A STUDY ON CONSUMER PERCEPTION TOWARDS ELECTRONIC VEHICLES (EV) IN INDIA

YOGESH CHAUDHARY
Master of Business Administration
Jagan Institute of Management Studies, Kalkaji
Email Id : yc866281@gmail.com

ABSTRACT

With the current depletion of fossil fuels and its price hike, there is a need for another energy resource to run the vehicle. The automobile sector is considering Electric Vehicle as a solution to the industry and environment in India. However, the current market penetration of EV is relatively low in spite of governments implementing EV policies. Through this paper potential scope of Electric vehicle in India will be studied and Consumer perception for same will be analyzed. With the current depletion of fossil fuels and its price hike, there is a need for another energy resource to run the vehicle. The automobile sector is considering Electric Vehicle as a solution to the industry and environment in India. However, the current market penetration of EV is relatively low in spite of governments implementing EV policies. Through this paper potential scope of Electric vehicle in India will be studied and Consumer perception for same will be analyzed.

'Global warming', 'Greenpeace' and 'Ozone Layer Depletion' are the terms almost everyone is quite familiar. As society becomes more concerned with the natural environment, businesses also have to adopt environmental concerns as their corporate social responsibility. Marketing the environment friendly products are called as green marketing. In recent era the automobile sector has been one of the major reasons behind global warming due to its high carbon emissions. So as a social responsibility, it is necessary to promote green vehicles in Indian market by the automobile industries to reduce its effect on environment. Green marketing can be considered to be contributing towards enhancing environmental performance of industry and an important element of the evolution of the Indian automobile industry as it responds to challenges of environmental regulations, increasing customer expectations and economic pressure. This study essentially, provides an in-depth study of the consumer's attitude and perceptions towards Green vehicles. It tries to answer fundamental questions that affect the awareness level and preference of the consumers to opt for an environment friendly car over a normal car.

1. INTRODUCTION

India is a country with the third-largest road network in the world. Road travel seemed to be a preferred choice in India with over 60 % of the population used personal or shared vehicles to commute. Conventional vehicles are a major cause of global warming and environmental air pollution. All types of vehicles produce dust from brakes, tires, and road wear(Zhang et al, 2014). The average diesel vehicle has worse effect on air quality than the average gasoline vehicle. But both gasoline and diesel vehicle pollutes more than the electric vehicle.

Governments started using fiscal policies, such as road tax, to discourage the purchase and use of more polluting cars. Green tax is imposed while re-registering the vehicle after 15 years of use to make people discontinue the use of polluting vehicles and encourage them for fuel-efficient and less polluting vehicles. Fuel taxes may act as an incentive for the production of more efficient, less polluting, vehicles and the development of alternative fuels(Lane and Potter, 2007). High fuel taxes or cultural change may provide a powerful incentive for consumers to buy lighter, smaller, fuel-efficient cars, or to not drive.

The FAME India Scheme is an incentive scheme for promotion of electric and hybrid vehicles. It aims to promote electric mobility and gives financial incentives for enhancing EV production and the creation of electric transportation infrastructure. In 2015 the Ministry of Heavy Industries and Public Enterprises launched FAME to incentivize the production and promotion of eco-friendly vehicles including EV and hybrid vehicles(Zhang et al, 2014). The scheme is proposed for establishing charging infrastructure.

 The National Electric Mobility Mission Plan (NEMMP) 2020, a National Mission document providing the vision and therefore the roadmap for the faster adoption of EVs and its manufacturing. This plan has been designed to boost national fuel security, to supply affordable and environmentally friendly transportation, and to enable the Indian automotive industry to attain global manufacturing leadership.

The growth of air pollution in Indian urban areas was a cause for concern Manufacturers. There are more than 25 major Indian cities among the 100 most polluted urban areas in the country World-Nation. The cause for the production of air pollution in urban areas is associated with an array of Sources but the division of transport makes a crucial commitment. Transport discharges are critical division is minimal. The antagonistic influence of air quality on human health and the economy is well known and, in this sense, producers are dreaming about reducing the impact on earth on a couple of options.

Electric cars are seen as a potential choice for transportation, what is in addition, a few national governments have successfully revised innovation development plans. Indigenous governments are swift to advance electric vehicles as a green alternative for portability, moreover find it a realistic solution to the elimination of air emissions in urban areas.

There are a few foreign examples of how to tackle challenges and best practices. China for example, bigly took hybrid cars for cycling and commuting. Metropolitan areas in the UK, such as London are providing rewards. For example, for the procurement of new electric cars, except blocking charges and leave fees for electric cars in certain jurisdictions free or reduced. In India, electric 3-wheelers have been relatively popular, but still very little distribution of electrical power. Vehicles existed between two wheelers, four wheelers and an armada for urban transport. Techno-funding anyway, tests show that electric bikes can be financially feasible by 2020 and by 2030 electric four wheelers will be a prominent option for innovation, if government offers incentive charging forces and underpinnings are available. The strong atmospheric approach to propel the reason electrical machines. The administration is excited about the advent of electric vehicles. Minister of defense power it has also set an ambitious goal of being 100% electric by 2030. Alternative programs, in particular, the Minister of Road Transport and Highways made a powerful proclamation to the society of Indians Automobile Manufactures (SIAM) annual custom that has terrified the car industry. Anyway, definition of strategies would require contributions to terms of dimension of help required, suggestions for spending plans of government, approach instruments required and utilizing the private part.

"Better late than never" is the English saying. With reference to the Environmental issues of late there is awareness among people. Continuous exploitation of nature for the past 200 or more years since industrialization has started showing its consequences. Of late we see round the world unforeseen natural calamities like flood, famine, earthquake, tsunami etc. The best example for this is, recent flood in Kerala and landslide in Kodagu (Aug 2018). Some of the villages virtually disappeared; roads and building were just swallowed by nature at the wink of an eye.

The reasons for these above havocs are nothing but environmental pollution. It is well known that air, water, soil, is contaminated completely. If we trace the factors for this environmental pollution at the very outset we find two major factors, like industrialization and motor vehicles. According to one of the study 75% of carbon monoxide emissions come from

automobiles and in urban areas 50 to 80%. Indians are finding hard to breathe in metropolitan cities. Recently Delhi people suffered a lot because of smog. People could not breathe even. Schools were declared holiday. Lot if vehicles collided each other due to invisibility. People stewarded moving around with masks. Delhi Government restricted vehicles from entering the city. This incidence shows that even the CNG (compressed natural gas) is not a solution for pollution.

Knowing that automobiles are the root cause for major pollution we must find a solution, why vehicles lead to pollution? It's mainly when fuel burns in engines produces lot of smoke especially diesel vehicles. This smoke contains carbon dioxide (co2) and nitrogen (N2). The government had tried to control on this emission by making pollution free certificate compulsory in all vehicles. Later, making Euro IV series engines compulsory.

The above all experience compelled the Government to do something in this regard. Now government is thinking that electric vehicle (EV) is the best solution for pollution. Electric vehicle does not lead to pollution at all. So in a country if there is a 100% electric vehicle 50 to 75% of pollution is reduced. It would be great achievement. Hence government is slowly encouraging automobile industries to produce electric vehicles. Also giving incentives and subsidies for electric vehicles.

The present situation in India shows it is high time to go for electric vehicles. In international market Dollar value is going up, at the same time petrol price is shooting like a rocket. Common man with meager income who has small vehicle are finding it very difficult to cope up. People are addicted to travel by own vehicle especially in cities now are not in a position to afford for petrol or diesel. Sometime ago people bought diesel vehicles when diesel price was considerably low. This has led to further deterioration of environment. But now the price has become almost equal.

Our prime minister's concern is to reduce import of petroleum. It has many advantages. One of which is, we can reduce the dependence on some countries who enjoy monopoly in petroleum products. Excessive dependence leads to economic slavery. This has to be curbed for the healthy growth of the country. Secondly, we can save lot of foreign exchange by cutting down petroleum imports. Major portion of our national income is spent on buying petroleum products. And when the price for this petroleum product increases in the international market increases the buying country will be the sufferer. Thirdly, and most importantly environmental pollution can be controlled. Our Prime Minister has shown this

concern in the international forum as well. He has given a call to reduce global warming. There are numerous advantages of using EV such as no gas or fuel required: Once charged no gas or fuel need to be bought. The cost of fuel is more when compared to electricity, no emissions: electric vehicles are 100% emission free. So absolutely good for environment. Safe: no chances of blasting or catching fire in case of accidents, low maintenance: the engine in electric vehicles does not require lubrication, servicing etc. Need not go to service stations often, no noise pollution: electric vehicles much quieter than other fuel vehicles, no hassles of registration, pollution, certificate etc, convenient for cities which faces traffic problems. Since electric vehicles are compact it is easy to drive in cities. Thus, the objective of the study are:

- To study about the attitude and behaviour of Indian consumers towards electronic cars.

- To know factors motivating customers to buy electronic cars.

- To know about the challenges could be faced by electronic vehicles market.

2. LITERATURE REVIEW

The longer-term uptake of EVs will depend heavily on progress in battery technology, to bring down costs and increase energy density, and on the provision of a suitable recharging infrastructure (Zhang et al, 2014).Also, India should invest in small scale reinforcements to manage the load issues locally rather than going for an enormous change. Home charging should be encouraged. Proper planning of place, population, traffic density and safety should be considered before implementing the massive scale charging infrastructure. The integration of activities within the energy and transport fields is important. Development goals through different innovative policies and programs, for instance, drivers of electrical cars are offered a financial consumer incentive, like tax credits, purchase subsidies, discounted tolls, free parking, and access to restricted highway lanes will help the market to grow(Raslavičius et al, 2015). Freight transport has a major impact on urban movement. Researchers explored the possible integration of electric vehicles in urban logistics operations. A fleet with different technologies has the opportunity of reducing the costs of the last mile. Researcher presented a fleet size and mix vehicle routing problem with time windows for EVs(Zhang et al, 2014). The main contribution of the authors was considering the variability of the range of EVs. In the segments of small vans, EVs are often the most competitive technology. In the segment of

large vans, diesel has seen the most interesting solution from a financial point of view as electric vehicles would need to cover a longer distance to be cost-competitive. Hybrid vehicles are chosen in the segment of trucks as its running costs and fixed costs are lower than the diesel truck(Zhang et al, 2015). Widespread adoption of EVs may contribute to lessening of problems like environmental pollution, global warming and oil dependency. However, this penetration of EV is comparatively low in spite of governments implementing strong promotion policies. They presented a comprehensive review of studies on consumer preferences for EV aiming to convey policymakers and give direction to further research. They compared the economic and psychological approach towards consumer preference for Electric vehicle. The impact of financial and technical attributes of EV on its utility is generally found to be significant, including its purchase and operating cost, driving range, charging duration, vehicle performance and brand diversity on the market. The density of charging stations also positively affects the utility and promotion of EV. The impact of incentive policies and tax reduction is quite effective (Al-Alawi and Bradley, 2013).The early market growth for electric vehicles continues, but a number of barriers prevent their widespread uptake. These barriers include the additional cost of the new technology, relative inconvenience of technology considering range and charge times, and consumer understanding about the availability and viability of the technology. This last point, typically referred to as "consumer awareness," is crucial (Lane and Potter, 2007). The replacement of ICE with electric engines will reduce pollution to a great extent and be profitable to consumers. Many countries have implemented this technology and are contributing to the improvement of the environment. The researcher saw the opportunities and challenges faced in India over implementing EVs (Al-Alawi and Bradley, 2013). Opportunities like Government Initiatives, Batteries, Industries, and Environment have been considered. With these challenges like cost of EVs, efficiency of EVs in India and demand for EVs were taken into consideration. The implementation of EVs in India aims primarily to scale back greenhouse emissions and cut oil expenses. The govt. should make the foremost out of the opportunities available and find suitable ways to tackle the challenges (Hidrue et al, 2011).

Indian Scenario is different because the current market share of EV/PHEV is around 0.1%. Presently almost all vehicles consider fossil fuel-based transportation. These pollute the atmosphere by the emission of greenhouse gases & causes global warming. The gap between domestic petroleum production and consumption is widening. India imports around 70% of

oil required per annum. Hence there's an urgent need to investigate factors and challenges for sustainable and cleaner alternatives (Carley et, 2013). India contributes around 18% in transport sector alone in terms of carbon emission. The Electric Vehicle (EV) is one of the foremost feasible alternative solutions to beat the crises. Several automotive companies are introducing EVs and are expanding their portfolio. Promoting EVs can help reduce fuel dependence and pollution and beneficial for both consumers and the nation. The education of people has significantly higher influence over their awareness level on EVs(Al-Alawi and Bradley, 2013). Apart from manufacturers, Government should strive hard to spread awareness and influence positive perception among potential customers. (Carley et, 2013). The Choice of cars depends upon environmental concern, cost, comfort, trust, technology, social acceptance, infrastructure availability. These arguments have been tested for both conventional cars and EVs. They assume that these factors have direct influence on individual choice of vehicle. They found that EV manufacturers and Government have to invest more in social acceptance of the vehicle by creating more infrastructural facilities, putting more thrust on technology to create trust. The analysis shows that the population is well aware of the environmental benefits. The responsibility lies on the shoulders of the Government and manufacturers to invest in the manufacturing of vehicles (Lane and Potter, 2007). Also, Global pollution is on the rise and each effort made, is to cut back the CO2 emissions and save the earth. One such effort is the introduction of EVs. The transport sector is one in all the largest emitters of CO2 and hence it's important to reduce it. The government has come up with ambitious plans of introducing EVs to the Indian market and confine pace with the event of EVs globally. The National Electric Mobility Mission Plan 2020 has included an in-depth report on the EVs. India encompasses a huge challenge in shifting the transportation sector from ICE engines to EVs. This needs lots of planning along with R&D. Charging infrastructure must be adequately build to deal with range anxiety. It's vital to form demand generation by making all government buses electric and offering tax exemptions for personal EV owners (Bjerkan et al, 2016). Further, developing an aggressive strategy for the adoption of EVs in India and ensuring a well-executed implementation is a challenge but vital for government. The geography and diversity of India will present problems that require thoughtful solutions. Public procurement is expected to be an important driver of growth of EVs, with the purchase of four-wheeled vehicles for government offices, three wheeled vehicles and buses for public transport. Investments by fleet operators such as Ola and Uber,

and operators of food distribution services, are also expected to boost the initial growth of two- and four wheeled electric vehicles. However, the private EVs may take 5-6 years to gain popularity and acceptance (Hackbarth and Madlener, 2013). Users of scooters, who need only to travel short distances, may consider an EV, but those, who need to travel longer distances and already own bikes like a Hero Splendor, may find it difficult to move to an e2W. For cars, it is relatively simple to improve the range with increased battery size. For electric 2Ws though, every increase in kWh may provide an extra 30km in range, but the increase in weight is around 10kg, approximately a 10% increase in the total weight of the bike. This weight issue is even more pronounced in smaller bikes (less than 150cc)(Rezvani et al, 2015).There are many factors which impact the decision of customers to buy electric vehicles.

2.1 Price

Numerous previous research reveals that the initial purchase price is the principal factor in automotive acquisition. The high cost of electric vehicles is a considerable barrier to their adoption relative to similar conventional cars(Zhang et al, 2015). Research demonstrates that the incentives provided encourage individuals to choose electric vehicles. Experts contend that the proliferation of battery electric vehicles (EVs) is facilitated by diminished operational and maintenance expenses(Hackbarth and Madlener, 2013). A reduction in prices is projected due to the commitment of numerous vehicle manufacturers to lower electric vehicle costs. Skoda plans to develop an electric vehicle featuring a 480-kilometer range and a 15-minute charging time by 2022, which will be more economical than most comparable internal combustion engine vehicles. Conversely, operating and maintenance costs are often cheaper than those of similar conventional cars, resulting in a diminished total cost of ownership. Electric vehicles have enhanced energy economy, resulting in diminished operational and maintenance expenses. Electric vehicles consume no gasoline, emit no greenhouse gases, and contain less mechanical and moving components(Sang and Bekhet, 2015).

2.2 Charging Stations and Time

Charging facilities are essential for an electric vehicle owner. Users are unable to recharge their batteries in the absence of a charging point. The significance of public charging stations is paramount. They in still greater trust in EV drivers regarding their range. They also offer

charging alternatives for individuals lacking access to a residential charging station. Electric vehicles may require up to eight hours for a complete charge when utilising a slow charger. International research indicates that certain potential buyers hold a negative perception of the duration required to recharge an electric car compared to refuelling a conventional vehicle (Hackbarth and Madlener, 2016).Access to charging facilities is essential for electric vehicle adoption. Electric vehicles can only compete with internal combustion engines if the charging infrastructure is established. These arguments are substantiated by evidence highlighting the significance of structure in the advancement of electric mobility(Li et al, 2013).Attitude towards Electric Vehicles Survey participants regarded electric vehicles as the future of transportation(Erdem et al, 2010). It was referred to as "the method of the future" and "future travel." These were found to exhibit a positive association. Individuals typically exhibit enthusiasm for acquiring knowledge about technical advancements.

2.3 Social Influence

Since the 1990s, numerous scholars have engaged in discourse regarding human behaviours from a sociological perspective, asserting that such behaviours are not solely individual but also society activities. The adoption of various behaviours by individuals is impacted by the actions of others. A behaviour is typically deemed reasonable if it aligns with the actions of others, as individuals frequently adjust their conduct based on societal perceptions. If the majority of individuals embrace CFVs, it becomes challenging to criticise these adopters, while choosing EVs may be perceived as unconventional or antisocial. Currently, societal influence significantly impacts a consumer's intention to acquire a EV (Eppstein et al, 2011).

Societal impact refers to the significance an individual assigns to the validation of their behaviour by others, including family and friends. Such acts encompass the adoption of a particular breakthrough or technology. Employing the idea of reflexive layers of influence, Axsen et al. (2013) classified societal impacts into three processes: diffusion, translation, and reflexivity. Diffusion refers to interpersonal influence conveyed through the dissemination of functional knowledge regarding a new product among individuals. The second, translation, denotes the negotiation of a new product's perceived benefits and importance within a social context. Reflexivity pertains to persons linking their awareness and assessment of the product to their lifestyle and self-concept. Empirical findings indicated that responders are influenced by at least one of these mechanisms.

2.4 Symbol

Prior to selecting a vehicle, individuals may evaluate not only the cost, performance, fuel efficiency, comfort, and other objective criteria, but also its role as a representation of self-image and social status, which are more likely connected to their self-identity. A symbol is a mark, sign, or term that denotes, represents, or is recognised as expressing an idea, object, or relationship. Symbols enable individuals to transcend the known or visible by creating associations between disparate concepts and experiences. Social role theory posits that individuals compare themselves to others to enhance their self-awareness and self-assessment(Breakwell, 1993). The examination of EV adoption behaviour illustrates this comparison as a representation of identity and social position.

Figure I Proposed Model
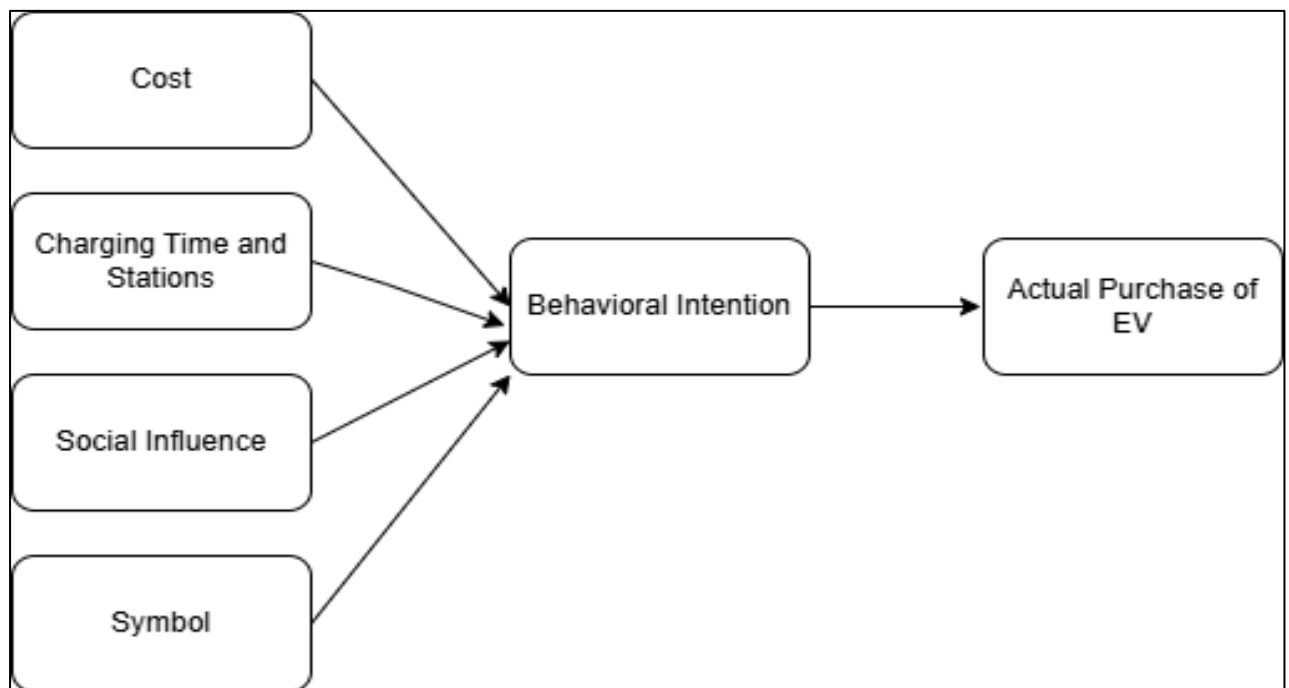

3   RESEARCH METHODOLOGY

The purpose of the project is to know how much electric vehicles are helpful in taking care of environment in climate change. Primary data was collected with the help of a structured questionnaire and with web journals and articles respectively. The questionnaires were

administered to 450 respondents. The questionnaire has been designed and used to collect the needed primary data. Close ended questionnaire was used to collect data. Sample Unit in this survey is done through individual units.

4 DATA ANALYSIS

A survey was conducted by floating a questionnaire to the people/participants for having their feedback and responses in the survey, 450 individuals participated and given their useful feedback. So, we have 450 individual responses all of which are clubbed together in the form of graphs, charts, etc. and then are analyzed collectively as whole. The data collected can be analyzed and interpreted as follows:

### 4.1 Does respondents ever personally owned an electric car
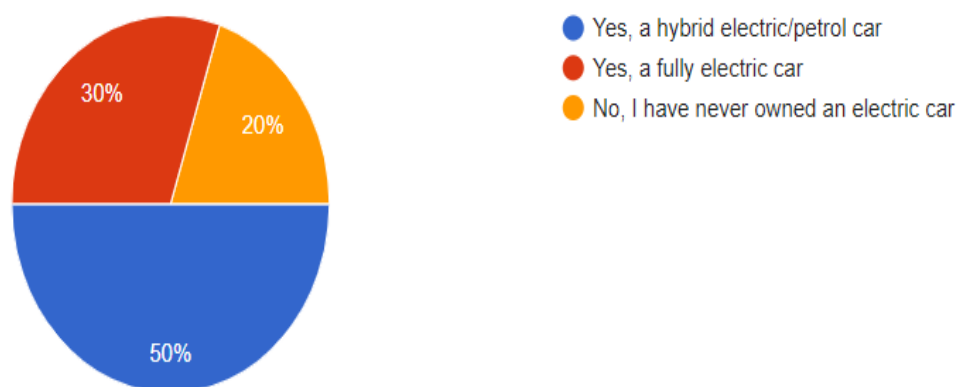
In the survey 50 percent of respondents said that yes that they have hybrid electric/petrol car where as 30 percent of people said that they use fully electronic car and rest said no they never used electric vehicle.

### 4.2 Does respondents ever driven an electric car
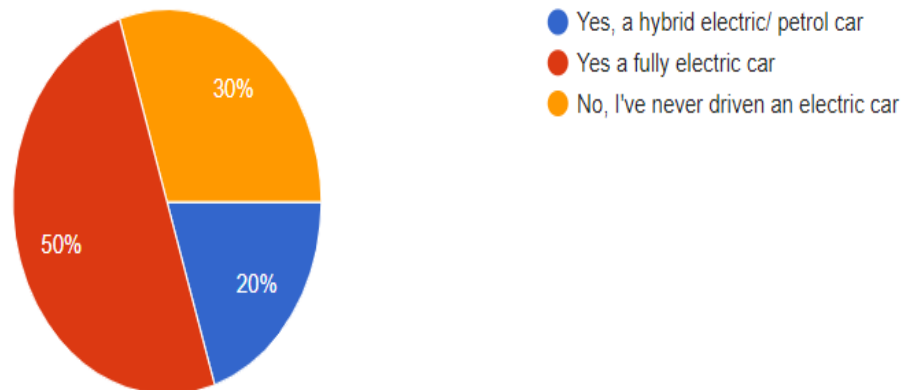
In the survey 50 percent of respondents said that yes that they drive fully electronic car where as 30 percent of people said that they never drove electronic car and rest said yes they drove hybrid electric vehicle.

4.3 Which factors encourage the respondents consider buying electric car
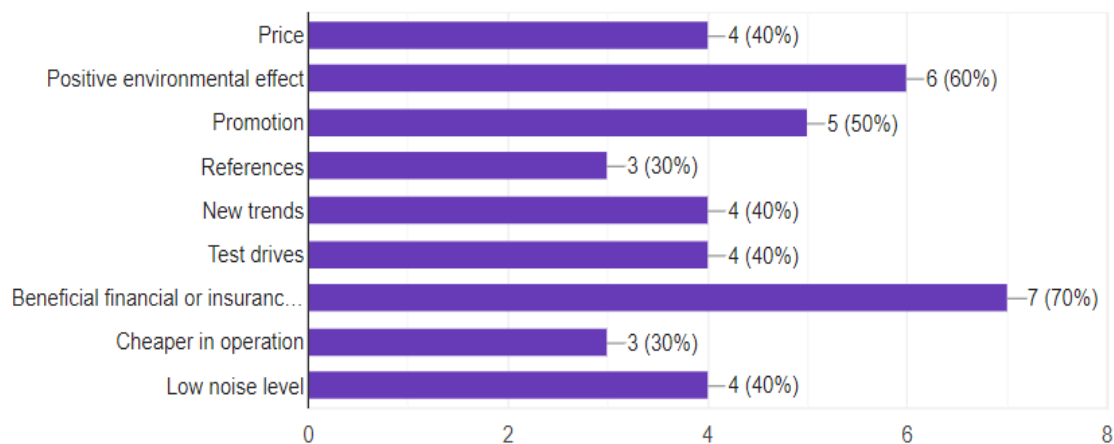

In the survey people asked about the factors that encouraged them to buy electronic car and most of them said that almost 70 percent of them said that they benefit financially. And on other hand 60 percent said that they are environment friendly.

4.4 What factors discourage the respondents to consider buying electric car
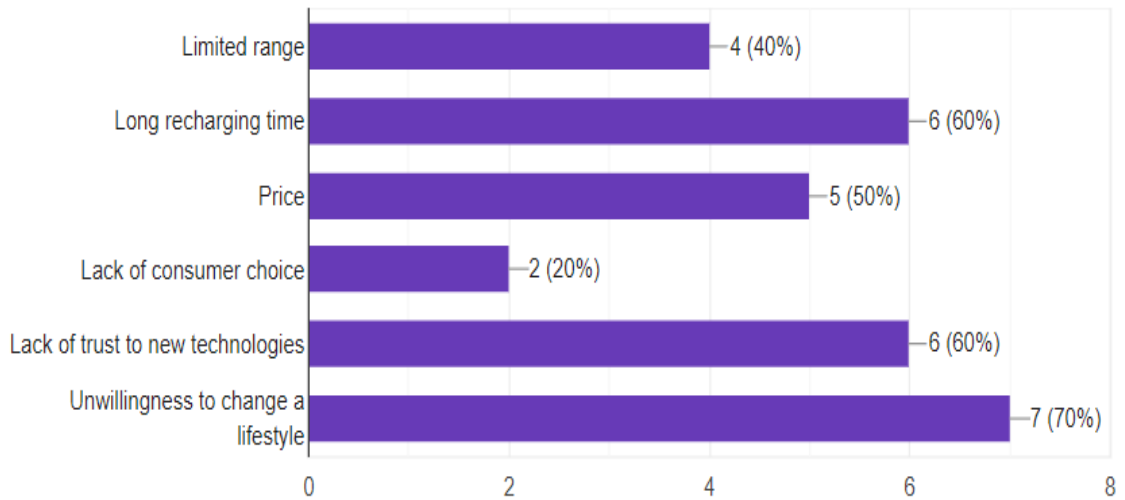
In the survey people asked about the factors that discouraged them to buy electronic car 70 percent of people said lifestyle on other hand 60 percent of people said lack of trust on new technology and long charging time where as 50 percent of people are concerned about price

4.5 Influence of someone's advice regarding choice of a car, particularly electric car?
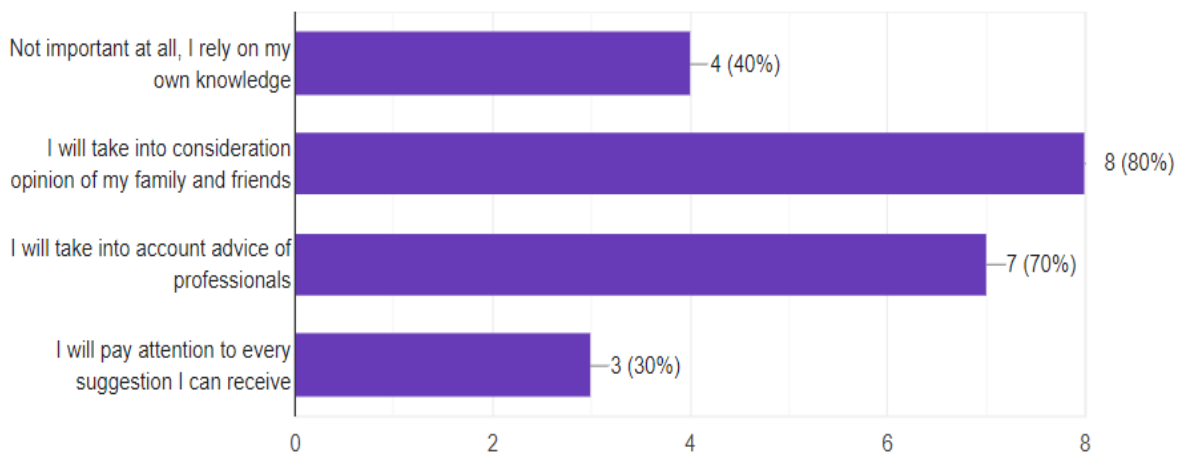

In the survey people replied to this question as 80 percent of people said that they will take into the consideration the opinion of their family and friends' 70 percent of people said that they prefer advice of professionals, 40 percent of people said that its not important they rely on their knowledge, 30 percent of people said they listen to every suggestion that they receive.

4.6 How likely is the respondent next car will be electric car?
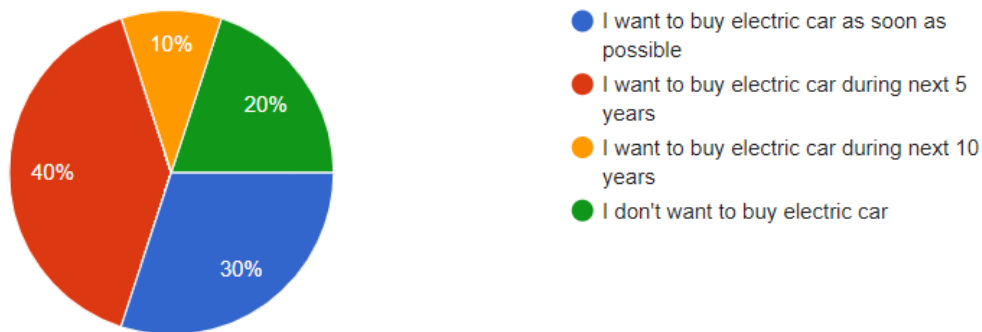
In the survey 40 percent of people said that they want a new electric car in coming next 5 years where as 30 percent of people said that they want electric car as soon as possible, 20 percent said that they don't want to buy electric car and rest 10 percent said that they want electric car in next 10 years.

4.7 How likely the respondent will consider buying an electric vehicle in the next 2 years?
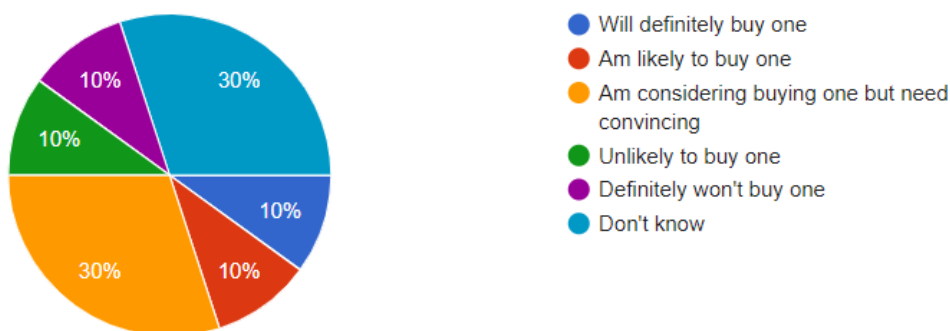
In the survey 30 percent of people said that aim considering one but need convincing, and other 30 percent said that they don't know rest 10 percent have their own opinion.

4.8 Factors affecting adoption of Electronic Vehicles

Various factors can influence the adoption of Electronic Vehicles. The partial least squares method has been employed to assess the influence of identified components. The model evaluated using SMART-PLS is elucidated below: Numerous methods exist to evaluate the validity and reliability of an instrument, although the Cronbach alpha methodology is commonly employed to measure the precision of an item's validity and reliability. A Cronbach alpha value of 0.7 or higher is considered satisfactory, 0.8 or above is deemed outstanding, and values exceeding 0.9 are classified as exceptionally good. All variables in our study exhibit a Cronbach alpha ranging from 0.945 to 0.841, signifying that all items were reliable. For each item, the composite reliability and average variance of every construct are calculated. Internal consistency reliability is predominantly assessed by composite reliability. Elevated dependability levels are frequently signified by an increased composite reliability value. Drolet and Morrison (2001) categorise dependability values into two classifications: suitable for exploratory research (ranging from 0.60 to 0.70) and "satisfactory to good" (ranging from 0.70 to 0.90). All constructs of the model exhibit composite reliability ranging from good to satisfactory. Also, the discriminant validity was assessed using (Fornel and Larcker, 1981) by comparing the square root of each AVE in the diagonal with the correlation coefficients (off-diagonal) for each construct in the relevant rows and columns.

TABLE I. Factor Loading, Cronbach's alpha, Composite Reliability, and AVE of all items

Constructs	Factor loading	Cronbach's Alpha	Composite Reliability	AVE
Behavioral Intention_1	0.918	0.891	0.932	0.821
Behavioral Intention _2	0.891			
Behavioral Intention _3	0.91			
Cost_1	0.933	0.815	0.915	0.843
Cost_2	0.903			
Charging Time and Station_1	0.973	0.939	0.97	0.942
Charging Time and Station _3	0.968			
Charging Time and Station _1	0.757	0.719	0.842	0.641

Social Influence_2	0.891			
Social Influence _3	0.745			
Symbol_1	0.907	0.773	0.898	0.815
Symbol _2	0.898			
Actual Purchase of EV_1	0.828	0.832	0.899	0.748
Actual Purchase of EV _2	0.849			
Actual Purchase of EV _3	0.915			

TABLE II. Discriminant validity

	Behavioral Intention	Cost	Charging Time and Station	Social Influence	Symbol	Actual Purchase of EV
Behavioral Intention	**0.906**					
Cost	0.639	**0.918**				
Charging Time and Station	0.428	0.378	**0.971**			
Social Influence	0.661	0.627	0.705	**0.903**		
Symbol	0.55	0.534	0.577	0.672	**0.8**	
Actual Purchase of EV	0.579	0.488	0.406	0.429	0.624	**0.867**

Diagonal numbers in bold represent the square root of average variance extracted from observed variables(items)
Off-diagonal represents the correlation between the constructs

4.9 Result of Hypothesis testing

The table below represents the Original Sample, Sample Mean standard error value, and R square of the endogenous constructs. The significance level is 0.05. The results of hypothesis testing are also shown below H1, H3,and H5 are supported. The most significant factor influencing the "behavioural intention" is "Social Influence" as compared to other factors (T statistics= 3.328>1.96, P value=0.001<0.05).

TABLE III. Result of hypothesis testing

	Standardized Error	T Statistics	p-value		Remark
Behavioral Intention -> Actual Purchase of EV	0.05	15.061	0		Supported
Cost -> Behavioral Intention	0.1	2.257	0.024		Supported
Charging Time and Station -> Behavioral Intention	0.122	0.998	0.319		Not Supported
Social Influence -> Behavioral Intention	0.141	3.328	0.001		Supported
Symbol -> Behavioral Intention	0.118	0.214	0.83		Not Supported

5. FINDINGS

50 percent of respondents said that yes that they have hybrid electric/petrol car whereas 30 percent of people said that they use fully electronic car and rest said no they never used electric vehicle.50 percent of respondents said that yes that they drive fully electronic car where as 30 percent of people said that they never drove electronic car and rest said yes they drove hybrid electric vehicle. People asked about the factors that encouraged them to buy electronic car and most of them said that almost 70 percent of them said that they benefit financially. And on other hand 60 percent said that they are environmentally friendly. People asked about the factors that discouraged them to buy electronic car 70 percent of people said lifestyle on other hand 60 percent of people said lack of trust on new technology and long charging time whereas 50 percent of people are concerned about price

 People replied to this question as 80 percent of people said that they will take into the consideration the opinion of their family and friends' 70 percent of people said that they prefer advice of professionals, 40 percent of people said that its not important they rely on

their knowledge, 30 percent of people said they listen to every suggestion that they receive.40 percent of people said that they want a new electric car in coming next 5 years where as 30 percent of people said that they want electric car as soon as possible, 20 percent said that they don't want to buy electric car and rest 10 percent said that they want electric car in next 10 years.30 percent of people said that aim considering one but need convincing, and other 30 percent said that they don't know rest 10 percent have their own opinion.

6. CONCLUSION

With the depletion of fossil fuels and constant hike in fuel prices, there is a need for energy transition in vehicles in India. Govt has taken initiative to fight pollution levels by promoting EVs and giving subsidies on purchase. To boost its production, Govt has eased the FDI norms. Various emerging brands are launching EVs in India. The Government and manufacturers should join their hands to build the infrastructure and create positive environment for EVs. The respondents are aware of global climate conditions and are ready to change their preference from conventional to eco-friendly vehicles. Cost is an important factor while considering the purchase of EV. Respondents are willing to consider EVs as their future purchase option, if proper infrastructure is available. Initial cost of purchase, a smaller number of charging stations and the time required to recharge the battery is creating limitation in boosting consumer confidence. The primary situational barriers are driving range, charging issues, and acquisition costs. Research that examines methods to assist consumers in effectively planning their journey duration and distance, as well as how to incorporate additional factors. Comprehensive charging infrastructures to meet customer demand, along with educating consumers on calculating total costs based on their driving habits, can more effectively furnish data to address these obstacles. Simultaneously, the evolving technology is altering the technical characteristics of EVs. Consequently, the dynamic influence of EV technical attributes is crucial for researchers, policymakers, and manufacturers to understand, as it can enhance methods for promoting and marketing EVs. Given that the contextual characteristics of EVs influence adoption intentions, a crucial area of research is addressing customers' uncertainties.

7. FUTURE RESEARCH AND LIMITATIONS

Subsequent research should concentrate on analyzing the symbolic significance of BEVs across various nations. Emotions, identified as significant factors in affecting adoption intention, remain under-theorized. Furthermore, emotions are regarded as variables on par with other psychological aspects (e.g., attitudes), necessitating deeper investigation into their interrelations. While other researchers were less focused on various psychological aspects, they should not be overlooked in future investigations. These factors may evolve with the progression of modern civilization and should be taken into account in future research.

REFERENCES

Axsen, J., Orlebar, C., & Skippon, S. (2013). Social influence and consumer preference formation for pro-environmental technology: The case of a UK workplace electric-vehicle study. *Ecological Economics*, *95*, 96-107.

Al-Alawi, B. M., & Bradley, T. H. (2013). Review of hybrid, plug-in hybrid, and electric vehicle market modeling studies. *Renewable and Sustainable Energy Reviews*, *21*, 190-203.

Breakwell, G. (1993). Social representations and social identity. *Papers on social representations*, *2*, 198-217.

Bjerkan, K. Y., Nørbech, T. E., & Nordtømme, M. E. (2016). Incentives for promoting battery electric vehicle (BEV) adoption in Norway. *Transportation Research Part D: Transport and Environment*, *43*, 169-180.

Carley, S., Krause, R. M., Lane, B. W., & Graham, J. D. (2013). Intent to purchase a plug-in electric vehicle: A survey of early impressions in large US cites. *Transportation Research Part D: Transport and Environment*, *18*, 39-45.

Erdem, C., Şentürk, İ., & Şimşek, T. (2010). Identifying the factors affecting the willingness to pay for fuel-efficient vehicles in Turkey: A case of hybrids. *Energy Policy*, *38*(6), 3038-3043.

Eppstein, M. J., Grover, D. K., Marshall, J. S., & Rizzo, D. M. (2011). An agent-based model to study market penetration of plug-in hybrid electric vehicles. *Energy policy*, *39*(6), 3789-3802.

Hidrue, M. K., Parsons, G. R., Kempton, W., & Gardner, M. P. (2011). Willingness to pay for electric vehicles and their attributes. *Resource and energy economics*, *33*(3), 686-705.

Hackbarth, A., & Madlener, R. (2013). Consumer preferences for alternative fuel vehicles: A discrete choice analysis. *Transportation Research Part D: Transport and Environment*, *25*, 5-17.

Hackbarth, A., & Madlener, R. (2016). Willingness-to-pay for alternative fuel vehicle characteristics: A stated choice study for Germany. *Transportation Research Part A: Policy and Practice*, *85*, 89-111.

Raslavičius, L., Azzopardi, B., Keršys, A., Starevičius, M., Bazaras, Ž., & Makaras, R. (2015). Electric vehicles challenges and opportunities: Lithuanian review. *Renewable and Sustainable Energy Reviews*, *42*, 786-800.

Rezvani, Z., Jansson, J., & Bodin, J. (2015). Advances in consumer electric vehicle adoption research: A review and research agenda. *Transportation research part D: transport and environment*, *34*, 122-136.

Sang, Y. N., & Bekhet, H. A. (2015). Modelling electric vehicle usage intentions: an empirical study in Malaysia. *Journal of Cleaner Production*, *92*, 75-83.

Lane, B., & Potter, S. (2007). The adoption of cleaner vehicles in the UK: exploring the consumer attitude–action gap. *Journal of cleaner production*, *15*(11-12), 1085-1092.

Li, X., Clark, C. D., Jensen, K. L., Yen, S. T., & English, B. C. (2013). Consumer purchase intentions for flexible-fuel and hybrid-electric vehicles. *Transportation Research Part D: Transport and Environment*, *18*, 9-15.

Zhang, Y. J., Peng, H. R., Liu, Z., & Tan, W. (2015). Direct energy rebound effect for road passenger transport in China: a dynamic panel quantile regression approach. *Energy Policy*, *87*, 303-313.

Zhang, X., Xie, J., Rao, R., & Liang, Y. (2014). Policy incentives for the adoption of electric vehicles across countries. *Sustainability*, *6*(11), 8056-8078.