



A STUDY ON “CONSUMER PERCEPTION TOWARDS E- TWO WHEELER VEHICLES AT VADODARA”

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Abstract:

As global warming and fuel prices continue to rise, many countries are transitioning from petrol two-wheelers to electric two-wheelers, and India is following suit. Even in the Indian Market, electric scooters are gaining popularity.

In the Indian market, there are currently many models and many companies producing electric scooters, but they are not experiencing the same boom as fuel scooters. As a result, I'm going to research customer behaviour and preferences for electric scooters.

I plan to conduct survey and ask questions about consumer perception behaviour, taking into account various factors such as Age, Gender, Monthly income and awareness of electric vehicles.

Keywords: Consumer perception, E-Two wheeler vehicles

I. INTRODUCTION

An electric vehicle (EV) is one that runs on electricity rather than an internal combustion engine, which generates power by burning a mixture of fuel and gases. As a result, such a vehicle is viewed as a potential replacement for current generation automobiles in order to address issues such as rising pollution, global warming, depleting natural resources, and so on. Though the concept of electric vehicles has been around for a long time, it has gained a lot of attention in the last decade due to rising carbon footprints and other environmental impacts of fuel based vehicles.

Electric propulsion system-based electric vehicle. There is no use of internal combustion engine. Electricity serves as the sole energy source for everything. The key benefit is the electric motor's proposal system's great efficiency in power conversion. Large scale research and development projects have recently been reported in both academic and industry. There are also commercial vehicles available. Many nations offers incentives to users in the form of reduced tax rates or tax exemptions, free parking spaces, and free charging stations. The hybrid electric vehicle, on the other hand, is an alternative. In the most recent years, it has seen considerable application. Almost all automakers offer at least one hybrid electric vehicle variant.

II. DEFINATION OF E-TWO WHEELER

An E-2-wheeler is a type of electric two-wheeler that is completely electric. It consists of an e-scooter, an e-motorcycle, an e-moped, an e-bike, and a bicycle. It does not have an engine and does not run on fossil fuels such as gasoline, diesel, or compressed natural gas. Instead, it is powered and run entirely by electricity. In most cases, it has a rechargeable battery that stores electric energy and propels the two-wheeler. So, an E-2-wheeler, E-scooter, or E-Motorcycle is a two-wheeler that runs entirely on electricity. Electric motorcycles and scooters are two or three-wheeled plug-in electric vehicles. A rechargeable battery provides power to one or more electric motors. Electric scooters differ from motorcycles in that they have a step-through frame rather

than being straddled. Electric bicycles are similar vehicles that differ in that they can be propelled by the rides & pedalling in addition to battery propulsion. E- Scooters are electric scooters that allow the rider to stand.

III. LITERATURE REVIEW

1).According to Kunihiro (2005)

Journal of the Eastern Asia Society for Transportation Studies article by Keiichi Satoh titled “Evaluation of Willingness to Buy a Low-Pollution Car in Japan” In order to suggest improvements to the introduction of low-pollution cars, this study clarifies consumer understanding on the purchase of a low-pollution vehicle. They conducted surveys in Sapporo to gauge public interest in purchasing a low-pollution vehicle. Sapporo residents are Environmental concern does not, however, result in the purchase of low-pollution vehicles.

2).According to Mohamed (2007)

Environmental effects of electric and hybrid cars. This study is being conducted to determine how well previous analyses of the environmental effects of hybrid and electric vehicles (EV) account for these technologies whole life cycles. To compare the global warming potential (GWP) of various EV and internal combustion engine vehicle (ICEV) choices, research results are synthesized.

3).According to Dixon (2010)

“Electric vehicle energy storage” This demonstrates some of the potential ways to shorten charging times and improve energy storage capacity. A comparison of various storage options, including chemical battery systems, ultra- capacitors, flywheels, and fuel cells is made, outlining the benefits and drawbacks of each.

4).According to Wahid et al. (2011)

Owning a green car makes it easier for citizens to uphold sustainability in the future by being more responsible and respectful of the environment. The purchase of green vehicles is still limited, and only a few automakers launched them to the Malaysian market in small production levels, despite the fact that they are the solution to lowering air pollution linked to climate change and resource scarcity. They still only make up a tiny portion of the passenger vehicle market. Giving into green marketing is currently a key commercial trend, but this is still new for Asian nations, particularly Malaysia.

5).According to Ozaki R, Sevastyanova K, (2011)

Early adopters of electric vehicles are reported to be youthful, have higher incomes, and have higher levels of education, according to numerous international surveys. There were 891 responders, with a 61% response rate. According to the poll, 72% of electric vehicle owners are men, and 55% are older than 60. They live in Norway eastern regions and have at least six years of higher education.

6).According to Thiel, (2012)

European drivers’ attitudes regarding electric cars. This study intends to outline and analyses how drivers in the six nations of France, Germany, Italy, Poland, Spain, and the United Kingdom feel about electric cars, as well as how familiar they are with the idea of electric cars and their key characteristics. Each of the six Member States received an average of 600 responses from drivers. According to the report, European cars Drivers are aware of the potential benefits that electric vehicles may provide, but they also recognize that there are a number of prerequisites that must be met before they can be seriously considered. Cars as a reliable form of transportation.

7).According to Kenneth (2013)

“Consumer perceptions about battery-powered vehicles.” This study summarizes the findings of a comprehensive data collection conducted in Flanders (survey with 1196 respondents) (Belgium). The findings cover opinions on battery electric vehicles benefits and drawbacks, acceptable driving distances, acceptable charging times (both slow and fast), acceptable top speeds, the government role in the introduction of BEVs, the preferred governmental tools to increase sales, and consumers’ willingness to pay.

8). According to Lingzhi Jin (2017)

The early market growth for electric vehicles is still present, but a variety of obstacles are keeping them from becoming widely used. These obstacles include the new technology higher price, relative annoyance as compared to range and recharge durations, and consumer ignorance of the technology practicality and availability. This final point—often referred to as customer awareness is extremely important.

IV.OBJECTIVES OF STUDY

- The primary objective of the Research is the need to understand the consumer point of view regarding electrical vehicles among people of Vadodara city.
- To study the factors affecting purchase intention of electric vehicles.
- To know the attitude of consumers towards Electric vehicles.
- To study the barriers towards purchasing electric vehicle.

V.HYPOTHESIS OF STUDY

H0: There is no significant impact of EV are expensive but can pay lower fuel costs with respect to willingness to buy EV in future.

H1: There is significant impact of EV are expensive but can pay for lower fuel costs with respect to willingness to buy EV in future.

VI.LIMITATION OF THE STUDY

- The study was restricted to the geographical limits of Vadodara and electric vehicle service is spread all over in India. Therefore, other cities responses are not evaluated
- The sample size used for the study is small. So, the results cannot be taken as universal

VII. RESEARCH METHODOLOGY

There are many types of research design used for research purpose but the research design which will be used for this study will be Descriptive research design. It is original primary data, for specific phase of research project. For this project I have used Questionnaire common research instrument or tool. For Secondary data I have used Books, Articles, Journals and Internet etc. Data collection was done through questionnaire method of survey. The questionnaire included open ended, dichotomous and multiple-choice questions. The questions were simple so that people can understand and answer to the questions. Some questions interrelated to make sure that, the answers received were related to the area of research. Data collection was done through the medium of internet and social media services allowing to get better and quick response from the units. Uses of internet for data collection was also increase diversification in answer and help us to get answer to multiple questions.

VIII. DATA ANALYSIS

- 1).Research Design: Descriptive
- 2).Research Tool: Questionnaire
- 3).Sample Size: 200
- 4).Sampling Technique: Random Sampling
- 5).Analytical Tool: Graphical Method

IX. DATA ANALYSIS AND INTREPRETATION

Intrepretation: Multiple- choice questions, or MCQ are the most commonly used method for measuring performance appraisal. The questions are very specific. This is the result of a survey questionnaire on performance appraisal which is conducted by us and this type of responses I get.

1. TYPE OF GENDER

Category	Respondents	Percentage
Male	103	51.8%
Female	96	48.2%

Intrepretation: According to the survey result; 51.8% male and 48.2% female are fill the questionnaire which helps to know the perception of the consumer towards E-Two wheeler.

2. SELECT YOUR HIGHEST EDUCATION

Category	Respondents	Percentage
Under-Graduation	43	21.5%
Post-Graduation	78	39%
Other	79	39.5%

Intpretation: According to the survey the respondents are the mainly 39.5% are other 39% are post-graduation and 21.5% are in Under- Graduation.

3. PLEASE SELECT YOUR INCOME RANGE

Category	Respondents	Percentage
Below 1Lakh	62	31.8%
1 Lakh to 3 Lakh	51	26.2%
3 Lakh to 6 Lakh	55	28.2%
More than 6 Lakh	27	13.8%

Intpretation: As per the survey the respondent income are majorly Below 1 lakh (31.8%), and 28.2% are the having the income 3 lakh to 6 lakh, 26.2% are 1 lakh to 3 lakh and 13.8% income range is more than 6 lakh.

4. SELECT YOUR EMPLOYMENT STATUS

Category	Respondents	Percentage
Students/Unemployed	55	27.5%
Employed/Self-Employed	109	54.5%
Retired/Pensioner	10	5%
Other	26	13%

Intpretation: As per the survey the majority of the respondents are the Employed/Self-employed and the percentage is 54.5% and 27.5% are student or unemployed, 13 % are having other employment status and 5% are the Retired or Pensioner.

5. ARE YOU AWARE ABOUT ELECTRIC VEHICLE?

Category	Respondents	Percentage
Yes	197	98.5%
No	3	1.5%

Intpretation: According to survey the 98.5% respondent are the aware about Electric vehicles and the 1.5 % not aware about Electric vehicles.

6. IF YES FROM WHERE YOU GET AWARE ABOUT EV DID?

Category	Respondents	Percentage
Print Media	15	7.6%
TV Commercial	60	30.3%
Social Media	98	49.5%
Friends/Family	25	12.6%

Intpretation: As per the survey mainly 49.5% respondents are get aware about EV from Social media, 30.3% are from TV Commercial, 12.6% are from Friends and family and 7.6 from print media.

7. FROM THE FOLLOWING BRAND OF EV, WHICH ONE ARE YOU AWARE OF?

Category	Respondents	Percentage
Ola	102	51.5%
Ather	65	32.8%
Mahindra Electric	71	35.9%
Tata Motors	69	34.8%
Ashok Leyland	30	15.2%
Other	4	2%

Intrepretation: According to survey the respondents are highly aware about the Brand of EV is Ola 51.5%, 35.9% Mahindra electric,34.8% Tata Motors,32.8% Ather,15.2% Ashok Leyland and 2% are from other brand of EV.

8. ARE YOU WILLING TO PURCHASE ELECTRIC VEHICLE IN FUTURE?

Category	Respondents	Percentage
Yes	97	49.2%
No	12	6.1%
May be	88	44.7%

Intrepretation: As per the survey 49.2% are interested to buy electric vehicle in future and 44.7% are may be purchase electric vehicle in future and 6.1% are not interested to purchase Ev in future.

9. WHAT IS YOUR PERCEPTION TOWARDS PURCHASING AN ELECTRIC VEHICLES?

Category	Respondents	Percentage
Social Acceptance	18	9.1%
Government Benefit features	21	10.6%
Low maintenance cost	76	38.4%
No fuel expenses	54	27.3%
Environment concern	19	9.6%
Other	10	5.1%

Intrepretation: As per the survey mainly low maintenance cost are affected the purchasing an electric vehicle, 27.3% are affected by 27.3%, 9.6% are environment concern, 9.1% are affected by social acceptance.

10. WHICH OF THE FOLLOWING FACTORS EFFECT THE PURCHASE DECISION OF AN EV?

Category	Respondents	Percentage
Dead battery	34	17.3%
Charging time	36	18.3%
Performance	31	15.7%
Battery cost	28	14.2%
Cost of vehicles	20	10.2%
Availability of electric plug station	33	16.8%
Maintenance/sales after service	15	7.6%

Intrepretation: As per the survey 18.3% are affected by the factor is charging time , 17.3% Are dead battery, 16.8% are availability of electric plug station,15.7% are affected by performance,14.2% are battery cost,10.2% are cost of vehicles and 7.6% purchase decision are affected by the maintenance/sales after service.

11. THE ELECTRIC VEHICLES ARE RELATIVELY MORE EXPENSIVE TO PURCHASE BUT CAN PAY FOR THEMSELVES IN LOWER FUEL COSTS.

Category	Respondents	Percentage
Strongly agree	34	17.2%
Agree	50	25.3%
Neutral	77	38.9%
Disagree	32	16.2%
Strongly Disagree	5	2.4%

Intrepretation: As per the survey 17.2% are believes in Ev are relatively more expensive to purchase but can pay for themselves in lower fuel costs.25.3% are agree, 38.9% are believes in neutral, 16.2% are disagree and 2.4 are strongly disagree.

12. RATE THE RANGE OF EV AS PER YOUR KNOWLEDGE.

Category	Respondents	Percentage
Very wide	18	9.1%
Wide	42	21.3%
Neither wide	80	40.6%
Nor narrow	51	25.9%
Narrow	6	3.1%

Intrepretation: As per the survey rate the range of Ev are 40.6% are rate neither wide,25.9% nor narrow,21.9% are rate range are wide , 9.1% are rate very wide and 3.1% are rate the range of Ev Narrow.

13. RATE THE FEATURE OF EV AS PER YOUR KNOWLEDGE.

Category	Respondents	Percentage
Excellent	18	9.1%
Very good	57	28.9%
Good	69	35%
Fair	42	21.3%
Poor	11	5.7%

Intpretation: As per the survey the features are 35% good,28.9% very good,21.3% fair,9.1% excellent and 5.7% are rate the features as a poor.

14. RATE THE EMISSION OF EV AS PER YOUR KNOWLEDGE.

Category	Respondents	Percentage
Very high	18	9.1%
Somewhat high	54	27.3%
Neither High	82	41.4%
Nor low	36	18.2%
Very low	8	4%

Intpretation: As per the survey the emission of Ev 41.4% are rate as a neither high,27.3% are rate as somewhat high,18.2% nor low,9.1% are very high and 4% are rate as very low.

15. ELECTRIC VEHICLES ARE LESS RELIABLE THEN CONVENTIONAL VEHICLE.

Category	Respondents	Percentage
Strongly agree	13	10.6%
Agree	56	28.3%
Neutral	71	35.9%
Disagree	37	18.7%
Strongly disagree	13	6.5%

Intpretation: As per the survey the 10.6% are strongly agree the Ev are less reliable than conventional vehicle,28.3% are agree,35.95 are rate as neutral,18.7% are disagree,6.5% are strongly disagree.

16. WHAT IS YOUR OVERALL PERCEPTION TOWARDS ELECTRIC VEHICLE?

Category	Respondents	Percentage
Excellent	34	17.2%
Very good	48	24.2%
Good	71	35.9%
Fair	37	18.7%
Poor	8	4%

Intpretation: As per the survey overall perception towards Ev 35.9% Good, 24.2% are very good, 17.2% are excellent, 18.7% are fair and 4% are rated as poor.

X. FINDING AND RESULT

- According to the survey 98.5% respondent are aware about electric vehicles and 1.5% are not aware about Electric vehicles and mostly 49.5% respondent are aware from social-media.
- When ask to the respondent brand of Ev, the 102 people are known about the Ola Electric vehicles and 49.2% respondent are willing to purchase electric vehicles in future.
- When ask to the respondent which feature affect purchase decision of people 18.3% people answers charging time & ask for the perception towards purchasing electric vehicles are low maintenance cost.
- When ask to the respondent about the Range, Features and emission of the electric vehicles 9.1 % are answer for the range are very wide, for features 35% are answer as a good and for emission 9.1 % are answer as a very high.
- When ask to the respondent overall perception towards electric vehicle 17.2% are answer excellent,24.2% are answer very good and 35.9% are answer Good.
- 17.2% are strongly agree and 25.3% respondents agree to the statement “EV are more expensive but can pay for lower fuel costs.”

XI. CONCLUSION

Based on the analysis, electric vehicle manufacturers and the government of India have to invest more in social acceptance of the vehicle by creating more infrastructural facilities, high capacity batteries, putting more trust on technology that can create trust in consumers. The result clearly illustrates that the population is well aware of the environmental benefits. Because environmental suitability 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 vehicle. Apart from manufactures, government should strive hard to spread awareness about EVs and influence positive perceptions among potential customers. Irrespective of the demographics, incentives from government for the purchase of electric vehicles have gained only limited awareness among the potential customers. People perceive that the price and maintenance cost is relatively high over other factors. Similarly charging infrastructure and drive range are perceived as low, and recharging time is perceived as high. Even though there are areas to improve for growth of EVs in India, there more 50% respondent are with the pan of owning an electric vehicle shortly.

XXI. BIBLOGRAPHY/REFRENCES

- <https://www.wikipedia.org/>
- <https://www.bmu.edu.in/social/future-of-electric-vehicles-in-india>
- <https://www.psmarketresearch.com/market-analysis/india-electric-scooter-and-motorcycle-market>
- https://www.reportlinker.com/p05882090/Electric-Two-Wheeler-Market-in-india-industry-outlook-and-forecast.htmlutm_source=PRN
- https://www.streetdirectory.com/travel_guide/56615/motorcycle/types_of_scooters_know_the_importance_of_electric_scooters.html
- <http://www.tandfonline.com/doi/full/10.1080/01441647.2016.1230794>
- <https://www.slideshare.net/PrashantBanglore/research-methodology-report>
- <https://www.tatacapital.com/blog/vehicle-loan/pros-and-cons-of-buying-electric-scooters-in-india/>
- <https://www.bikedekho.com/upcoming-scooters/electric>