



A study on Customer Satisfaction towards Electric Bikes with special preference to Coimbatore city.

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ABSTRACT:

India is the second largest producer and manufacturer of two-wheelers in the world. It stands next to Japan and China in terms of the number of two-wheelers produced and domestic sales. Indian two wheeler industry has got spectacular growth in the last few years. The face of auto industry that was redefined with the invention of fuel-efficient technology is all set to see dawn of a new era in two wheeler industry. It's not petrol or diesel or any other fuel, but it is electricity that has initiated a revolution in two-wheeler industry in India. Indian two-wheeler industry has embraced the new concept of Electric Bikes and Scooters that are very popular mode of personal transport in the developed countries like America, Japan and China. With the rising cost of fuel at International level, increasing levels of pollution and congestion in transport system especially in urban areas, higher running and maintenance cost of vehicle, the electrically charged bikes or scooters have very bright future in area of personal transportation. This Paper studies about satisfaction level of customers towards electric bike with special reference to Coimbatore city.

Key words: Electric bike, Two-wheeler, Scooters, Fuel-efficient, Energy saving

INTRODUCTION:

The feeling of freedom and being one with the Nature comes only from riding a two-wheeler. Indians prefer the two wheelers because of their small manageable size, low pricing and maintenance, and availability of loans on liberal terms. Indian streets are full of people of all age group riding two-wheelers. The populace sees motorized two wheelers as a symbol of status. Majority of Indians, especially the youngsters prefer motorbikes rather than cars.

Capturing a large share in the two-wheeler industry, bikes and scooters cover a major segment. Bikes are considered to be the favorite among youth, as they help in easy commutation. Large variety of two wheelers is available in the market, known for their latest technology and enhanced mileage. Indian bikes, scooters and mopeds represent style and class for both men and women in India.

India is the second largest producer and manufacturer of two-wheelers in the world. It stands next to Japan and China in terms of the number of two-wheelers produced and domestic sales. Indian two-wheeler industry has got spectacular growth in the last few years. The face of auto industry that was redefined with the invention of fuel-efficient technology is all set to see dawn of a new era in two-wheeler industry. It's not petrol or diesel or any other fuel, but it is electricity that has initiated a revolution in two-wheeler industry in India. Indian two wheeler industries has embraced the new concept of Electric Bikes and Scooters that are very popular mode of personal transport in the developed countries like America, Japan and China. With the rising cost of fuel at International level, increasing levels of pollution and congestion in transport system

especially in urban areas, higher running and maintenance cost of vehicle, the electrically charged bikes or scooters have very bright future in area of personal transportation.

During the last few decades, environmental impact of the petroleum-based transportation infrastructure, along with the peak oil prices, has led to renewed interest in electric transportation infrastructure. Electric vehicles differ from fossil fuel-powered vehicles in that the electricity they consume can be generated from a wide range of sources, including fossil fuels, nuclear power, and renewable sources such as tidal power, solar power, and wind power or any combination of those.

Global warming is becoming the major concern all around the world. There are several policies, promise and pledges 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 under gone paradigm shift along with this. We are also experiencing the negative effects of industrialization in the form of global warming. Under these circumstances there are so many vehicles emitting impure carbon particles and carbon dioxide pollution into the air. With increased number of fossil fuel dependent vehicles, there is a greater level depletion of fuel resource. It is here that automobile company's felt need to innovate motor pad vehicle that will get charged through electricity and will not be depending on fossil fuels. So many automobile manufacturing companies invested in research and development to bring forth Electrical-bike that will help people to save the fuel.

STATEMENT OF THE PROBLEM:

Two-Wheeler industry is one of the largest industries in the automobile sector of global market. Being the leader in product and process technologies in the manufacturing sector, it has been recognized as one of the drivers of economic growth. An average two-wheeler customer can be described as one who is at active stage of development of the organization. The difference that exists in income, literacy and culture make it a difficult task to Point out the two wheeler customers and his choice of preference. As he is living in an active environment, his needs will keep getting altered. With high traffic and not so well built roads, bikes are the most convenient, efficient and cost effective mode of transportation in India. People all over the country prefer to travel on bikes, which give them utility and cost efficient mode for transport. When it comes to electric bikes, the cost efficiency of these bikes are even better than normal bikes as there is no fuel consumption in electric bikes and in countries like India where there majority are of middle class families who cannot afford high fuel prices, electric bikes are the solution.

Introduction of electrical-bikes is a perfect solution to cut costs and energy conversation. There can be many models of electrical-bike and customer satisfaction towards electrical-bikes decides the fate of electrical-bikes. In this context, a study of this nature is felt relevant and an attempt is being made to analyze the customer satisfaction in detail.

OBJECTIVES

- To find out the awareness of consumer about the electric bike in Coimbatore city.
- To find out the reason why consumer refers to electric bike.
- To find out the factor influencing the sales of electric bike.
- To find the post purchase experiences of electric bike consumer.
- To find out the market share of different manufacturing companies dealing in electric bike.
- To suggest measures to increase sales of electric bikes.

METHODOLOGY OF THE STUDY

Primary data:

The primary data has been collected through questionnaires filled by 150 respondents who are all using electric bikes and conventional bikes.

Secondary data:

The secondary data has been sourced from various journals and websites.

Sampling area and sampling technique:

All the respondents have been chosen from the Coimbatore city based on convenient random sampling.

TOOLS USED:

- Simple Percentage Analysis.
- Chi-square Analysis.
- Likert Scale.

REVIEW OF LITERATURE

Elliot Fishman, Christopher cherry (2016) talked about that E-Bike speak to one of the quickest developing sections of the vehicle showcase. More than 31 million e-Bikes were sold in 2012. Research has pursued this development and gives a combination of the most relevant subjects rising over the past on the expanding point of e-Bike. The center is transport as opposed to recreational electric bikes look into, just as the most basic research holes requiring consideration. China drives the world in electric bikes deals, trailed by the Netherlands and Germany. E-Bike can keep up speed with less exertion. E-Bike is found to expand bike use. E-Bike can possibly dislodge ordinary mechanized (inside burning) modes, yet there are open inquiries regarding their job in uprooting customary bikes. E-Bike has been app to give medical advantages and a request of size less carbon dioxide than a vehicle venturing to every part of a similar separation. Security issues have developed as arrangement issue in a few locales and electric bikes numbers are currently moving toward levels in which satisfaction wellbeing information can be gathered. Research on Electric Bike is still in its earliest stages. As electric bike utilization keeps on developing, so too will the requirement for further research. So as to give the fundamental information illuminates Strategy creators and industry.

C Simon Washington, Nareiaee Haworth (2014) clarified that there are as of now in excess of 700 urban communities working bicycle share programs. Indicated advantages of bicycle share incorporate adaptable versatility. Physical movement. Emanations and fuel use. Certain or express in the figuring of program benefits are presumptions with respect to the methods of movement supplanted by bicycle share ventures. An optional and remarkable common and support, two parts are then consolidated to gauge bicycle offer's general commitment to changes in vehicle kilometers voyaged.

James Belies, Pyrou Chung, James Macdonald (2013) led an examination on "Empowering E bike utilize: This report looks at the control of intensity helped bikes in Australia and abroad. The present controls are investigated and purposes behind updating the directions in Australia are plot. The examination investigates the issues of significance to the encircling of controls covering these vehicles, and recognizes the activities that are expected to empower these vehicles to make a bigger commitment to the urban transport assignment.

Hatwar, N.; Bisen, A.; Dodke, H.; Junghare, A.; Khanapurkar, M. (2013). Projected a new approach in the design of e-bike which consists of hybrid system of battery and super capacitor for increasing speed, and avoid the complaints of long charging time and short lifespan of battery.

A study by Abdullah et al. (2013) has confirmed that the customer preference and their order of importance, price, quality of service, branding are considered to be the important customer dimensions in

automobile industry. Knowing these dimensions relative influence may result in better allocation of resources for effective services in electric vehicle industry.

Jennifer dill Geoffrey rose (2012), clarified that Electric Bike are progressively regular in China however are moderately uncommon in the United States. The meetings uncovered a few conceivable statistic markets for e-Bike that could extend the bicycling populace: ladies, more established grown-ups, and individuals with physical impediments. Proprietors of e-Bike noticed their capacity to travel longer separations and over slopes without any difficulty and to touch base at a goal, for example, work. Less damp with sweat and less drained than a customary bike would permit, highlights may beat a portion of the regular hindrances to bicycling for all socio economics'. The vast majority of the talked with electric bikes proprietors utilized their Electric bike to substitute movement by either human-fueled bikes or customary engine vehicles. Thusly. The electric bikes can address worries about medical issues identified with inertia. Contamination and Other open strategy issues to which private vehicles contribute. Further research is expected to decide if explicit approaches are expected to expand reception of e-Bike. The potential for strife between riders of e-Bike and of standard Bike due to speed differentials is a worry, Regardless of whether speed differentials will represent a noteworthy issue will depend not just on the degree of selection of e-Bike however the qualities of the riders.

Bhupendra kumar verma (2011) in his paper sates that on the basis of this study, the following suggestions can be made to help in sales of electric bike more effective. There is need to bring more awareness of various others feature of electric bike brings to a consumer mind by providing them vouchers and literature in different regional languages. There should be free, fair, justified and honest competition amongst the various electric bike companies.

Cherry C., Weinert J., Ma Z. (2007) conducted a study on "The Environmental Impacts of Electric Bikes in China," and found that Electric bikes have captured a large share of trips in many Chinese cities. They provide high levels of mobility and use little energy. This research investigates and quantifies the environmental implications of electric bike use in China particularly energy use, air pollution, solid waste and water use. A framework for policy analysis is presented and potential regulatory mechanisms are discussed. This investigation brings out the quantifying environmental impacts so that problematic parts of the life cycle can be addressed, rather than banning electric bikes all together.

Weinert, C.T. Ma, and C. Cherry (2006) in their study on "The Transition to Electric Bikes in China: History and Key Reasons for Rapid Growth." Examines how and why e bikes developed so quickly in China with particular focus on the key technical, economic, and political factors involved. This case study provides important insights to policy makers in China and abroad on how timely regulatory policy can change the purchase choice of millions and create a new mode of transportation.

Chris Cherry and Robert Cervero November (2006) Reveals in their study on "Use Characteristics and Mode Choice Behaviour of Electric Bikes in China," the electric bike usage in two large Chinese cities Kunmming and Shanghai. The study indicates that electric bike users are generally more educated and earn more than bicycle users. Electric bike users take more and longer trips in an average weekday than bicycle users and LPG users take much longer trips. In both Kunmming and Shanghai, electric bike users were observed to spend a larger portion of their travel time stopped at signals than Bike, as expected because of their higher free-flow speed.

ViorelTrifa, Calin Marginean, LiviuZarnescu (2006) conducted a Case Study Regarding "The Implementation of an Electric Bicycle Using Reluctant Motors". The article deals with an overview regarding the implementation of individual urban transportation using reluctant motor driven electric Bike. A particular case of Cluj-Napoca city is taken as reference. Study of opportunity, state of the art in the field of electrical driven bikes and a proposed solution in this field are presented. The study indicates the good performances with respect to requirements of an individual transportation vehicle in case of a hilly city as Cluj-Napoca.

Jonathan X. Weinert and Chaktan Ma, (2006) conducted a study on "The Transition to Electric Bikes in China: Effect on Travel Behavior, Mode Shift, and User Safety Perceptions in a Medium-Sized City". The authors have surveyed bike and electrical bike users in Shijiazhuang, a medium sized city with

particularly high two-wheeled vehicle (2WV) use, to identify differences in travel characteristics and attitudes. The study shows that e-bikes are providing low-income commuters a mode of transportation that provides high levels of personal mobility at low personal cost. This has important implications on energy use, accessibility and urban expansion of cities. People underserved by public transportation are shifting to e-bike and Women feel safer on an e-bike compared to regular bike, however they have strong reservations about increasing bike speed capability.

K.J. Astros, R.E. Klein (2005), clarified that the elements of bikes is dissected from the point Of view of control. Models Of various multifaceted nature are exhibited, beginning with straightforward ones and closure with progressively practical models created from multimode programming. Models that catch fundamental conduct, for example, self-adjustment just as models that show troubles with back wheel controlling are considered. Encounters utilizing bikes in charge instruction alongside recommendations for the sake Of entertainment and provocative examinations with demonstrated understudy fascination are introduced. At long last, bikes and clinical projects intended for kids with incapacities are depicted.

James Belias, Pyrou Chung, James Macdonald (2003) conducted a study on “Encouraging E-bike use: This report examines the regulation of power assisted Bike in Australia and overseas. The current regulations are reviewed and reasons for revising the regulations in Australia are outlined. The study explores the issues of relevance to the framing of regulations covering these vehicles, and identifies the actions that are needed to enable these vehicles to make a larger contribution to the urban transport task.

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.

C.C.Chan (2002) talked about a reality where condition assurance and vitality preservation are developing concerns. The advancement of electric vehicles (EV) and half and half electric vehicles (HEV) has taken on a quickened pace, fantasy of having industrially practical EVs and HEVs is turning into a reality, EVs and HEVs are step by step accessible in the market. This paper will give a diagram of the present status of electric and half breed vehicles worldwide and their cutting edge, with accentuation on the building logic and key innovations. Significance of the combination of innovations of vehicle. Electric engine drive, hardware, vitality stockpiling, and controls and furthermore the significance of the reconciliation of society quality from government, industry, explore establishments. Electric power utilities and transportation experts are tended to. The test of EV commercialization is examined.

Cervero (2002) study also recognized new dimensions such as cost and socioeconomic attributes of travelers Other than core dimensions density, diversity and design of electronic vehicles. Relatively very few studies have been conducted in favoring e-bike from the market side. The study highlighted the individuals' gender, age; occupation and income have its own impact on the choice of e-bike.

SIMPLE PERCENTAGE ANALYSIS:**TABLE 1: MEMBERS ELEGIBLE TO RIDE TWO WHEELERS IN A FAMILY OF THE RESPONDENTS**

MEMBERS ELIGIBLE TO RIDE TWO WHEELERS IN A FAMILY	NO.OF RESPONDENTS	PERCENTAGE
BELOW 2	62	41.30%
3-5	84	56%
5-7	3	2%
7 AND ABOVE	1	0.70%
TOTAL	150	100%

INTERPRETATION:

The above table shows that In below 2 category 41.3% are members eligible to ride two wheelers in a respondents family; in 3-5 category 56% of members eligible to ride two wheelers in a respondents family; in 5-7 category 2% of the members eligible to ride two wheelers in respondents family; in seven and above category 0.7% of members are eligible to ride two wheelers in respondents family.

TABLE 2: DID ADVERTISEMENT INFLUENCE YOUR BUYING DECISION?

DID ADVERTISEMENT INFLUENCE YOUR BUYING DECISION	NO. OF RESPONDENTS	PERCENTAGE
STRONGLY AGREE	11	7.30%
AGREE	45	30%
NEUTRAL	88	58.70%
DISAGREE	5	3.30%
STRONGLY DISAGREE	1	0.70%
TOTAL	150	100%

INTERPRETATION:

The above table shows that 7.3% of the respondents have strongly agreed that advertisement had influence their buying decision;30% of the respondents have agree that advertisement had influence their buying decision;58,7% of the respondents have neutral decision that advertisement had influence their buying decision ; 3.3% of the respondents have disagreed to advertisement had influenced to their buying decision.

TABLE 3: RESPONDENTS FEEL ABOUT THE PRICE OF THE ELECTRIC BIKES

FEEL ABOUT PRICE OF THE ELECTRIC BIKES	NO.OF RESPONDENTS	PERCENTAGE
VERY HIGH	15	10%
HIGH	42	28%
MODERATE	86	57.30%
LOW	7	4.70%
VERY LOW	0	0
TOTAL	150	100%

INTERPRETATION:

The above table shows that 10% of the respondents feel about the price electric bikes are very high; 28% of the respondents feel about the price of the electric bike is high; 57.3% of the respondents fell about the price of the electric bike is moderate; 4.7 % of the respondents feel about the electric bike is low.

CHI-SQUARE TEST:**TABLE 1: COMPARISON BETWEEN MONTHLY INCOME AND PRICE OF THE VEHICLE**

H_0 = There is no association between income and price of the vehicle.

H_1 = There is an association between income and price of the vehicle.

Chi-Square Tests

	Value	Df	Asymptotic. Significance. (2-side)
Pearson Chi-Square	17.640 ^a	9	.040

Source primary data

INTERPRETATION:

In the above table the P value (0.40) is greater than the significance value 0.05. so the null hypothesis is accepted. We conclude that there is no association between monthly income and price of the vehicle.

LIKERT SCALE:**TABLE 1: DISTRIBUTION OF SAMPLE RESPONDENTS ACCORDING TO SATISFACTION WITH TOWARDS MILEAGE OF ELECTRIC BIKES AS COMPARED TO CONVENTIONAL BIKES?**

Satisfaction level	No. of respondents	Likert scale	Total
Very good	43	4	172
Good	55	3	165
Average	36	2	72
Bad	21	1	21
Total	155	10	430

Source primary data

Likert scale = $\sum (FX) / \text{Total no. of respondents}$

$$= 430/155$$

$$= 2.77$$

Likert scale value is 2.72 and it is greater than the third value, so the respondents are good with towards mileage of electric bikes as compared to conventional bikes.

FINDINGS:**Simple percentage analysis:**

- Majority of the members eligible to ride two wheelers in a respondent's family are in 35 categories (56%).
- Majority of the respondents had a neutral idea that advertisement had influence their buying decision (58.7%).
- Majority of the respondents feel about the price of the electric bike is moderate (57.3%).

Chi-square test:

- There is **no significant relationship** between the monthly income and price of the vehicle.
- There is **significant relationship** between the monthly income and price of the vehicle

Likert scale analysis:

- The respondents are good with towards mileage of electric bikes as compared to conventional bikes.

SUGGESTION:

- Electrical-bikes are utilized just for short separation due to low battery limit, so producers should focus on innovative work to expand the limit of Electrical bikes.
- Another significant issue in Electrical-bikes is the requirement for visit charging of the batteries, to conquer this issue charging focuses ought to be opened at different spots.
- More number of service centers need to be opened at least in major areas to cater to the problems & needs of the customers when needed.
- As most of the people prefer high speed the speed of the electric bikes need to be improved so as to increase the sales of the Electrical-Bikes.

- Promotional activities should be increased to create awareness and increase the sales. Like it should be displayed in auto shows and to attract more youths demonstrations and special offers should be given to college students.

CONCLUSION:

The concept of e-bike has entered into Coimbatore in the past 4-5 years and the same is gaining momentum, as there are around 10 dealers currently for e-bike in the city. As an eco-friendly product it is more suitable for city as it can reduce the emission of harmful gases and thereby it can reduce the atmospheric pollution. Due to frequent increase in the fuel prices, the electrically charged vehicles seem to be the cheapest one compared to the traditional vehicles. Electric bikes are more suitable for rural areas where the numbers of petrol bunks are not adequate, so that the rural people can charge the vehicle with the help of electricity.

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