



OUR HERITAGE

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A Study of Awareness and Perception Level of Prospective Consumers towards Electric Vehicles

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ABSTRACT:

Global warming is a major concern all over the world. There are several policies, promises and pledges to save environment. With the ever increasing emission of greenhouse gases, there is an increased fear of environment pollution at every step. With modern technology and innovation, transportation and communication have undergone a paradigm shift.

Transport sector is second largest in emitting carbon into environment. Increased numbers of fossil-fuel dependent vehicles, not only add to greater level of pollution but are also leading to depletion of fuel resources. This has necessitated automobile companies to innovate motorized vehicles that get charged through electricity and do not depend on fossil fuels. This led to the expansion of eco-friendly initiatives and many automobile manufacturing companies have invested in bringing forth Electric Vehicles (EV), which help people save a few bucks by reducing consumption of already spiraling fuel price, besides fighting global warming.

EVs are environment friendly as air and noise pollutions are much reduced. It is the modern vehicle technology with a rapid development which will alleviate the problems of energy; air pollution and global warming that are becoming more severe. This paper was aimed at the study the Awareness and Perception Level of Prospective Consumers towards Electric Vehicles. The questionnaires distributed to 200 respondents were collected by offline survey in Baramati and Phaltan city which descriptive data were analyzed and inferential information by used a statistic i.e. means, percentage etc. The results of the present research can help the researchers to continue create a new model forecasting toward EVs adoption in the future.

KEYWORD: *Electric Vehicles, Customers Awareness, Customers Perception, Prospective Customers, Environment etc.*



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INTRODUCTION:

During the past years, many countries all over the world began to attach more importance to a vehicle that uses electric energy that is called EV and there has been a relentless attempt to replace a car that uses fuel oil as the main energy for its mobility with EV in order to reduce the problems of energy, air pollution and global warming that are increasingly more severe. Announced in December 2015 and enforced in November 2016, the Paris Agreement set the objective of limiting the increase in the global average temperature to well below 2°C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5°C above preindustrial level. Therefore, the worldwide growth of EV tends to rise. According to the report in “Bloomberg New Energy Finance (BNEF) by 2040”, more than half of all new car sales will be electric. At the same time, EVs will account for a third of the automobiles on Earth. That’s about 559 million vehicles. The International Energy Agency (IEA) forecasted that EV will replace the ICE (the internal combustion engine) in the near future.

EV’s technology will grow very fast in the future because of the production costs that are quickly reduced due to the advancement of various research developments. It is anticipated that EV’s market share will be as high as 35% of the total world car sales value in 2025.

India’s automobile industry is the sixth largest in the world and accounts for 24% of the country’s total manufacturing output. In the last decade, India has been growing at a faster rate on the motorization curve. As a result, urban traffic congestion and the air quality get affected in the all major metropolitan cities and town. In India, the transport sector alone contributed around 20% in terms of carbon emission. Indian government is trying to move to alternative fuel based vehicle technology. The Electric Vehicle (EV) is one of the most feasible alternative solutions to overcome the crises. Several automotive companies are slowly venturing into the EV space and are expanding their portfolio. Promoting Electric vehicles through innovative ways can help reduce fossil fuel dependence and pollution, and prove to be beneficial for both consumers and the nation in the long run. Electric vehicles can have a significant impact on the reduction of greenhouse and pollutant gas emissions associated to the transportation sector. The awareness about new products among the consumers has an impact on their behavior in the long term. The consumers with knowledge about products develop an attitude towards specific products. In this paper the awareness about environmental-friendly vehicles among automobile involvement consumers is discussed.

OBJECTIVE OF THE STUDY:

The major objective of the study is to understand the awareness level of prospective consumers of Electric vehicles. Among those who are aware, perception towards EV changes from person to person. Hence, it is important not only to make people aware about the product but also to understand their perception in order to cater them effectively. They perceive the various features adopted in E-vehicles as well as the amenities required for the maintenance of e-vehicles. Understanding the awareness of prospective consumers about the environmental friendly electric vehicles and their perception level towards various features offered by it will help in formulating the campaigns by manufacturers and Government as well.

FRAMEWORK IN CONSUMER AWARENESS AND PERCEPTION TOWARDS EV:



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Adoption of any Innovation by consumers is based on awareness and perception regarding the innovation. The literature review shows that the perception and awareness towards Electric vehicles in various parts of the world is studied by focusing on reducing carbon emission, technology (Speed, distance, efficiency), cost (EV and Fuel), infrastructure (charging points) and social acceptance. The Current Exploratory study focused on Perception and adoption of Electric Vehicle in India by comparing the use, features, acceptance, and reliability of traditional cars with upcoming Electric vehicles. It would help in Growth of technology and this is the most relevant topic for modern India. This study enables to understand and explore the driving parameters that would lead to change in adoption of electric vehicle in changing Indian ideologies.

RESEARCH DESIGN:

Based on the review of literature and theoretical framework, Questionnaire is formed to perform the survey. The Questionnaire has four parts. The first part of the Questionnaire asks for the respondents' demographic factors. The second part is to understand the awareness level of respondents about the benefits offered by e-vehicles. The third part contains the perception of respondents towards electric vehicle. The demographic factors are recorded using nominal scale. Likert scales are used to record the awareness and perception of respondents. The questions are selected carefully in such a way it best suit the research objectives. Most of the questions are in Likert scale and so closed ended.

- a) **Method of Data Collection** - The survey Questionnaire is circulated entirely through offline. The data are collected in prime locations of Baramati and Phaltan City, where prospecting customers would gather. The locations from where the data are collected include Big Bazaars, Malls, Parking Slots, Cinema Halls and some of the Apartments as well as Housing Societies located in the cities. Some of the Questionnaire is also circulated among students because they are the future prospects and also play a highly influential role in purchase decision of vehicles. At most care was taken to include all the demographic segments to avoid bias towards any particular factor.
- b) **Population** - The population for this survey would be the people above the age of 18 in India. This is because only people above the age of 18 would have a significant role in purchasing decision. It is highly difficult to reach out to the entire population and even not possible. Hence sufficient sampling technique should be adopted to collect the data. This sampling technique should be in such a way that it should represent the entire sample.



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- c) **Sampling Design** - Here the entire population is split geographically for our convenience. The size of the sample is chosen sufficiently at least to represent all the options included in the demographic factors. Sample data is collected offline through hard copies that are distributed among the respondents. Final results are made to understand the potential customers' perception towards electric vehicles using descriptive, frequency analysis and also through cross tabs of influencing factors.
- d) **Sampling Method and Sample Size** - The subgroups chosen for our survey are Baramati and Phaltan city. Hence, all the individuals above the age of 18 would represent our sample. Probability sampling technique is used in order to provide an equal chance to all the elements in the population. Simple random probability sampling technique is used to collect the data. This sampling technique is used because of time constraints and to have a fair spread of data when demography is considered. Sample size chosen is 200. Hence, data is collected from all 200 respondents individuals, who are in the age of above 18 are chosen randomly for data collection.
- e) **Tools of Analysis** - The tools of analysis used are SPSS (Statistical Package for Social Science) Statistics 19.0 and Microsoft Excel. The required graphs and charts for interpretation is made using Microsoft Excel.

PROFILE OF THE RESPONDENTS WITH DEMOGRAPHIC FACTORS:

Demographic Factors	Categories	No. of Respondents	Percentage
Age Group	18 to 24	40	20.00
	25 to 29	51	25.50
	30 to 34	52	26.00
	Above 35	57	28.50
Gender	Male	130	65.00
	Female	70	35.00
Education	HSC and Below	10	5.00
	Graduate	81	40.50
	Post Graduate	86	43.00
	Professionals	18	9.00
	Other	5	2.50



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Occupation	Self Employed	52	26.00
	Private Employee	68	34.00
	Govt. Employee	28	14.00
	Home Maker	15	7.50
	Students	37	18.50
Annul Income	Below Rs.2.5 lakhs	39	19.50
	Rs.2.5 to Rs.5 lakhs	37	18.50
	Rs.5 to Rs.10 lakhs	46	23.00
	Rs.10 to Rs.20 lakhs	45	22.50
	Above Rs.20 lakhs	33	16.50
Marital Status	Married	127	63.50
	Unmarried	73	36.50
Family Size	Below 1	21	10.50
	2-4	137	68.50
	Above 5	42	21.00

ANALYSIS AND INTERPRETATION:

- **Age:** It is one of the important factors to be considered for the purchase decision of automobiles. Here, working professionals and students play a major role in the decision making. In our survey, 20% of the respondents belong to the age group 18 to 24; 25.5% belong to the age group 25 to 29, 26% belong to the age group 30 to 34, and 28.5% belong to the age groups above 35 years old.
- **Gender:** As gender is concerned, the survey is inclined towards male (65%) when compared to its counterpart (35%). This is because, the decision making authority of shopping products like automobiles will generally be with male. But this trend is changing as days pass on. Hence, female cannot be neglected and so a considerable number of respondents belong to the gender female.
- **Education:** From the total sample, 5% of the respondents are belongs to HSC and Below category, 40.5% of the respondents hold Graduate, 43% hold Post Graduation, 9% hold Professional qualification and 2.5% of the respondents had been dropped out of school.



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- **Occupation:** As far as occupation is concerned, 26% of the respondents are self employed, 34% are private employee, 14% are government employee, 7.5% are home maker and 18.5% are students.
- **Annul Income:** It is one of the important factors which decide the purchasing power of automobiles. In this survey, 14.5% of the respondents have an annual income of below 2.5 lakhs, 14.5% have an annual income in the range of 2.5 to 5 lakhs, 22% have an annual income between 5 to 10 lakhs, 22.5% in the range of 10 to 20 lakhs and 26.5% earn above 20 lakhs per year.
- **Marital status:** Marital status and Family size are important as those factors play a vital role to decide the type of automobile to be purchased. In this survey, 36.5% of the respondents are unmarried and the rest (63.5%) are married.
- **Family Size:** Out of total respondents, 10.5% of the respondents say that they reside alone or along with one family member, 68.5% say that their family has 3 or 4 persons and 21% say that their family has more than 5 members.

AWARENESS LEVEL:

- **Findings:** 15% of the people do not own a vehicle. Out of those 15%, nearly 55% are ready to own a vehicle. Around 70% believe that the brand of vehicle they possess reflects their social status. More than 70% feel that electric vehicles will dominate the future. Around 50%, 43% and 25% of people feel that personal opinion, family and friends respectively influence their purchase decision.
- Around 40%, 46% and 46% of people gather information through company website, social networks and word of mouth respectively. Most of the people are aware that electric vehicle emits less carbon and eco-friendly but post relatively low awareness towards high efficiency and low maintenance cost. Almost all of the people are not aware of the incentives offered by the Government for the purchase of electric vehicles.
- **Inference:** One out of 10 people consider buying a vehicle. It is the right time electric vehicle manufacturers to tap the market. Brand building of any automobile is important as it directly affects the market share. It is the right time for all automobile manufacturers to concentrate in the manufacturing of electric vehicles. All the



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campaigns organized regarding electric vehicles either by the manufacturer or the Government should make an impact to the individual's family members to help better conversion rate.

- Updating the company website as and when required and active presence in social networking sites are important. Societal advantages offered by electric vehicles are reached well among the people when compared with economic advantages offered by electric vehicles. Though Government offers near about rupees eight hundred crores for the manufacturing of hybrid and electric vehicles through FAME, people hardly know about the same.

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PERCEPTION LEVEL:

- Findings: People perceive that price, maintenance cost and recharging time are comparatively high for electric vehicles. People perceive that number of variants available and resale value of electric vehicles is low as compared with other factors. Education of the people plays a major influence over the awareness level. Performance, safety features and number of variants available are perceived with the major percentage deviation between those who are ready to own an electric vehicle and those who are not ready to own an electric vehicle.
- Inference: People pay price premium for electric vehicles but maintenance cost and running cost is comparatively low and so electric vehicles are economical. This fact should be spread through appropriate medium to break the negative perception among the people. Consumer behaviour for purchasing electric vehicles is complex in nature and hence increase in number of alternatives would provide a better option to potential customers. Societal, environmental and economical benefits offered by electric vehicles should be communicated through the right medium to reach the people who are uneducated. Safety features and number of variants should be at par with conventional IC engine vehicles, so that the deviation would reduce. Performance should be increased with continuous R&D to reduce negative perception level among the people.

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CONCLUSION:

Education of people has significantly higher influence over their awareness level on electric vehicles as the people who are school drop outs have very low awareness about the benefits offered by electric vehicles. Irrespective of the demographics, incentives from the Government for purchase of electric vehicles has not gained any awareness among the potential customers. People perceive that price and maintenance cost is relatively high over other factors. Even the people who are ready to own electric vehicles perceive that the price of electric vehicle is relatively high, but they feel that performance offered and maintenance cost is considerably low than the conventional vehicles. Hence they prefer electric vehicles. Similarly, charging infrastructure is perceived as low and recharging time is perceived as high.

Apart from manufacturers, Government should strive hard to spread awareness and influence positive perception among the potential customers. Because environmental sustainability is one of the major concerns to be addressed and electric vehicles would ultimately aid in achieving the same as the carbon emissions from electric vehicles is almost 90% lower than conventional vehicles.

People believe that electric vehicles will dominate the near future and if technological advancements and Government supports considerably, electric vehicles may even replace the conventional vehicles in few decades of Tim.

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