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# An Analysis of Buying Decision for Electric Two Wheelers -A Study of Vidarbha Region

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**ABSTRACT:** The demand for electric vehicles (EVs) has significantly increased in recent years, but it represents only a tiny percentage of the total new vehicles sold globally. In 2021, the total sales of electric two-wheelers were less than 1% only. Therefore, the adoption of an electric two-wheeler (E2W) needs to be studied. This research develops a behavioral electric two-wheelers adoption intention model. The present study aimed to identify the factors that influence consumers' intentions to adopt electric two-wheelers. The questionnaire method was employed, and 120 valid responses were collected. The partial least squares structural equation modelling (PLS-SEM) was used to test the research hypothesis.

The empirical results indicate that environmental concern, perceived economic benefit, charging infrastructure, and social influence significantly impact consumers attitudes towards electric two-wheelers. Attitude also significantly affects the consumer's intention to purchase an electric two-wheeler. Perceived economic benefits were found to be the main factor influencing consumers to purchase electric two wheelers. The findings of this research also show that women are more inclined towards purchasing electric two-wheelers than men. These results offer useful information for governments and electric-two-wheelers companies to gain a better understanding of consumer behaviour towards purchasing electric two-wheelers.

## I.INTRODUCTION

In now a days competitive and fast- moving world is going on and automobiles play a very crucial role in any matter total lives of individuals. Be it productivity, better performance or tackling livelihood issues, vehicles save considerable time, energy and effort, helping as a provide a path between different place of travel. However concerns about greenhouse gas emissions and their disease the effects of global warming and also affected to environment have forced mankind to look for alternative fuel options.

All Major players in the automobile industry are currently going through a transitional phase the recent directive of Nitti Aayog to launch electric bikes. Although electric vehicles looking forward to best solution in terms of the above problem but a transitional shift when it comes to consumer buying/decision making process from petrol to electric vehicles is very slow. Hence the study was undertaken with the aim of understanding the perception consumer preference for two-wheeler electric vehicles and also customers their perception of various attributes of two wheeler electric wheeler decision making process. Under this research was conducted with a structured questionnaire data collection tool. Analysis of collected data provides better understanding consumer perception and preferences towards two-wheeler electric vehicles. Marketing implications of the findings are also provided which can be useful in design marketing and communication Strategies for Two Wheeler Electric Vehicle Dealers.

The demand for electric vehicles (EVs) has significantly increased in recent years, Representing only a small percentage of the total new vehicles sold globally. Electric Vehicles (EVs) are revolutionizing the world of road transport, but it is at a nascent stage in India. In 2020, global eclectic car sales touched 10 million, but it represented only 1% of Overall sales. Electric twowheelers (E2W) occupy the largest EV type with 25 million in 2020, mainly due to increased demand in Asian countries .Asia is the biggest market for Electric two-wheelers due to developing economies such as India, China, and Japan. India's Automobile market is dominated by two- wheelers, and more than 80% of automobile sales In India comes from two-wheelers.

The Indian government targets suggest that 30% Of all vehicles sold in India by 2030 will be electric to reduce air pollution. According to SIAM, 15,119,387 two-wheelers were sold in the year 2020–2021 in India, and out of these, 143,837 units were electric two-wheelers. In 2021, the total sales of electric two-wheelers Were less than 1% only. The adoption of electric two-wheelers (E2W) is very low in India despite various government initiatives. The EV two-wheelers adoption rate in India Is down due to high upfront costs, range anxiety, inadequate charging stations, and battery Replacement costs.



India is ranked as the third most polluted country in the world and received 22 Of the 30 most polluted cities. The air pollution is caused due to components like Nitrogen, sulphur, carbon monoxide, carbon dioxide, dust, and ash. India is the third largest emitter of carbon dioxide, which is one of the major causes for air pollution. India's transport sector is the third most CO<sub>2</sub>-emitting sector.

The MOSPI reports estimates that transportation sector contributes nearly 7.5% of the overall carbon dioxide emissions in India. In this context, the shift to electric mobility has become inevitable to reduce greenhouse gas (GHG) emissions as EVs emit 50% fewer greenhouse gases than petrol or diesel .EV adoption is, therefore, the best solution to tackle the hazardous air pollution levels in choked cities in India. There are different categories of electric vehicles, including battery EV, hybrid EV, plug-in hybrid EV, extended-range EV, and fuel cell EV. Electric two-wheelers mostly operate with the help of battery-run electric motors.

The electric two-wheeler category comprises of bicycles, mopeds, scooters, and motorcycles. Electric bicycles are commonly called electric bikes or e-bikes. The maximum speed is below 20 MPH. Electric scooters and motorcycles are commonly used in India. Electric two-wheelers use a lead-acid or lithium-ion battery. In 2021, Hero Electric and Okinawa E2W continue to lead the Indian market, accounting for over 50% of the total sales. Electric two-wheelers are more suitable for developing countries like India as they can use a portable battery, which can be recharged via a standard wall outlet from a home or office.

## II.LITERATURE REVIEW

**Prof. Manisha Jagtap & Dr. Anand Deshmukh** (2018) found in his study that the factors influencing the Consumer buying behavior are Brand Image, Showroom Services, Engine Capacity, Safety, New technology, Product design, Warranty period, Impact of peers, Driving Comfort, Mileage , Price and Engine Power. The Research identified apart from the factors, consumer behaviour is also influenced by the need, purchasing power and The price of the two- wheeler. The researcher also analyzed the reason behind the changes occurred in consumer Buying decision over to another brand which are is due to problems faced with the existing brand and due to the Desire of highly technological automobile and due to the change in the services offered by dealer before and after Purchase.

**A Jayaraj** (2017) explained about the buying behavior of consumers in purchasing two wheelers Involves several psychological factors that govern the individual thinking process (like motivation, perception and Attitude), decision-making steps involved in buying, interaction of the consumer with several groups like friends, Family and colleagues, group, and selection of the brand and outlet depending on features and emotional appeal (marketing mix). All consumers engage in shopping with certain fundamental decision-making modes or styles, Including rational shopping and consciousness regarding brand and quality.

**Mukesh Sharma** (2002) conducted "A Study on Consumer Awareness and Perception towards Genxt Electric Bikes". The study identifies and evaluates the consumer perception towards various factors about electric bike. The result of this study shows that there is a combination of both positive and negative effect on consumer perception. It also shows that maximum number of respondents is not aware of Genxt Electric bikes. So various promotional activities need to be taken in order to increase the awareness level & thereby increase the sales. Most of the respondents consider the cost and the mileage while purchasing a bike, so there are ample potential to electric bike in two wheeler sectors. But their battery performance, speed and appearance are the major factors, which is affecting the sales of electric bikes.

**Suraj Basha and Dr. B.C. Lakshmana** (2017) have written a paper on "A study on factors influencing Consumer's buying behaviour of two-wheeler with special reference to Rayalaseema region, Andhra Pradesh, India", The study revealed that consumer buying behavior influence by personal, psychological, social and cultural factors.

**Joseph Antony and Dr. Siby Thomas** (2017) conclude in their paper entitled "A study on factors influencing Purchase intention of consumers towards two wheelers" that consumers influenced by economic factors, features, Usage, brand image, aesthetics and social factors.

**Dr. Raj A. Jesu Kulandai, & Prof. Kaviarasu S. John,** (2015) found in his study that the Indian two wheeler Industry is expanding and growing up each year and the motorcycle segment is governed by various players i.e.Hero, Honda, Bajaj, TVS, Royal Enfield. The study notices that buying behavior of two-wheelers in Chennai city is Significantly influenced by a number of marketing stimuli offered by the manufacturers. It also reveals the people From low and middle class prefer two wheeler as it matches with their individual and family requirements.

**Suraj Basha and Dr. B.C. Lakshmana** (2017) have written a paper on "A study on factors influencing Consumer's buying behaviour of two-wheeler with special reference to Rayalaseema region, Andhra Pradesh, India",



Electric Two Wheeler	Normal Two Wheeler
<p>Electric bikes run on electricity alone, there is a battery inside the bike that needs to be charged to run an electric motor. Electric bike runs on electricity thus it does not produce harmful gases in the environment. And electric bikes are considered the safest mode of transportation because they do not emit carbon and harmful gases. Which helps in reducing the environmental pollution.</p>	<p>A petrol bike runs on fuel like petrol, it has an ICE engine ie; an Internal combustion engine, which combusts petrol to generate the energy by which the vehicle is driven. Petrol bikes have an outlet of CO2 carbon dioxide gas (CO2), which is very harmful and pollutes the environment.</p>
<p>Electric Vehicles are the future of India and they are emerging in India as electric bikes are safe, economical and require less maintenance. Air and noise pollution is a major drawback of petrol/Fuel bikes.</p>	<p>As discussed earlier, petrol bikes generate CO2 gas, resulting in environmental pollution. But on the other hand, electric bikes run on battery and it does not have any bad effect on the environment. This is one of the major differences between electric bikes and petrol bikes.</p>
<p>electric bikes are bit expensive but if we talk about the cost of running electric bikes vs petrol bikes in India, then these electric bikes are much cheaper than petrol bikes.</p>	<p>Whereas petrol bikes give you an average range of 500 to 700 km depending on your engine. So a person who travels less than 100 km a day can definitely opt for an electric bike.</p>
<p>Electric bikes have huge advantages due to their low running cost, economical, low maintenance requirement, and eco-friendly.</p>	<p>Where as petrol bikes are having less maintenances more reliable as well as durable too</p>
<p>electric Bikes takes about 6-7 hours to recharge completely. Even if it comes with a fast-charging battery, it will take a full 1 hour to recharge.</p>	<p>when we need to refill our petrol bike, it hardly takes 5-10 minutes to fill it completely.</p>
<p>Example, Ola</p>	<p>Example, Access 125</p>

### III. RESEARCH METHODOLOGY

Research methodology deals specially with the manner in which data is collected, analyzed and interpreted. The methodology may include publication research, interviews, surveys and other research techniques, and could include both present and historical information.

#### Scope of the Study

The geographical scope of the study is the Pune city of India. The geographical scope is decided based on the convenience of the Researcher and the fact that the Pune city is home for many youngsters from various parts of the country. The city attracts youngsters from all over the country due to great job opportunities and good education facilities. The operational scope is limited to electric two-wheelers and no other type of electric vehicle is considered. The sample scope is limited to the age group of 25 to 45.

#### A. Statement of Problem

The two-wheeler industry is the largest industry in the country automobile sector is a global market there is always change or modified in production and process technology in manufacturing sector help to improve economic growth. An average customer of a two-wheeler can be described as being at an active stage of development organization. The two-wheeler customer always preferences low cost as possible as, good average, safety is changing roads with heavy traffic and not so well constructed, Bikes are the most convenient, efficient and economical. When it comes to Electric- two wheeler, the price performance of this two wheeler is even better than normal bikes because electrics do not use fuel. In India there is a majority of middle class families who cannot afford high fuel prices, Electric bikes are the best solution. The Introduction of e-bikes is a great solution to reduce costs Energy conversation.



## B. Measure

This research help to identify the impact on the purchase intention of consumers towards the Electric 2-Wheelers in Shegaon-Khamgaon region .It also attempts to test the proposed hypotheses, and the relationship between the independent variables and the purchase intention. A structured questionnaire method can use to collect responses under the study. The statements can measured by Likert Scale from strongly disagree to strongly agree.

## C. Objectives:

- To identify factors considering while selecting **Electric- two wheeler**
- To compare **Electric- two wheeler** with regular fuel two wheeler
- A analysis the attitude and perception of customer while buying **Electric- two wheeler**
- To analyze the awareness of customer and general public about the availability of **Electric -two wheeler** in region

## D. Data Analysis:

- Primary Data Collection Method: Primary data is collected questionnaire and by personal interview, Discussion .
- Secondary Data Collection Method :The secondary data will be collected through internet and literature from books and brochure. From Internet.

e. **Research type:** Descriptive type of research. Descriptive type of research the study has been conducted through descriptive research as it will help identifying the cause of something that is happening. A structured instrument used to measure the characteristic described in the research questions using approach.

f. **Sampling:** Shegaon Khamgaon cluster is identified as good representative of Vidarbha region and hence sample use take conveniently from this cluster.

g. **Sampling size :** 120 user of bike

h. **Sampling Technique cluster region :** The Sampling technique would be Convenience Sampling technique.

i. **Data Collection Tools/Instruments :** Structured questionnaire technique using Google from through online is used for data Collection study and questionnaire was distributed to the respondents with a given before Filling. The data collect from various Interpretation such as

- Currently owned Two-Wheeler
- Currently owned two-wheeler brand
- Engine Capacity
- Looks and styles
- Riding comfort
- Cheap maintenance cost
- Engine pickup
- Goods mileage
- Availability of genuine parts
- Brand reliability
- Good braking system
- Headlights good visibility
- Engine kill switch and ES
- Innovative product

## Limitations:

- The survey is based on the respondents chosen Random from Shegaon- Khamgaon region.
- Hence the results of the study cannot be generalized.
- The sample size has been restricted up to 100 respondents.

## IV.SUGGESTIONS AND CONCLUSION

As globally people are getting more and more conscious towards environment-friendly living, it's the right time for the two-wheeler Industry also to move towards its eco-friendly option of electric vehicles. Electric two-wheelers can solve a big global issue of oil Availability and pollution control. It can take the world to a new era if all customers understand its value and start using only electric Vehicles. Electric two-wheelers can make the world a better place to leave by reducing pollution



at a higher rate. This change is possible only if electric two-wheeler companies and marketers can educate potential customers is the right way.

Electric two-wheeler marketers need to create awareness and develop positive customer perception about their products. It is important To increase the extent of marketing efforts for creating more awareness and creating positive customer perception in the Indian market. In India, many environmentalists are starting their campaigns. It is a good idea for electric two-wheeler companies to join hands with Them in their campaign. Another good suggestion is to increase advertisements and provide freebies for potential customers to test ride Electric vehicles.

When customers can test drive and check the performance efficiency of products at no cost, they will develop a positive Perception about the vehicles. One more way of creating positive perception is to provide rewards and recognition for reference Marketing. Electric two-wheeler marketers have to create public events and awareness programs to reach a wider potential customer base. It is Important to attach an eco-friendly and intelligent image with the choice of electric two-wheelers. For achieving this a young intelligent Brand ambassador should be utilized. It is also observed that no brand is having good recall in the customer's perception. So, all brands Can come together for creating awareness about eco-friendly transportation. Once industry settles properly later, they can compete for Their market share. Future research can be conducted with higher sample size and wider geographical scope for generalization of results.

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