



Consumer satisfaction of electric Scooter with special reference to Raipur City

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Abstract :

In recent years, the shift in the electric vehicle segment, like e-scooter, has been very popular among users. This increasing shift in e-scooters is due to the increasing rate of gasoline, regular service, and government support. The Indian government is appreciative and promoting mode for electric vehicles by running various schemes like FAME 1 and 2, only electric vehicles on the road till 2030, special electric mobility zone, etc. Electric vehicles are slowing down carbon pollution. But there are some issues associated with electric scooters: build quality, charging time, and distance coverage. Both positive and negative factors are affecting consumer satisfaction. The present study was conducted in Raipur, the capital of Chhattisgarh, where the population is more than 40 lakhs. The research is focused only on the consumer satisfaction of electric scooter users. 46 samples were chosen for data analysis; this data was collected via questionnaire, and most of the respondents were male.

Keywords : electric scooter, consumer satisfaction, electric vehicles

1. Introduction

1.1 Electric vehicle : An overview

Innovation and time have a positive relationship with each other. Every innovation and discovery have been done to make human life easy and comfortable. Vehicles had been invented to make traveling easy and save people's time. These traditional vehicles run on fossil fuels, which are natural and non-renewable sources of energy. The population of India is growing by leaps and bounds, or any country is increasing, and the dependency on vehicles is also increasing. Therefore, traditional vehicles (car, bike, scooter, bus, etc.) are used by every consumer for transportation and travel. And that is why exploitation of natural resources and pollution of the environment are increasing due to carbon emissions. The transportation sector is one of the major causes of pollution.

Due to environmental pollution and the exploitation of natural resources, the concept of electric vehicles came into existence. Electric vehicles are the best substitute for combustible engine vehicles (a natural resource). Electric vehicles are fully powered by a chargeable battery, and they do not harm the environment through carbon emissions. Electric vehicles are strongly promoted by the Indian government by introducing various schemes in the EV sector. There are multiple segments in the electric vehicle sector, like E-Bus, E-Car, E-Riksha, and Offroad. E-Riksha and E-Scooter.

1.2 Electric Scooter Introduction :-

There is a large population in India that belongs to the middle class, which is why buying an electric car is a little hard due to its high ownership cost. E-Bus is not operating right now, and petrol vehicles contribution to carbon emissions is high. The e-scooter is a very good option to ride in the city because the travel cost is cheaper than a two-wheeler (traditional) and it has good boot space. Multiple brands came into existence in the electric scooter segment, like Ola, Ather, Okinawa, TVS, Bajaj, and many more, to meet market needs. In the electric vehicle segment, electric scooters are easy to own and available in all price ranges. According to a report from the RTO, registration of electric vehicles has increased in the recent few years in Raipur city. People who are shifting into the electric scooter segment either already have petrol two-wheelers or have switched from petrol two-wheelers. Every consumer has the habit of using old petrol vehicles for long-distance travel, good pick-up, and less time taking for fuel refill. All these habits are criteria for consumer satisfaction with electric scooters.

1.4 Advantages of electric scooters

There are multiple advantages in electric scooter segment

1. Riding cost is nominal so users can save their money.
2. These electric vehicles are environment friendly, hence leads zero carbon emission. So, health of people and animal are less affected.
3. Additional features of reverse gear mode, mode change, phone connectivity and navigation map on display are useful and helpful.
4. Cost of service is less than petrol vehicles because electric scooter has less component uses. Electric scooter does not need regular service.
5. Government is in favor to increase the dependency in electric vehicles because non renewable energy is available in less quantity and it is expensive. Indian government import this crude oil from other nations and this is one of the reasons of deficit balance of payment, so renewable energy is good alternative to balance this non-renewable source of energy dependency.

1.5 Challenges of electric scooters

There are multiple challenges in electric scooter segment which we want to discuss. This challenge plays an important role in consumer satisfaction and new consumer building.

1. The battery capacity of electric scooters is less, and as a result, this vehicle covers few km on average in eco mode. But the problem is that very few people run on eco mode because this mode compromises the riding performance in terms of speed and pick-up. So, most of the people could not ride more than 70 to 90 km.
2. Charging facilities are not available in most of the places; in Raipur city, only Ather provides free charging in 10 places and Ola in 2 places in Raipur; the rest in Raipur; the rest of the other companies are not providing public chargers.
3. The ownership cost of this electric scooter is too high, and the subsidy also does not get credit on time.
4. Blast in the battery during plug-in is one of the major issues for human life and assets, and this leads to fear among electric scooter users and for new users.
5. Users cannot take service from local service and repair centres; they must go to authorized service centres.

All these problems are faced in urban area but on a grass root level there might be some other challenges which could be faced in small cities and rural areas.

2. Review of literature

- **(V N & K, n.d.)** The researcher has conducted research on Consumers' satisfaction towards electric two-wheeler in Kasaragod district Kerala state, researcher collected 192 Ather users sample out of 3878 users in different age group and different gender. As further researcher stated that most of the electric two-wheeler users are Male from 30 to 39 years age group where 90 % of users are satisfied with price of electric two-wheeler, mileage, and power. Researcher suggested that Ather should focus more in

advertisement to get a greater number of consumers. Government employees are less interested to use electric scooters and providing discount can increase the number of users.

- **(Sivashakti, 2020)** In the research paper named A study on consumer satisfaction towards Ampere electric bike with special reference to Coimbatore city researcher stated that India is second largest producer and manufacturer of Two wheelers in the world. Petrol and diesel technology is strongly challenged by new revolution of electric technology as a result fuel technology is going to see down. Healthy environment is major concern all over countries hence electric bike is very helpful due to its environment friendly nature. Two-wheeler is majorly used for transportation and electric bike is best alternative options in all aspects like in terms of low-cost ride. Researcher found that 53% of respondents are e=female,30.8% people are 19 to 24 years age group and 56% of respondents are married, 62% respondents are satisfied with electric scooter.
- **(Bennett & Vijaygopal, 2018)** the researcher has focused to investigate the consumers self-image congruence in relation to purchase of electric vehicle .it touches various areas of a customers like its it attitudes towards environment friendly products, it also studies the link between willing and attitude towards purchase of electric vehicles by consumers. The study has been conducted in single country and mainly focuses on electric vehicle.
- **(Khurana et al., 2020)** a study on the adoption of electric vehicles in India: the mediating role of attitude. in this article researcher points out that pollution is a global concern. He says that the combustion engine release toxic emissions and it is one of the primary pollutants in air. To counter this electric vehicle are promoted all over the world. Government plays a vital role in promoting and provides incentives for switching to EV from traditional combustion engine vehicles. The paper mainly focuses on electric cars and its barriers to adaptation by consumers. The data was analysed by SEM (structured equation modelling).
- **(Aijaz, 2022)** Electric vehicles in India: filling the gaps in awareness and policy, the paper focuses on the governments attention towards electric vehicles in developing countries. The researcher has also studied the EV sector as a strategy to minimise the harm of transport towards human and environment both. It also gives attention towards the initiative taken by India in EV sector. The paper also highlights certain barriers in the manufacturing sector, adoption of EV etc. The result shows that there is a reduction in air pollution and fuel saving.
- **(Tuan et al., 2022)** Factors influencing purchasing intention toward electric vehicles in Vietnam, the study focuses on different factors which influence buyers to buy electric vehicles in Vietnam country. The study was conducted in December 2021 to January 2022 and consist of 406 samples of customers using electric cars. The result shows there was a positive impact on customers according to SEM results. The study has provided guidance to EV sector as well as Government. The study has also focused to find out the common factors that influence a buyer to buy an EV based on price, infrastructure, social awareness, or government key support. The study shows that the infrastructure plays a vital role in buying of EV. the study shows a comparison between developed and developing countries regarding the awareness level regarding EV.

3. Main objective of study

1. To know impact of additional attractive features in consumer satisfaction level;
2. To know challenges of electric scooters.

3.1 Hypothesis building

1. H_{01} = There is significant impact in satisfaction level among users by providing additional attractive features.
2. H_{03} = There is significant impact of long-distance coverage of electric scooters among users.

4. Research Methodology

Research methodology is a road map and structure where every question is answered what to do and how to solve a problem its major question in research work, so research methodology is step by step guide and tool to achieve results

4.1 Research design : An analytical study is conducted.

4.2 Sample size and method : Simple random sampling method is used to collect samples; large sample size 46 sample is collected and analysis in this study.

4.3 Data collection : Questionnaire were circulated by providing links to multiple users of electric scooters to collect data. Likert 5-point scale is also used to major satisfaction level of electric scooter consumers.

4.4 Limitation of study

1. Study is conducted area of Raipur.
2. Only electric scooter users are respondents.
3. Result may vary if sample size, place is changed.
4. Study is focused only in electric scooter segment.

5. Data analysis

1. Demographic details

Gender	Count	Weightage
Female	21	45.7%
Male	25	54.3%
Age group (in years)		
18 to 25	18	39.1%
26 to 35	20	43.5%
36 to 45	6	13%

Chart 01 demographic detail

2. Total duration of uses

Total uses in month	Count	Weightage
Below 6 months	16	34.8%
6 to 12 months	17	37%
12 to 18 months	11	23.9%
Above 18 months	2	4.3%

Chart 02 Duration of uses

3. Overall satisfaction level

	VD 1	SD 2	N 3	SS 4	VS 5
Overall ownership experience	3	0	4	18	21
Pick-up	0	0	4	12	30
Distance covered	5	3	6	18	14
Build quality	4	2	3	17	20
Charging time at home	7	12	5	12	10
Advanced features	1	0	6	15	24

Table 03 overall satisfaction

Criteria	Likert score	Interpretation
Overall ownership experience	4.17	Positive sentiment, greater than 3, respondents are satisfied and leaning towards very satisfied.
Pick-up	4.56	Positive sentiment, greater than 3, respondents are satisfied and leaning towards very satisfied.
Distance covered	3.71	Moderate satisfaction, greater than 3, most respondents are leaning towards satisfaction but not overwhelmingly so.
Build quality	4.02	Positive sentiment, greater than 3, satisfied but not leaning towards very satisfied.
Charging time	3.13	Moderate satisfied not overwhelming, almost at a mid-value.
Advanced features	4.33	Positive sentiment, greater than 3, satisfied respondents and leaning towards very satisfied. Alternate hypothesis 01 is accepted.

Table 04 Likert scale score

Likert scale analysis

VD Very dissatisfied numeric value 1

SD Somewhat dissatisfied numeric value 2

N Neutral numeric value 3

SS Somewhat satisfied numeric value 4

VS Very satisfied 5

Mid value is 3

Likert scale formula = $\text{Sum of (numeric value } \times \text{ count) } \div \text{ total respondents}$

Calculating value of Likert scale

4. Issues related to electric scooter

Issue list	Count	Rank
Long distance coverage fear	35	1
Charging infrastructure	26	2
Expensive replacement and repair cost	17	3
Subsidy waiting period	15	4
Short circuit and burning fear	9	5

Table 04 issue list

Above table 4 shows the issue list faced by users in a sequence that needs to be solved for better consumer satisfaction. Long-distance coverage has a major impact on consumers. Alternate hypothesis 02 is accepted.

6. Discussions :

- An increase in public charging availability in most places, like fuel stations, will build consumer's confidence in the rapid shift to electric scooters. Example: Jio Telecom started.
- The charging time at home should be reduced.
- Subsidy should be available as soon as possible; the government should investigate this and act against this time-taking subsidy process.
- The ownership cost of an electric scooter is a little high; companies should reduce the cost.
- Battery replacement costs is 50% of the cost of vehicles. Proper planning is needed.
- Electric scooter companies should increase the number of service centres and employees. And run a tie-up program with local service centres.
- Safety should be a top priority, and the government should make strict rules for the electric scooter industry.

7. Conclusion

India is the second-largest manufacturer and producer of two-wheeler segments in all over the country. There is a huge number of consumers who use two-wheelers as their primary mode of transportation. Most of the users have not yet shifted to the electric scooter segment, but there will be a good shift towards the electric bike/scooter segment soon, and that is why consumer satisfaction is a needful action to work on it for the government and electric two-wheeler manufacture. This study is focused on the consumer satisfaction of users of electric scooters, with special reference to Raipur city. It concludes that most of the respondents are satisfied with electric scooters, pickups, and advanced features. Only Ather and Hero are providing good public charging points. During the field survey, it was found that sales of Ola, TVS, Ather, and Bajaj is very good.

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