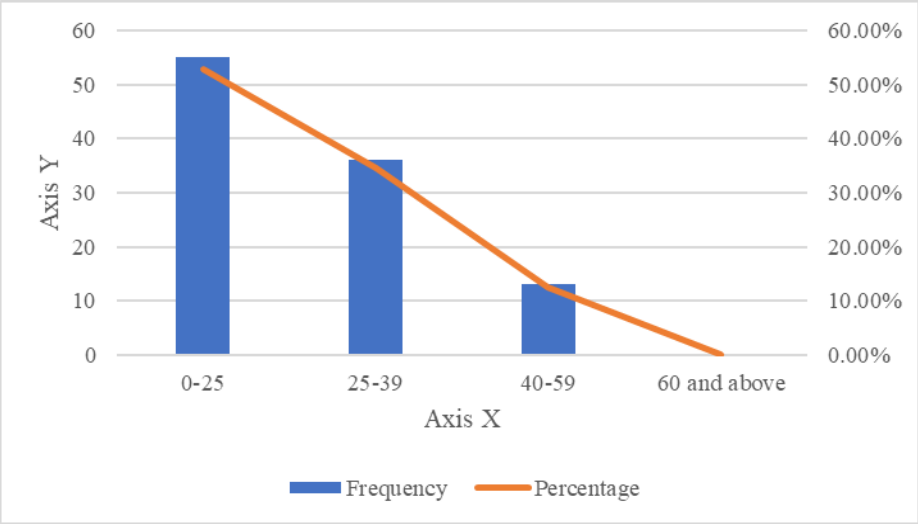

FIGURE 1. Classification of responses based on Gender

TABLE 2. Classification of responses based on Age group

Age group	Frequency	Percentage
0-25	55	52.90%
25-39	36	34.60%
40-59	13	12.50%
60 and above	0	0%
TOTAL	104	100%

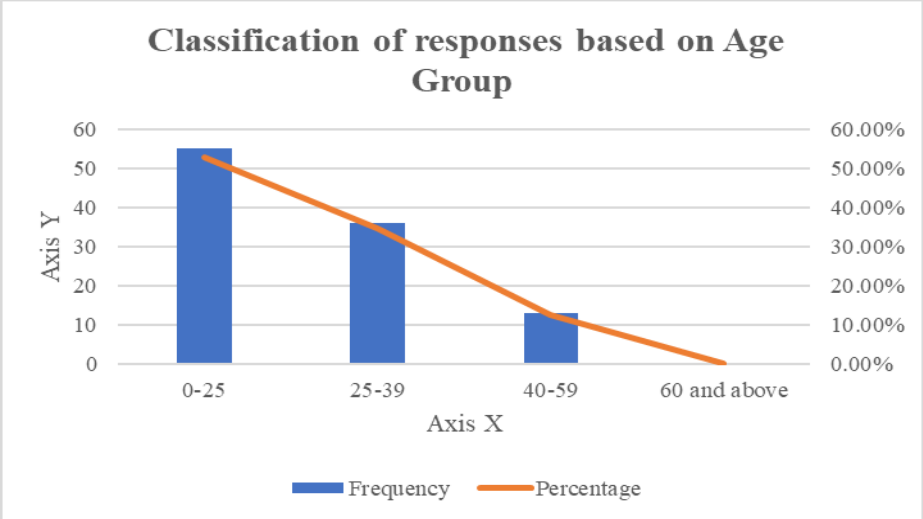

FIGURE 2. Classification of responses based on Age group

The above table no.2 and figure no. 2 represents the classification of respondents based on Age group. The Study includes 55 respondents belonging from the age group under 25, 36 respondents belonging under 39 and 13 respondents belonging from the age group under 59. No respondents were found from the age group of 60 and above.

TABLE 3. Classification of responses based on occupation

Occupation	Frequency	Percentage
Housewife	19	18.30%
Businessman	39	37.50%
Salaried	19	18.30%
Pensioner	2	2%
Petitioner	2	2%
Student	20	19.20%
Chartered Accountant	3	2.70%
TOTAL	104	100.00%

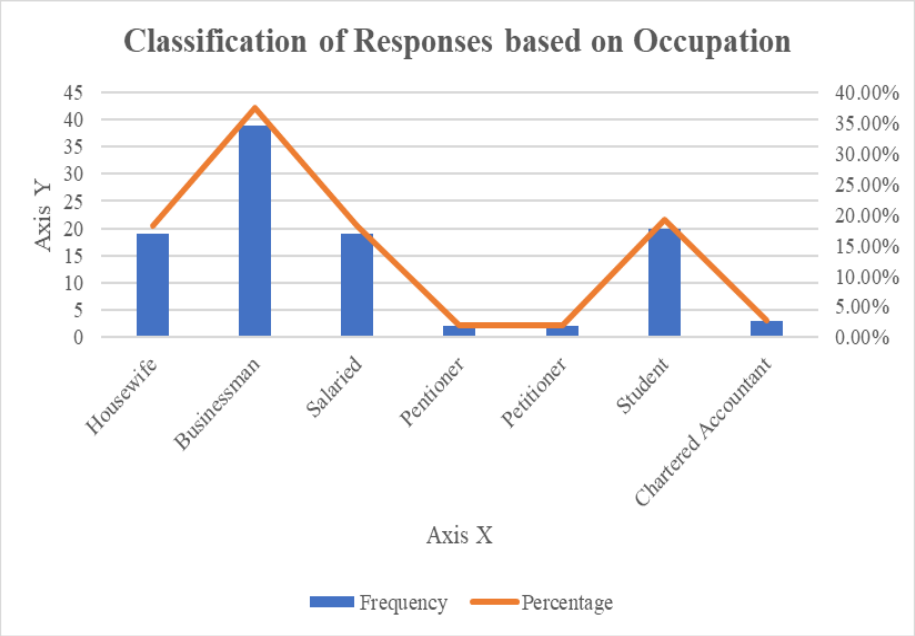

FIGURE 3. Classification of responses based on occupation

The above table no. 3 and figure no. 3 represents the classification of respondents based on Occupation. The Study includes 19 respondents from housewives, 39 respondents from businessmen, 19 respondents are salaried persons, 2 respondents are Pensioner, 2 respondents are petitioner, 20 responses are Students and 3 responses from Chartered Accountant. The occupation with the highest responses is businessmen.

TABLE 4. Classification of responses based on locality

Locality	Frequency	Percentage
Jayanagar	20	19.20%
VV Puram	17	16.30%
Banashankari	9	8.70%
Nagarathpet	14	13.50%
Koramangala	9	8.70%
Jayanagar	6.3	6.14%
TOTAL	104	100.00%

The above table no.4 and figure no.4 represents the classification of respondents based on locality. The study includes 20 respondents from Jayanagar, 17 respondents from VV Puram, 9 respondents from Banashankari, 14 respondents from Nagrathpet, 9 respondents from Koramangala and other respondents are from varied areas of Bangalore.

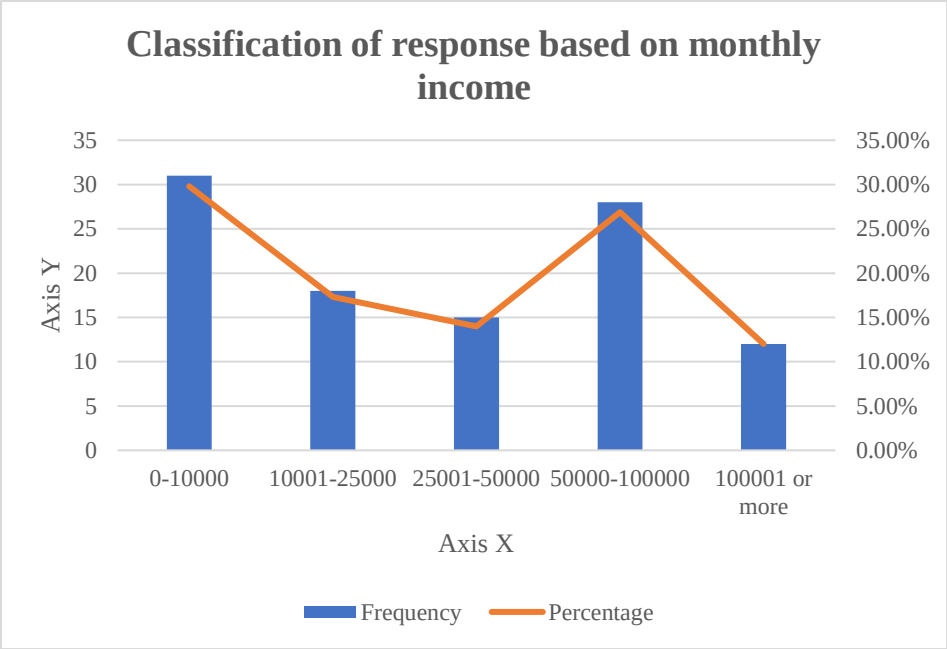

FIGURE 4. Classification of responses based on locality

TABLE 5. Classification of response based on monthly income

Income	Frequency	Percentage
0-10000	31	29.80%
10001-25000	18	17.30%
25001-50000	15	14.00%
50001-100000	28	26.90%
100001 or more	12	12.00%
Total	104	100.00%

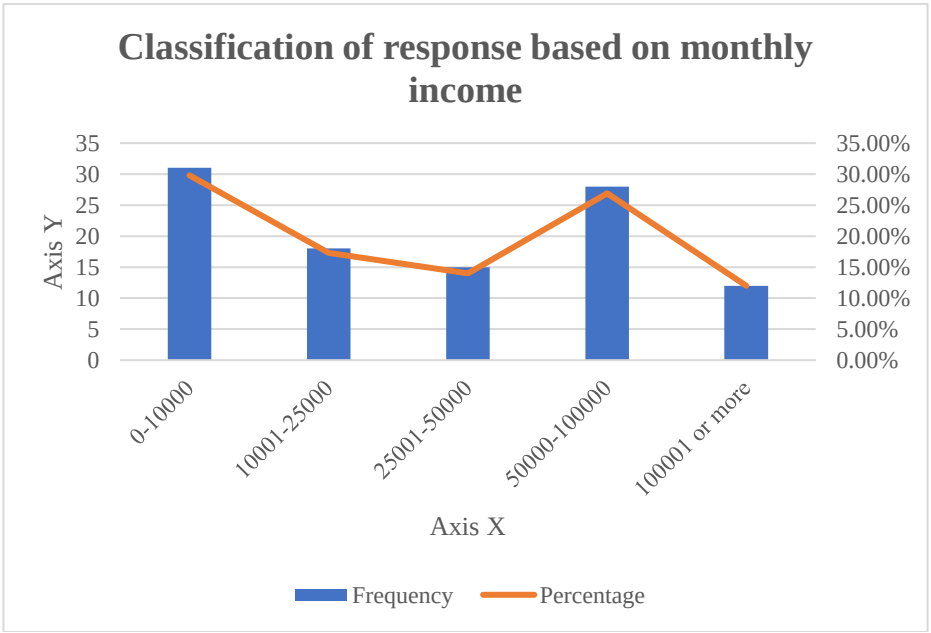

FIGURE 5. Classification of response based on monthly income

The above table no.5 and figure no.5 represents the classification of respondents based on income. The study includes 31 respondents belonging to the income group of rupees under 10,000. 18 respondents belonging to the income group of rupees 10,001 to 25,000. 15 respondents belonging to the income group of rupees 25,001 to 50,000, 28 respondents belonging to the income group of rupees 50,001 to 100,000 and 12 respondents belonging to the income group of rupees beyond 100,000.

TABLE 6. Classification of response based on family type

Family type	Frequency	Percentage
Joint family	44	42%
Nuclear family:	60	58%
Total:	104	100%

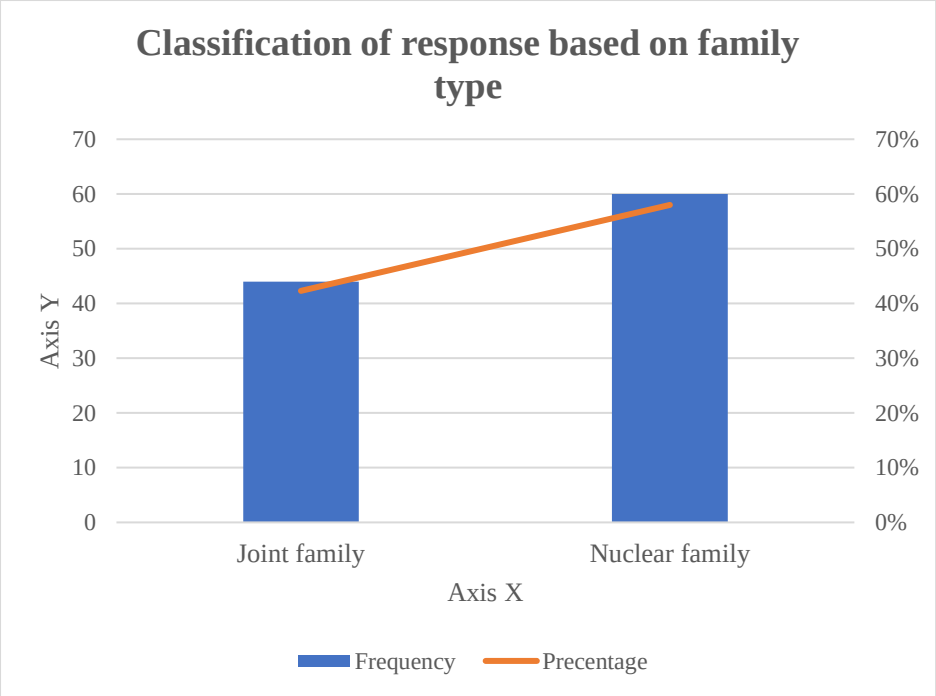

FIGURE 6. Classification of response based on family type

The above table 6 figure 6 represents the classification of respondents based on family type The study includes 44 respondents belonging from joint family and 60 respondents belonging from nuclear family .The respondents belonging to joint family are comparatively Higher than the nuclear family.

TABLE 7. Classification of responses based on ownership

Electric Vehicle	Frequency	Percentage
OLA	12	11.50%
ATHER	57	55%
TVS	5	4.80%
IQCUBE	10	9.60%
CHETAK	10	10%
HERO	6	6%
OTHERS	4	3.80%
TOTAL	104	100%

The above table no 7 figure and 7 represents the Classification of response based on the EV owned by the responders. The study includes 12 respondents belonging from Ola, 57 from Ather, 5 from TVS, 10 from IQCUBE, 10 CHETAK,6 HERO, 4 OTHERS. The respondents belonging to Classification of response based on the EV owned by the responders of where ATHER is higher comparatively to other vehicles.

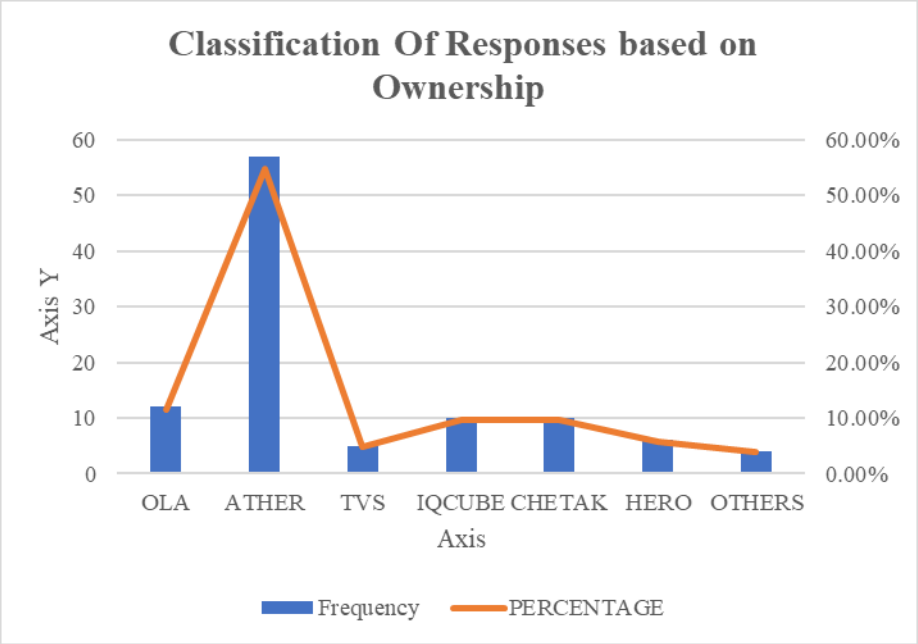

FIGURE 7. Classification of responses based on ownership

TABLE 8. Classification of responses based on EV Range over motor cycle

Perception	**Frequency**	**Percentage**
Excellent Acceleration	49	47.10%
Pocket Friendly	39	37.50%
Environment Friendly	55	52.90%
Not worth	13	12.50%
Battery	19	18.30%
Make less noise	27	26%
Easy to adopt	30	28.80%
Total	232	223%

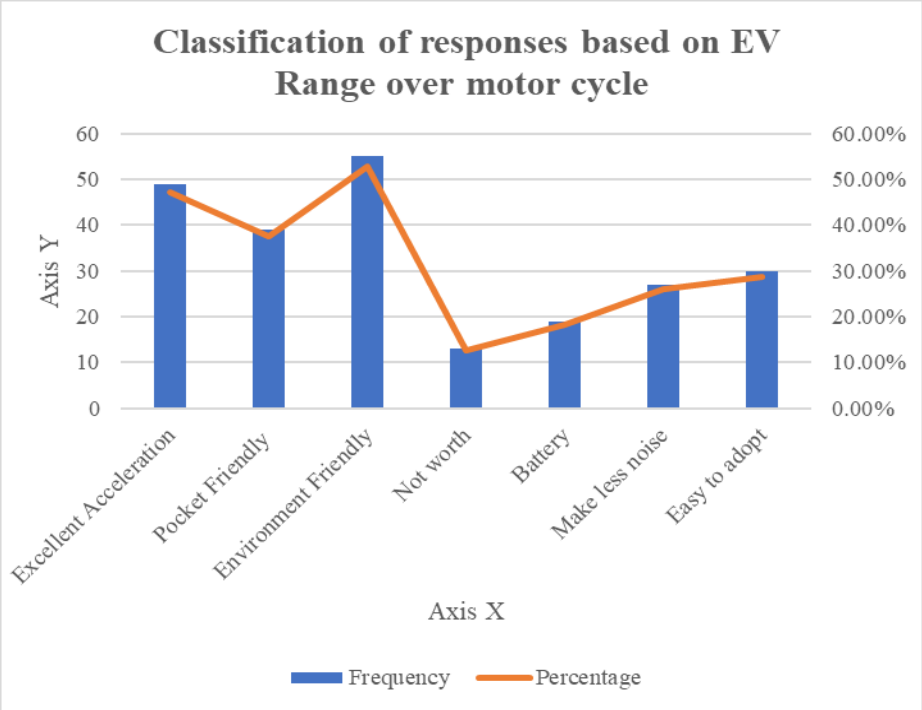

FIGURE 8. Classification of responses based on EV Range over motor cycle

The above table no 8 and figure 8 represents the Classification of response based on the perception on EV range over conversion of Motor vehicles. The study includes 49 respondents belonging to excellent acceleration, pocket friendly ,39 and environment friendly ,55 not worth 13 battery ,19 make less noise 27 easy to adopt 30. The highest number of respondents belonging to the Environment friendly.

TABLE 9. Classification of response based on EV preference over motor cycle

Perception	Frequency	Percentage
Strongly Agree	36	34.60%
Agree	44	42.30%
Neutral	21	20.20%
Disagree	3	2.90%
Total	104	100%

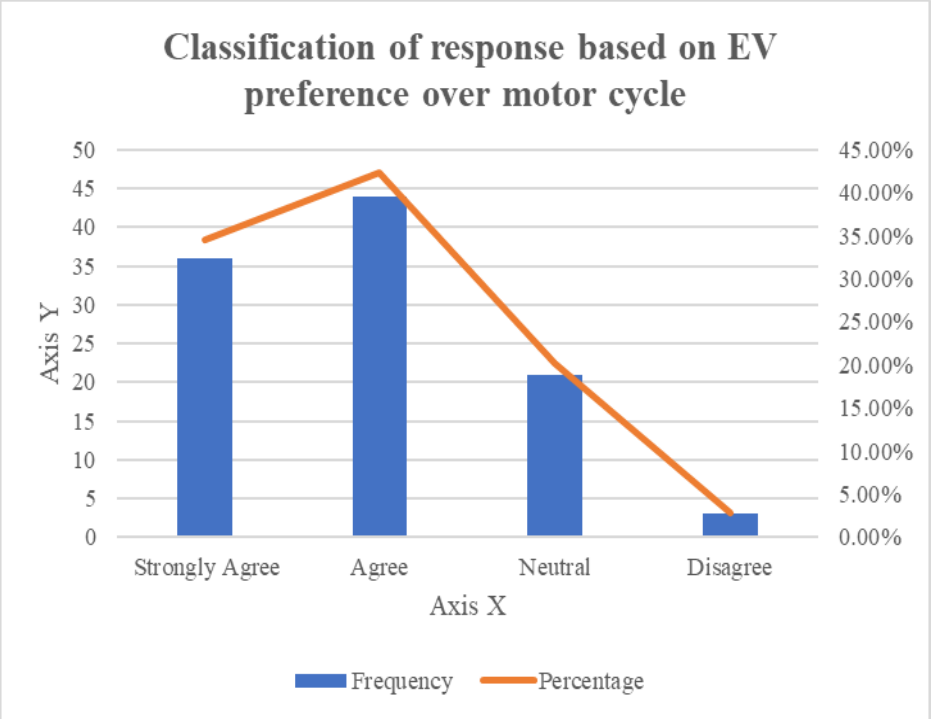

FIGURE 9. Classification of response based on EV preference over motor cycle

The about table number 9 and figure 9 represents the classification of respondents based on the preferences for easy over motor vehicles. The study includes 36 respondents which is strongly agreed, 44 is partially agreed 21, neutral and 3 disagree. The partially agreed respondents are higher compared to the other respondents

TABLE 10. Classification of response based on charging preferences

Hours	Frequency	Percentage
0-1	7	6.73%
1-2hrs	35	20.20%
2-3Hrs	10	3.84%
3-4hrs	25	43.27%
4 or more hrs	27	25.96%
Total	104	100%

The above table no.10 and figure no. 10 represents the classification of respondents on the basis of charging time preference. The study includes 7 respondents who prefer within 1 hour, 35 respondents who prefer within 2 hours, 10 respondents who prefer within 3 hours, 25 respondents who prefer within 4 hours and 27 respondents who prefer 4 or more than 4 hours. The respondents who prefer within 2 hours of charging time are higher than the other respondents.

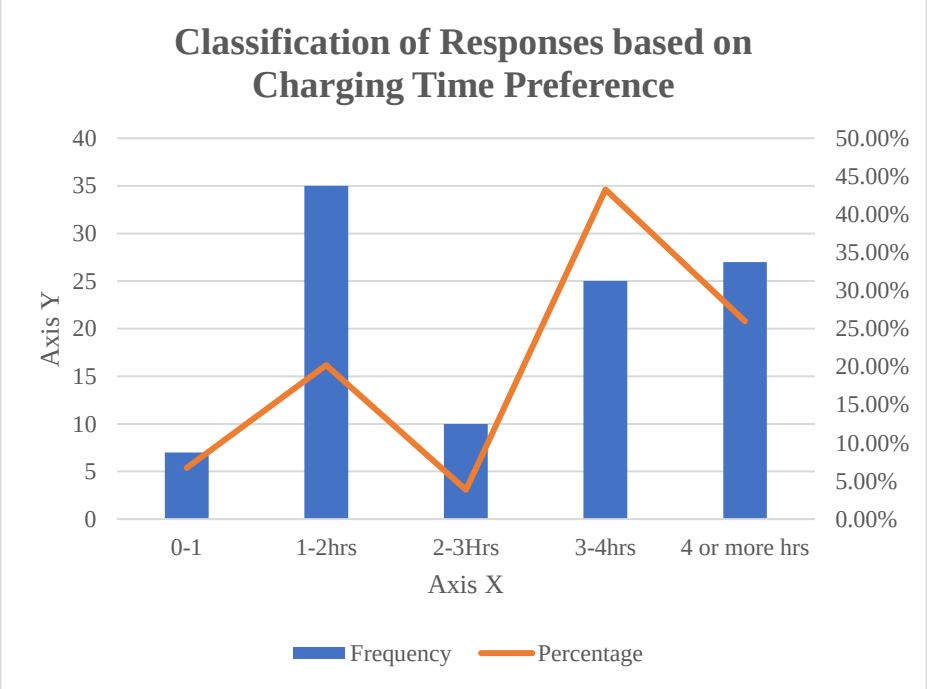

TABLE 10. Classification of response based on charging preferences

TABLE 11. Classification of response based on buying preference

Preferences	**Frequency**	**Percentage**
Likely to buy one	54	51.90%
Considering but need convincing	30	28.80%
Unlikely to buy one	9	8.70%
Don't know yet	11	10.60%
Total	104	100%

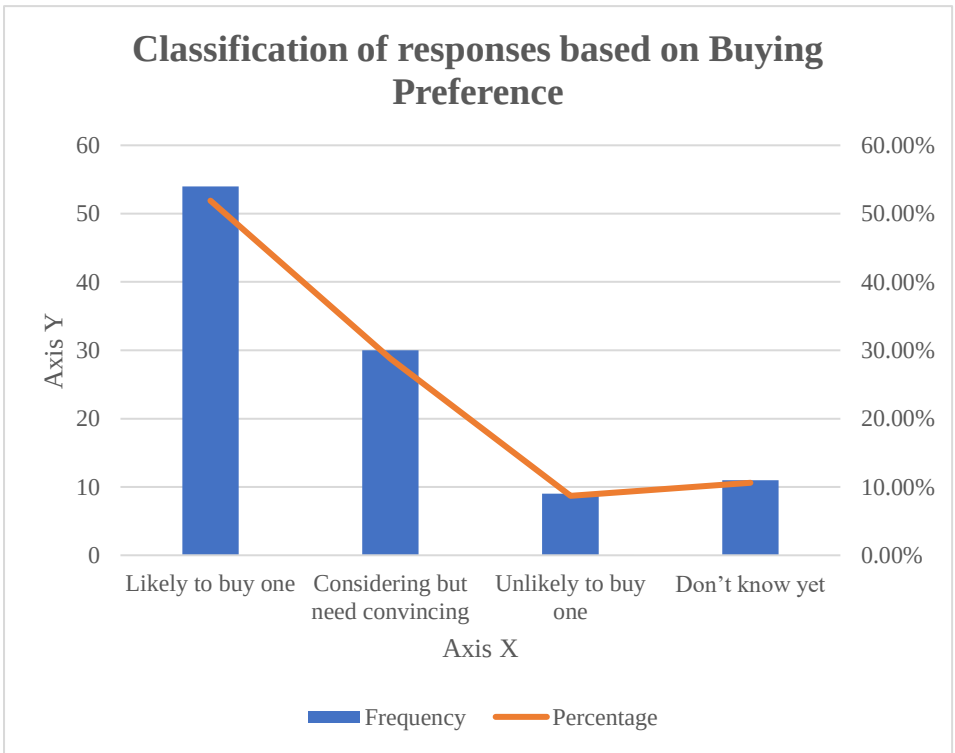

FIGURE 11. Classification of response based on buying preference

The above table no. 11 and figure no.11 represents the classification of respondents on the basis of buying preference. The study includes 54 respondents who are likely to buy an EV, 30 respondents who are considering to buy an EV but need convincing, 9 respondents who are unlikely to buy one and 11 respondents who haven't decided yet. Therefore, respondents who are likely to buy an EV are more compared to others.

TABLE 12. Classification of responses based on charging place preference

Place	Frequency	Percentage
Home	73	70.20%
Charging station	22	21.20%
Change the battery	9	8.70%
Total	104	100%

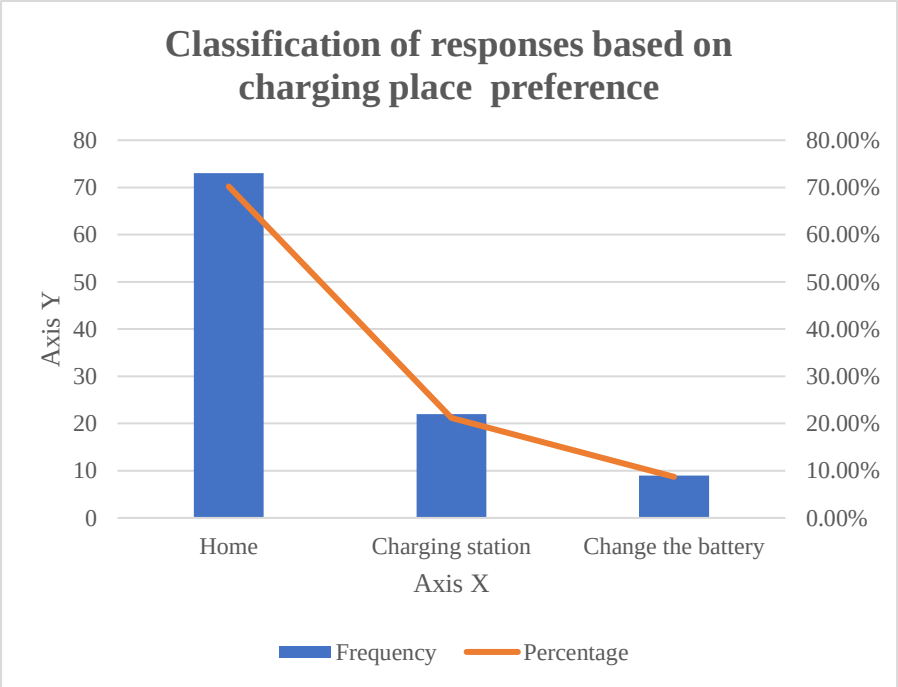

FIGURE 12. Classification of responses based on charging place preference

The above table no .12 and figure no. 12 represents the classification of respondents on the basis of charging place preference. The study includes 73 respondents that prefer home charging, 22 respondents that prefer charging at the station and 9 respondents who prefer changing the battery. The respondents that prefer charging at home are the highest compared to charging at station or changing the battery charge. Therefore, respondents who prefer DC fast charge are more compared to others.

TABLE 13. Classification of responses based on frequent charging

Charging Days	Frequency	Percentage
Almost everyday	43	41.30%
Alternative days	36	34.60%
A few times a week	16	15.40%
Once a week	15	8.70%
Total	104	100%

The above table no.13 and figure no.13 represents the classification of respondents on the basis of frequent charging. The study includes 43 respondents who charge almost every day. 36 respondents who charge alternative days, 16 respondents charging few times a week and 15 respondents who charge once a week. The highest respondents compared to the others are the ones who charge their EV almost every day.

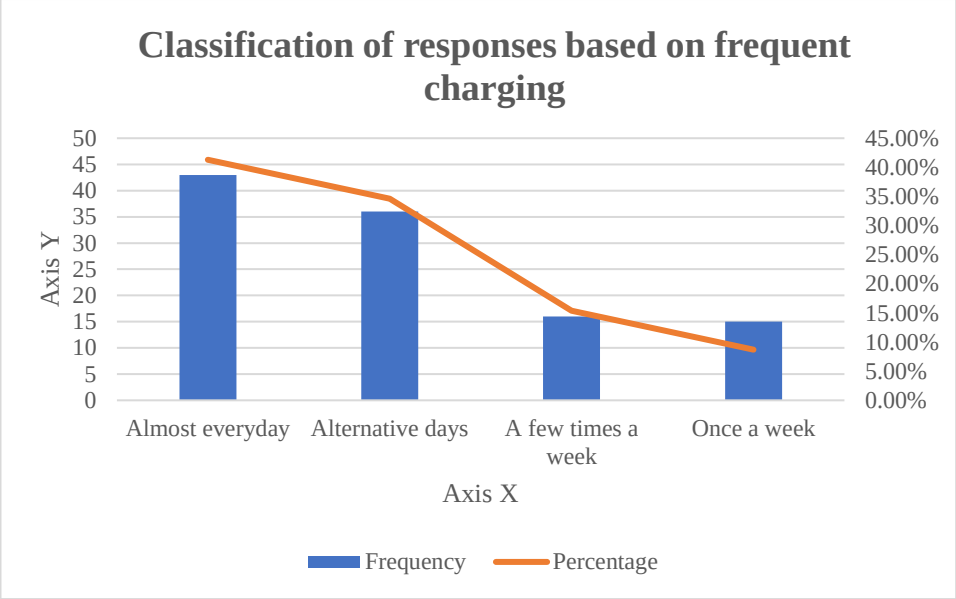

FIGURE 13. Classification of responses based on frequent charging

Table 14. Classification of responses based on frequent usage

Usage	Frequency	Percentage
Most days	60	57.70%
Few times a week	18	17.30%
once a week	14	13.50%
once a month	7	6.70%
3 months	1	1%
6 months	0	0.00%
Never	4	3.80%
Total	104	100%

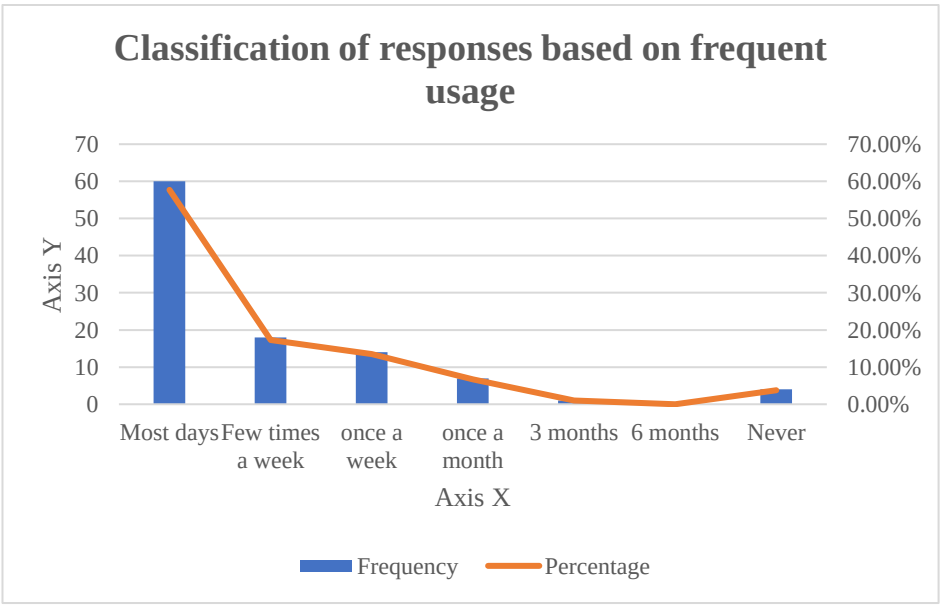

FIGURE 14. Classification of responses based on frequent usage

The above table no.14 and figure no.14 represents the classification of respondent's baes on frequent usage. The usage includes 60 respondents who use on most days,18 respondents who use few times a week, 14 respondents who use once a week, 7 respondents who use once a month, 1 respondent who uses every 3 months, 0 respondent using every 6 months and 4 respondents who never uses an EV. The highest respondents use an EV on most days compared to others.

TABLE 15. Classification of responses based on number of Electric Vehicles owned

Ownership	Frequency	Percentage
1	76	73.10%
2	21	20.20%
3 or more	7	6.70%
Total	104	100%

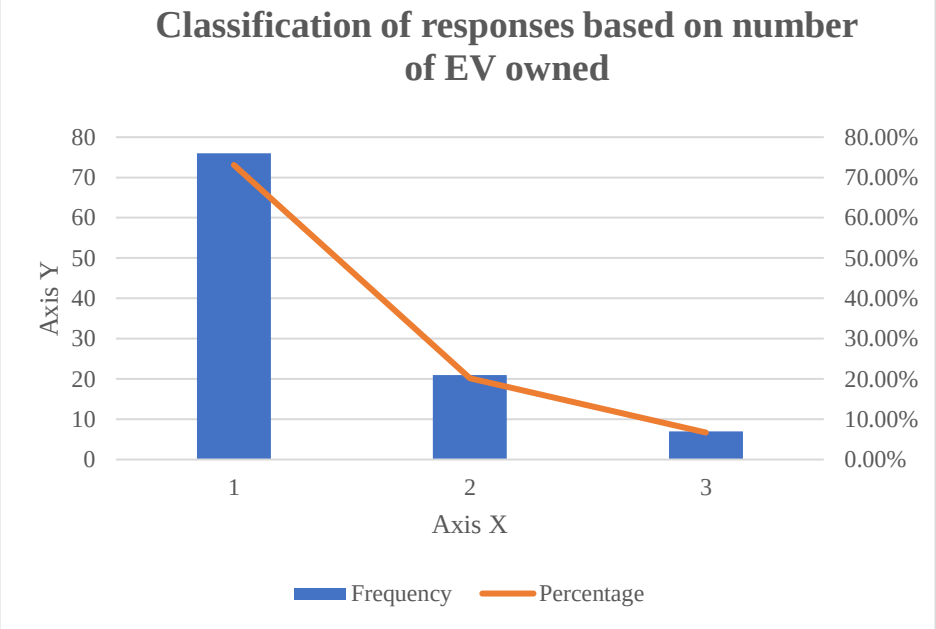

FIGURE 15. Classification of responses based on number of Electric Vehicles owned

The above table no.15 and figure no.15 represents the classification of respondents based on ownership of EV. The study includes 76 respondents that own one EV, 21 respondents that own two EV and 7 respondents that own three or more EVs. Respondents owning 1 EV are higher compared to other respondents.

7. FINDINGS

The study measured variables related to the perception on electric vehicle adoption from an Indian context. The results showed that the female respondents are comparatively higher than the male respondents. The majority of responses collected are 55 respondents belonging from the age group under 25. The occupation with the highest responses are businessmen. Majority respondents belong from Jayanagar. The respondents belonging to joint family are comparatively. Higher than the nuclear family. The respondents belonging to Classification of response based on the EV owned by the responders of where Ather is higher comparatively to other vehicles. The highest number of respondents believe in EV and strongly agree that EV is a better option to adopt since it is environment friendly.

8. CONCLUSION

Over the next few years, it is projected that India's market for electric vehicles would grow dramatically. The country is well-positioned to transition to a more ecologically friendly and sustainable mode of transportation because to supportive government regulations, growing consumer awareness, and technical advancements. The demand for EV is growing, there is a tremendous opportunity for both domestic and foreign enterprises to contribute to and support the development of India's EV ecosystem. Electric vehicles are still in their infancy in India, and the majority of people have never used one before. The running and maintenance costs of an EV are quite low, despite the fact that the original cost of purchase may be higher. The effect of perceived economic benefit (PEB) on adoption is one of the factors. It is believed that the adoption of EVs is being influenced by the fact that there is a growing awareness about EVs. Social influence and self-image (IM) can both have an impact on the adoption of high participation items. Most of the people have started preferring EV and have a positive attitude towards the growth and development of EV, they see it as the future to a better environment. Hence, cutting the tax rates on EVs has the same result as providing a subsidy. Huge buses, which are an essential

component of the public transportation system, have undergone multiple experiments but are not practical without a large subsidy. Alternative development avenues for various EV kinds must therefore be taken into account.

REFERENCES

[1]. Steinhilber, S., Wells, P., & Thankappan, S. (2013). Socio-technical inertia: Understanding the barriers to electric vehicles. Energy Policy, 60, 531–539.

[2]. P. Kumar and K. Dash, Potential Need for Electric Vehicles Charging Station Infrastructure and its Challenges for the Indian Market, vol. 3, no. 4, pp. 471-476, 2013.

[3]. R.G. Jungst and R.P. Clark, "Progress in the Development of Recycling Processes for Electric Vehicle Batteries.

[4]. Patil, M., Bandhu, B., & Kumar Sahu, P. (2022). A Comparative Evaluation of the Total Cost of Ownership between Electric Two-Wheelers and Motorized Two-Wheelers from an Indian Perspective. Transportation Research Record, 2676(5), 526–550.

[5]. Rezvani Z., Jansson J., Bodin J. Advances in Consumer Electric Vehicle Adoption Research: A Review and Research Agenda. Transportation Research Part D: Transport and Environment, Vol. 34, 2015, pp. 122–136.

[6]. Ali I, Naushad M. A Study to Investigate What Tempts Consumers to Adopt Electric Vehicles. World Electric Vehicle Journal. 2022; 13(2):26.

[7]. Shalender, K., Sharma, N. Using extended theory of planned behaviour (TPB) to predict adoption intention of electric vehicles in India. Environ Dev Sustain 23, 665–681 (2021).

[8]. Khalid, A.M., Khuman, Y.S.C. (2022). Electric Vehicles as a Means to Sustainable Consumption: Improving Adoption and Perception in India. In: Bhattacharyya, J., Balaji, M.S., Jiang, Y., Azer, J., Hewege, C.R. (eds) Socially Responsible Consumption and Marketing in Practice. Springer, Singapore.

[9]. Jaiswal, D., Kant, R., Singh, P.K. and Yadav, R. (2022), "Investigating the role of electric vehicle knowledge in consumer adoption: evidence from an emerging market", Benchmarking: An International Journal, Vol. 29 No. 3, pp. 1027-1045.

[10]. 10.Das, P.K., Bhat, M.Y. Global electric vehicle adoption: implementation and policy implications for India. Environ Sci Pollut Res 29, 40612–40622 (2022).

