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A Study On Customer Satisfaction And Challenges Towards Electric Two Wheeler In Vatakara City

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ABSTRACT

This study aimed to identify the customers' satisfaction level and challenges on buying and utilizing the electric two-wheelers in Vadakara city. Data required for the study were collected from primary and secondary sources. The primary survey were conducted among the respondents through a pre structured questionnaire during the month of July 2024. A total of 100 respondents who are using electric two wheeler were selected in Vatakara city using a random sampling method. After cross checking and testing the reliability the four samples found to be counterfeit and then sample size confined to 96. The benefits and problems of consumers were identified by making use of Garretts ranking technique and factor analysis. The study revealed that all the age group were utilising the electric two wheeler as their mode of transportation. The study found that environmental benefits, quick recharge, simple to manage, less maintenance and convenience are the main benefit attracted the respondents while buying the electric two-wheeler. In the meantime, insufficient service centers, shortage of skilled workforce, lack of clarity in government policies and lack of knowledge regarding upkeep and services are the various barriers faced by the respondents during buying and utilizing the electric two wheeler.

Keywords: Electric, Two-Wheelers, Automobiles, Satisfaction, Consumers

INTRODUCTION

In today's competitive and quick paced world, automobiles play very significant part in individuals' overall life. Be it the efficiency, performance or coping with livelihood issues, vehicles save a significant amount of time and efforts aiding as a bridge between different commuting points. Larger part of Indians depends on two wheelers to cater their portability needs. Travelling has come long way from the days of the strolling to different shapes of cutting -edge transportation of the globalized world. The travelling time of the old times has been decreased definitely with the advancement of the science developments within the field of transport are still advancing. There are huge numbers of vehicles and brands that has been utilized within the nation for the transportation.

The world is encountering a noteworthy move towards feasible transportation as countries hook with the squeezing ought to combat climate alter and decrease their carbon emission. In reaction to these worldwide challenges, electric vehicles (EVs) have risen as a promising arrangement, advertising the potential to revolutionize the automobile industry and clear the way for a greener, cleaner future. Electric vehicles (EVs), especially electric two-wheelers, have seen critical development universally and in India over the final decade. The two wheeler fragment which shapes a huge portion of India's transportation biological system, has seen a developing move towards electric models, driven by their lower operational costs and eco-friendliness (Waheeduddin et al 2024)

The global electric two-wheeler market was valued at US$ 35.3 Billion in 2022, and it is projected to grow to US$ 72.5 Billion by 2028, reflecting a compound annual growth rate (CAGR) of 13.18 percent from 2023 to 2028. The rise in production of electric vehicles and their associated components is expected to elevate the manufacturing sector's contribution to GDP to over 24 percent by the fiscal year 2022-23(Sebastian ,2022).As reported by the Society of Manufacturers of Electric Vehicles, India experienced a remarkable rise in electric two-wheeler sales, reaching 846,976 units during the 2022-23 fiscal year, marking an increase of more than two and a half times compared to the 327,900 units sold the previous year (SMEV,2020). The journey to introduce electric two-wheelers in India began in the 1990s, with initial models developed by companies such as Bajaj Auto and Scooters India Ltd. Between 2010 and 2012, the Ministry of New and Renewable Energy (MNRE) offered subsidies for electric vehicles, as noted by Niti Aayog. Government data collected by clean mobility shift from the Vahan Dashboard reveals that there were only 72,930 newly registered four-wheeled electric vehicles in India in 2023. While this number is almost double that of 2022, the shift towards e-mobility in the South Asian nation mainly focuses on two-wheelers.

Electric vehicles represent an environmentally friendly alternative, utilizing electricity as their power source, which leads to a decrease in emissions and a reduced reliance on fossil fuels. They provide a driving experience that is efficient, quiet, and smooth, thereby promoting sustainable transportation. Daily, we

encounter various issues and reports that underscore the significant role electric vehicles play in transforming the transportation landscape. In a bid to diminish our reliance on fossil fuels, lower greenhouse gas emissions, and enhance air quality, governments worldwide are swiftly enacting legislation to encourage the adoption of electric vehicles. However, concerns regarding the reliability and safety of electric vehicles persist.

Kerala is among the first states in India to announce its e-mobility policy (Economic Review 2021). The state holds the second position in the adoption of electric two-wheelers, which are free from air and noise pollution. The market for e-two-wheelers in Kerala has grown by 13.66 percent in comparison to other states. In 2022, this growth stood at 6.28 percent. That year, the state registered 33,438 electric two-wheelers. Currently, electric vehicles play a critical role in addressing global climate change by aiding in emission reductions and lessening reliance on fossil fuels. A transition to 100 percent electric vehicles could lead to a reduction in pollution by 50 to 75 percent. At present, there is a growing interest among the people of Kerala in purchasing and learning about electric vehicles. Against this background it is essential to investigate the consumer satisfaction and challenges encountered by consumers when buying and utilizing electric two-wheelers in Vatakara city.

REVIEW OF LITERATURE

Hussain et al. (2022) found that respondents expressed a high level of satisfaction with the prompt pick-up and drop-off service, pricing, and simplicity of the booking process; they indicated they were “satisfied” with additional aspects such as convenience, speed, and safety. Elements such as convenience, brand reputation, affordability, speed, safety, ease of booking, and timely pick-up and drop-off options play significant roles in influencing a customer's choice to utilize Bykea electric bike services. Tejesh et al. (2023) discovered that environmental issues, government efforts, and increasing fuel costs are key factors driving the adoption of electric vehicles. It is crucial to tackle challenges such as range anxiety, charging duration, and a limited selection. Survey participants favour EVs with distances between 200 and 350 km, suggesting a promising outlook for the market. Nigam et al. (2023) stated that factors influencing customer satisfaction include the brand name, alert system, and motor power. Over 90 percent of respondents reported being satisfied with the bike's price, value for money, mileage, and maintenance. Sangeetha (2023) discovered that electric bikes may be slower but are steadily entering the two-wheeler market. The rise of electric bikes has intensified competition in this industry. Customers who are environmentally aware understand the importance of reducing pollution. The awareness among users of electric bikes is considered transformative at this point, as there is a necessity to transition away from the traditional systems that harm the environment. Krithika and Sunil (2024) revealed a predominantly favourable perspective among consumers, influenced by elements like convenience, environmental advantages, and cost efficiency. Nevertheless, it is essential for manufacturers and policymakers to tackle certain issues such as battery range, charging infrastructure, and safety considerations to further improve customer satisfaction and facilitate broader E-bike adoption.

STATEMENT OF THE PROBLEM

The two-wheeler sector is a significant segment in the global automobile industry. People prefer motorcycles because they are practical and economical for transportation. When it comes to electric motorcycles, they are even more cost-effective compared to conventional motorcycles due to the absence of fuel expenses. This is especially beneficial in countries like India where many middle-class households struggle with rising fuel costs. Electric two-wheelers offer a viable alternative that reduces expenses and energy usage.

There are many options available to consumers in the two-wheeler segment. The Electric Bike, in particular, has been a groundbreaking invention of the 21st century, helping to address environmental issues in our society. Its development has posed a formidable challenge to traditional engines in the automotive sector.

Consumer satisfaction is crucial in shaping the development of electric two-wheelers in the Indian economy. It serves as the link between consumer preferences and the product. With numerous models of electric two-wheelers available, the level of customer satisfaction plays a crucial role in determining their market success. Therefore, conducting a study focused on customer satisfaction is essential. In this regard, conducting a study focused on customer satisfaction, benefits and the challenges faced in relation to electric vehicles is of considerable importance.

OBJECTIVES OF THE STUDY

- To study the socio-economic characteristics of the respondents
- To analyze the satisfaction level of the respondents towards the electric two wheeler
- To find out the benefits and barriers on buying and utilizing electric two wheeler

Methodology

A Research Design is simply a structural framework of various research methods as well as techniques that are utilized by a researcher. It includes mode of data to be collected, sample to be selected and the analysis part of research. Vadakara is a Municipality city situated in Vadakara taluk of Kozhikode district. Data required for the study were collected from primary and secondary sources. The primary survey was conducted among the respondents through a pre-structured interview schedule during the month of July 2024. Secondary data were collected from websites, government reports, and publications. A total of 100 respondents who are using electric two-wheeler vehicles were selected from Vatakara city, using a random sampling method. After cross checking and testing the reliability the four samples found to be counterfeit and then sample size confined to 96. Besides averages and percentages, the following techniques like cronbach's alpha, Garrett's ranking and factor analysis were applied.

Findings of the Study

Socio-economic elements are crucial in shaping an individual's standing within society and directly influence the pursuits they are engaged. Table 1 depicts the details of the socio- economic condition of the respondents selected for the study.

Table-1

Socio-Economic Characteristics of the Respondents

Particulars		Number of Respondents	Percentage
Gender	Male	49	51.0
	Female	47	49.0
Age	Below 25 years	22	23.0
	25-35	43	44.8
	Above 35 years	31	32.2
Qualification	Post graduate	19	19.8
	Under graduate	46	47.9
	Plus two	21	21.8
	SSLC	10	10.4
Occupation	Professionals	47	49.0
	Business	39	40.6
	Students	10	10.4
Monthly income	Below 30000	32	33.3
	30000-50000	41	42.7
	Above 50000	23	24.0
Total		**96**	**100.0**

Source: Field Survey, 2024

Out of 96 respondents, 49 respondents (51 percent) are male and 47 respondents (49 percent) are female. The respondents were divided into three groups on the basis of age. Majority of the respondents (45 percent) were in the age between 25-35 years, 32 percent were above 35 years and 23 percent were in the age below 25 years prefer electric two-wheeler as their mode of transportation. The education status of the respondents revealed that 48 percent were having undergraduate degree, 22 percent were completed plus two, 20 percent of them were having post graduate degree and 10 percent of them were completed SSLC. The occupation status of the respondents depicted that nearly 48 percent of them were professionals followed by 41 percent of the respondents doing various business and 10 percent of them were students. The monthly income status of the respondents revealed that 43 percent of them had income between Rs 30,000-50,000, 33 percent of them have income below 30,000 and 24 percent of them have income above 50,000.

Table 2

Satisfaction Level Towards Electric Two Wheeler of the Respondents

Particulars		Number of Respondents	Percentage
Years of owned electric two wheeler	One year	48	50.0
	2-3 years	30	31.3
	Above 3 years	18	18.7
Satisfaction towards efficiency	Satisfied	38	39.6
	Neutral	32	33.3
	Highly satisfied	22	23.0
	Dissatisfied	4	4.17
Satisfaction towards durability	Satisfied	31	33.0
	Neutral	28	29.0
	Highly satisfied	27	28.0
	Dissatisfied	10	10.0
Satisfaction level on EV charging station	Satisfied	46	48.0
	Neutral	22	23.0
	Highly satisfied	16	16.7
	Dissatisfied	12	12.3
Overall satisfaction of electric two wheeler	Satisfied	42	43.7
	Neutral	26	27.0
	Highly satisfied	22	23.0
	Dissatisfied	6	6.3
Total		**96**	**100.0**

Source: Field Survey,2024

In the study, nearly 50 percent of the respondents have owned the electric two-wheeler in one year, in the meantime 31 percent of them bought electric two-wheeler between 2-3years and 19 percent of them bought electric two-wheeler for more than 3 years. Almost 40 percent of the respondents are satisfied with the efficiency of electric two wheeler in the interim 33 percent were neutral and 23 percent of them are highly satisfied. Only 4 percent of the respondents are not satisfied with efficiency of electric two-wheeler. Most of the respondents (32 percent) are satisfied with durability of electric two wheeler it is followed by neutral (29 percent) and highly satisfied (28 percent). Only 10 percent of the respondents are satisfied towards durability of electric two-wheeler. From the study its clear depicted that 48 percent

of the respondents are satisfied with EV charging station which is followed by 23 percent of them are neutral, 18 percent are highly satisfied and 12 percent of them were dissatisfied. In the overall satisfaction level of the electric two wheeler 44 percent are satisfied, 27 percent were neutral, 23 percent are highly satisfied and 6 percent of them are dissatisfied with electric two wheeler.

Benefits Towards the Usage of Electric Two-Wheeler

The present study made an effort to observe the benefits of the consumer towards the usage of electric two-wheeler. So, the selected consumer was asked to rank the various benefits they received during the usage of electric two-wheeler in their order of priority. The ranks were then converted into percent position and from the percent position the individual scores were determined on a scale of 100 points by using Garrett's rating scale. The average scores and the ranks corresponding to each purpose are shown in table 3.

Table – 3

Benefits Towards the Usage of Electric Two-Wheeler

Benefits	Scores	Rank
Simple to manage	54.95	3
Quick recharge	55.48	1
Low operating cost	50.79	7
Less maintenance	41.43	10
Outstanding resilience	47.26	8
Smooth and quiet operation	53.59	4
Relaxing and pleasurable driving experience	52.28	5
More maneuverable and stable	45.72	9
Convenient and cost-effective for use	51.24	6
Availability of colour and design	38.27	11
Environmental benefits	55.06	2

Sources: Field survey, 2024

In the study the consumers pointed out that benefits availed during the usage of electric two-wheeler they were ranked and discussed. From the above it was observed that from consumer point of view quick recharge (1^{st} rank), environmental benefits (2^{nd} rank), simple to manage (3^{rd} rank) smooth and quiet operation (4^{th} rank), relaxing and pleasurable driving experience (5^{th} rank) convenient and cost-effective for use (6^{th} rank), low operating cost (7^{th} rank) outstanding_resilience (8^{th} rank) more maneuverable and stable (9^{th} rank) less maintenance (10^{th} rank) and availability of colour and design (11^{th} rank). These are the various benefits afford by the respondents during the usage of electric two-wheeler. In a similar way,

Manoj et.al (2023) found that comfortable seat, easy handling, weight and quality, appearance and brand performance, quick pick up and less noise are the main benefit attracted the respondents while buying the electric two wheeler.

Problems Faced by The Consumers While Buying and Using the Electric Two-Wheeler

The automobile industry in India is introducing electric vehicles as a means to address challenges faced by both the industry and the environment (Ranjan et.al 2022). Among these electric vehicles, electric two-wheelers are gaining increasing popularity each day. An electric two-wheeler is defined as a vehicle that utilizes an electric motor to either supplement or completely replace pedalling. Factor analysis was used in the present study to identify the underlying pattern of relationship between various problems faced by the consumers while buying and using the electric two-wheeler can be grouped in terms of a composite variable.

The Cronbach's alpha to test the reliability or internal consistency of the scale, gave a value of 0.827 greater than the norm of 0.70 indicating good scale reliability. To determine the appropriateness of applying factor analysis, the KMO and Bartlett's test measure were computed and the results are presented in table 4.1. KMO statistics is .809 which is signifying higher than acceptable adequacy of sampling. The Bartlett's test of Sphericity was also found to be significant at one percent level providing evidence of the presence of relationship between variables to apply factor analysis.

Table-4.1
KMO and Bartlett's Test Measures

KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.809
Bartlett's Test of Sphericity Approx. Chi-Square	1.800E3
Degrees of freedom	190
Significance level	.000

Source: Estimation based on Field Survey, 2024

The communalities for each variable were assessed to determine the amount of variance accounted by the variable to be included in the factor rotations. All the variables had value greater than 0.50 signifying substantial portions of the variance accounted by the factors. Table 4.2 enlists the Eigen values, their relative explanatory powers and factor loadings for 10 linear components identified within the data set.

Table-4.2

Rotated Component Matrix

Problems	Component			
	1	2	3	4
Expensive vehicle price			.917	
Insufficient service centers	.923			
Shortage of skilled workforce	.840			
Vehicles with low mileage				.871
Extended charging duration		.909		
Issues in the supply chain		.825		
Lack of clarity in government policies	.869			
Lack of knowledge regarding upkeep and services	.849			
Elevated power cost			.768	
Lack of adequate charging station		.898		
Eigen value	**7.144**	**2.271**	**1.931**	**1.173**
Percentage of variance	**40.720**	**11.356**	**9.655**	**6.866**
Cumulative percentage	**40.720**	**52.076**	**61.731**	**68.596**

Source: Estimation based on Field Survey,2024
Extraction method: principal component analysis
Rotation method: Varimax with Kaiser Normalization, rotation converged in 6 iterations

The Kaiser rotated component matrix presented in table reveals that factor one had significant loadings on four dimensions namely insufficient service centers, shortage of skilled workforce, lack of clarity in government policies and lack of knowledge regarding upkeep and services which explains 40 percent of the variance. Factor 2 had significant loadings on three dimensions namely extended charging duration, issues in the supply chain and lack of adequate charging station it explains only 11 percent of the variance. Factor 3 had significant loadings on two dimensions namely expensive vehicle price and elevated power cost explains 10 percent of variance. Factor 4 had significant loadings on one dimension namely vehicles with low mileage explains 7 percent of variance. Hence these are the problems faced by the consumers while buying and using the electric two-wheeler vehicles among the sample respondents. Similar findings were reported by Javed et.al(2022) electric two wheeler can offer affordable, quiet and low emission options yet they are presently vying in a challenging market against a more developed but less eco-friendly alternative gasoline-powered two wheelers. Arjun(2023) stated consumers encounter significant challenges when using electric vehicles, primarily due to the scarcity of service centers and a shortage of skilled labor for repairs and maintenance. Sreekumar et al (2022) also initiate that lack of infrastructure, protracted charging times and restricted ranges are the barriers founded during the purchase and utilizing the electric two wheelers.

Conclusion

Nowadays Electric two-wheeler have become increasingly popular in our polluted world. Electric vehicles are gradually and consistently establishing their presence in the market for two-wheeled vehicles. This study reveals that all the age groups were utilising the electric two-wheeler as their mode of transportation. The quick recharge, environmental benefits, simple to manage, smooth and quiet operation, relaxing and pleasurable driving experience are the main benefits which influences the respondents during the buying and usage of electric two-wheeler. In the meantime, the insufficient service centers, shortage of skilled workforce, lack of clarity in government policies and lack of knowledge regarding upkeep and services are the various barriers faced by the respondents while purchasing and utilizing the electric two wheeler. Almost the respondents were satisfied with the productivity and robustness of electric two wheelers. More attention must be given to enhance and cultivate the brand of electric two-wheeler. The study will support marketing in understanding the problems faced by the consumer while buying and using the electric vehicles.

Suggestions

- To facilitate extended travel and shorten e-bike battery charging times, manufacturers of e-bikes and scooters may also think about leveraging solar energy.
- While manufacturers should focus on research and development to increase the capacity of electric bikes, the initiatives of conducting promotional campaigns will create a large pool of consumers to be attracted towards the electric two-wheeler.
- The government ought to offer financial aid and incentives to people who purchase electric vehicles.
- To a certain degree, tax price reductions can encourage people to buy electric vehicles.
- More charging stations may encourage more people to purchase electric vehicles.
- The government can bid adieu to crude oil and its exorbitant price by promoting electric vehicles.

References

- Arjun (2023) “Electric Vehicles Sales Soar In Kerala 2022” Published In Mathrubhumi
- Aswathy K K and Ushadevi K N (2024) “Problems Faced by the Consumers While Buying and Using the Electric Two Wheeler in Thrissur District”, Kerala, India Asian Journal of Agricultural Extension, Economics and Sociology, Vol. 42, No 5, Pg no 356-363.
- GOK (Government of Kerala) Economic Review 2021[on-line]; 2021. Accessed on:25 May 2023.
- Javed Syed Waqas and Hafiz Muhammad Khurram (2022) “Consumer Preferences For Adoption Of Two Wheeler Electric Vehicles” European Journal Of Technology Vol. 6 No.3, Pg no 37-48
- Krithika M and Sunil G E (2024) “Customer satisfaction towards Electric Bikes A Study In Hassan City”, Vol.12, No. 3 March, Pg No.647-682.

- Mohd Waheeduddin, Amtul Wahab, Asma Sultana, Asma Unnisa, Asra Sana and Asra Sulthana (2024) "A Study on Consumer Perception towards Two-Wheeler Electric Vehicles in Hyderabad" International Journal of Advanced Engineering and Management, Vol.2, No1, Pg no.743-746.
- NITI Aayog (National Institution for Transforming India) "Forecasting penetration of electric two-wheelers in India (on-line)" 2022. Accessed On: 20 May 2023.
- Ranjan I, Sawan K J, Shuvam MA (2022) "Study on consumer buying behaviour towards electric vehicle" International journal of Innovative Science Research Technology, Vol. 7, No.6, Pg no. 325-346.
- Sebastian G (2021) "Preference and adoption towards electronic vehicles among youngsters" International Journal of Advance Research Ideas Innovations in Technology, Vol.7, No.5, Pg no.606-609.
- SMEV (Society of manufactures of electric vehicle) Available: https://www.smev.in Accessed On:15 May 2023.
- Sreekumar V, Devadevan S, Baburaj A (2022) "An Analysis of the Socioeconomic Factors Affecting the Acceptance of Electric Vehicles in Kerala with Special Reference to Trivandrum", Amity Journal of Professional Practices, Vol.2, No.1.
- Tejesh, Susheela Devi Devaru (2023) "Consumer Buying Behaviour Towards Electric Vehicles in Bengaluru City, Karnataka", India International Journal for Multidisciplinary Research, Vol 5, No.5.