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Consumer Perception towards E-Bike: A Special Reference to Kalaburagi City, Karnataka State

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Abstract:

The electric bicycle (e-bike) is a newly emerging transport option that brings several environmental and individual benefits. Consumer perception studies have pointed to the importance of consumer attitude and green perceptions in the adoption of green innovations. The purpose of this paper is to identify how users of shared e-bikes perceive the greenness of shared. Results showed that increasing age, higher perceived benefits, both subjective and descriptive norm in favour of e-bikes, and familiarity with e-bikes were positively related, whereas perceived barriers related to usability and safety were negatively related to the intention to buy an e-bike. Environmental factors, such as poor weather and road conditions, appeared as the strongest barrier against e-bike use for both e-bike users and nonusers.

Keywords: Consumer Perception, Consumer behaviour, E-Bike, Kalaburagi City, Karnataka State

I. Introduction:

An e-bike is an assisted electric power bicycle with an integrated electric motor used to assist momentum. Many kinds of e-bikes are available worldwide, but they generally fall into two broad categories: bikes that assist the rider's pedal power and bikes. But this study is based on E-bikes only in Kalaburagi city of Karnataka State. E-bikes use rechargeable batteries and typically are motor-powered up to 25 to 32 km/h (16 to 20 mph). High-powered varieties can often travel up to or more than 45 km/h (28 mph), and new, developed E-bikes are powered up to 100 km/h.

The consumer perception towards e-bikes is influenced by several factors, including geographical location, age, income level, and lifestyle preferences. E-bikes have gained popularity in recent years due to their eco-friendliness, convenience, and cost-effectiveness. In urban areas, e-bikes are perceived as a practical and efficient mode of transportation for short to medium distances. They are also seen as a viable alternative to cars or public transport, especially for people who want to avoid traffic or parking problems. In rural areas, e-bikes are popular among outdoor enthusiasts and people who enjoy exploring nature, as they provide a more eco-friendly and accessible means of transportation than traditional bikes. Age is another factor that affects consumer perception of e-bikes. Older consumers tend to view e-bikes to stay active and maintain their mobility, while younger consumers often see them as a trendy and sustainable mode of transportation. Income level also plays a role, with consumers in higher income brackets more likely to view e-bikes as a luxury item or a status symbol. or e-bikes are becoming increasingly popular as an alternative mode of transportation. Many consumers are interested in e-bikes because they offer a greener and more cost-effective way

to get around. However, there may be some concerns or barriers that prevent some consumers from adopting e-bikes. Another perception of electric bikes is that they are expensive. While it is true that some electric bikes can be costly, there are also affordable options available. In fact, some electric bikes are priced similarly to traditional bikes. Additionally, electric bikes can be a cost-effective transportation option when compared to owning a car or using public transportation. In terms of lifestyle preferences, e-bikes are popular among people who prioritize environmental sustainability and active lifestyles. Additionally, e-bikes are viewed to reduce the costs associated with car ownership and maintenance, making them an attractive option for budget-conscious consumers. Overall, consumer perception towards the introduction of e-bikes is generally positive, with e-bikes increasingly seen as a practical, convenient, and eco-friendly mode of transportation.

II. Review of Literature:

Bishop et al. (2011) This work presents the findings of a small-scale electric scooter trial in Oxford, United Kingdom. The trial scooters were instrumented with global positioning satellite data loggers and energy meters to record their time-of-day usage and charging regimes. The scooters were most likely driving at 09:00, 12:45 and 17:15 and charging at 10:15–10:40. The electric scooter's normalized mains-to-wheel energy use was 0.10 kWh km−1.

Devshete et al. (2019) introduce the concept of an electric bike. He converted the normal bicycle into an electric one with an innovative approach. Charging of the Battery was provided by three ways, i.e. by means of wall charging, solar charging and by mechanical pedal. The focus of the concept was on System Architecture, operational Concept and Battery Management. Use of the PIC15F72 controller was used for overcurrent protection and undercurrent protection, which is helpful.

Evtimov et al. (2015) studied the consideration of energy efficiency on an experimental bicycle. the bicycle was fitted with a board computer to store information about motion and energy consumption. An experiment was carried out for three types of city routes. Without regeneration of energy, the electric bicycle could go up to 35 km. Studies show that the use of electric bicycles could reduce pollution up to 10 times compared to conventional vehicles.

Greaves et al. (2014). This paper assesses the extent to which current car travel needs could be met by BEVs for a sample of motorists in Sydney, assuming a home-based charging set-up, which is likely to be the primary option for early adopters of the technology. The approach uses five weeks of driving data recorded by GPS technology and builds up home-to-home tours to assess the distances between charging possibilities. An energy consumption model based on characteristics of the vehicle,

Halvorson and Hungate (2002), it is advisable to create a sustainable program for reaching a wide range of prospective customers, such programs with a wide range and the right target can create a positive perception in electric vehicle potential customers.

Kurani et al. (1996) suggested that to assess the effectiveness, efficiency, and feasibility of an electric vehicle awareness program, it is important to work in a proper Local context and resources.

III. Objectives:

1) To know the consumer perception towards E-bikes in Kalaburagi city.
2) To study the profile of the E-bike.
3) To analyse the consumer perception towards E-bikes.

IV. Scope of the Study:

The study, which is titled as the Study on Consumer Perception Toward the Electric Bike in Kalaburagi City, aims to assess the buying behaviour of the people. The study mainly aims to identify the buying behaviour of consumers in purchasing the Electric Bike and various factors that influence the consumer to purchase the same. The consumer costs and benefits that are to arise in using of the Electric Bike is also analysed. The study aims to bring out the reasons behind the post-purchase behaviour of consumers after buying the Electric Bike. The study primarily concentrates on assessing the opinions of consumers in the usage of the Electric Bike.

V. Methodology:

The Research Methodology is the process that is adopted by the researcher in collecting and analysing the information on the research topic. In the present study, both the primary and secondary data are taken into consideration, along with the 5-point Likert scale questionnaire. A simple random sampling technique was used with 50 samples, and five reputed E-bike company products were taken for this study.

VI. Limitations of the Study:

1. This Study of the Project is limited only to Kalaburagi City.
2. The sample size of the Project is restricted to only 50 respondents.

VII. Profile of E-Bike:

The electric bike (e-bike) market in India is experiencing rapid growth, fuelled by increasing environmental awareness, government incentives, and the rising cost of traditional fuel. Projections estimate a market size of $60.93 million by 2029, with a compound annual growth rate (CAGR) of 16.49% from 2025-2029. This growth is driven by factors such as the need for eco-friendly transportation and the convenience of e-bikes for short commutes. Some Growth Factors are as follows:

- **Government Support:**

The Indian government is actively promoting electric vehicles, including e-bikes, through initiatives like the FAME II scheme and various subsidies.

- **Infrastructure Development:**

Dedicated cycling infrastructure and charging networks are expanding, making e-bikes more practical for daily use.

- **Increased Awareness:**

Rising fuel costs and growing environmental consciousness are driving consumers towards sustainable transportation options like e-bikes.

- **Technological Advancements:**

Manufacturers are introducing innovative e-bike models with features like connected technologies and improved battery performance.

- **Shifting Consumer Preferences:**

E-bikes are becoming popular for both commuting and leisure activities, attracting a wider range of users.

E-Bike Manufacturers in India:

India's electric bike market is booming, with several manufacturers leading the charge toward sustainable urban mobility. This article highlights the top 10 e-bike manufacturers in India, each offering unique models tailored to various consumer needs. From Hero Electric's affordable options to Ather Energy's tech-savvy scooters and Ultraviolet Automotive's high-performance bikes, there is an e-bike for everyone. Whether you are seeking a cost-effective commuter bike, a feature-rich smart scooter, or a high-speed electric motorcycle, India's e-bike manufacturers are setting new benchmarks in innovation and design. Electric bikes, also known as e-bikes, are becoming increasingly popular in India due to their affordability, eco-friendliness, and convenience. With a variety of models and features available, it can be challenging to choose the right e-bike.

VIII. Analysis and Interpretation:

Table No. 1: Age-wise wise of the respondents

Age	Respondents	Percentage
15 - 30	11	22.0
31 - 45	15	30.0
46 - 60	14	28.0
More than 61	10	20.0
Total	**50**	**100.0**

Sources: Field Survey

Table No. 1 explains the age of the respondents in Kalaburagi city. Out of 50 respondents, maximum 15 (30%) respondents are under the age group of 31 to 45 followed by 14 (28%) of them comes under the age group of 46 to 60, 11 (22%) E bike users are under the age group of 15 to 30 and 10 (20%) respondents are more than 61 aged persons are using E-bikes in Kalaburagi city.

Table No. 2: Gender of the respondent

Gender	Respondents	Percentage
Male	32	64.0
Female	18	36.0
Total	**50**	**100.0**

Sources: Field Survey

This table displays the gender of the E-bike users. Out of 50 respondents, a maximum of 32 (64%) respondents are male and 18 (36%) respondents are female. In this researcher identified that males are more e-bike users than female customers in Kalaburagi city of Karnataka state.

Table No. 3: Marital status of the respondent

Marital status	Respondents	Percentage
Married	35	70.0
Unmarried	15	30.0
Total	**50**	**100.0**

Sources: Field Survey

The above table and graph illustrate the marital status of the respondents in Kalaburagi city. Out of 50 e-bike users, a maximum of 35 (70%) respondents are married, which means these respondents are thinking about savings as well as reducing the burden of queueing for petrol, and 15 (30%) e-bike users are unmarried, they are including students, newly joined for work, and jobless persons.

Table No. 4: Education Qualification of the respondent

Education Qualification	Respondents	Percentage
Illiterate	06	12.0
SSLC	07	14.0
PUC	12	24.0
Undergraduate	18	36.0
Master Degree	06	12.0
Other	01	02.0
Total	**50**	**100.0**

Sources: Field Survey

Table No. 4 portrays that education qualification of the respondents in Kalaburagi city of Karnataka state, a maximum of 18 (36%) respondents are completed their undergraduate degree followed by 12 (24%) of them studied upto PUC, 7 (14%) respondents are studied only SSLC, 6 (12%) e-bike users are finished their Master degree as the same percent illiterates also using these e-bikes and only one person means 2% of the respondents are other degree holders means doctorate persons.

Table No. 5: Occupation of the respondent

Occupation of the respondent	Respondents	Percentage
Student	08	16.0
Employed	21	42.0
Unemployed	04	8.0
Businessman	13	26.0
Retired	04	8.0
Total	**50**	**100.0**

Sources: Field Survey

In this table and graph expressions that, out of 50 e-bike users in Kalaburagi city, maximum 21 (42%) respondents are employed followed by 13 (26%) of them are business men or women these people are using these bikes as a food delivery, gas supply, Kirana material supply etc., 8 (16%) respondents are students using for school/College purposes, and 4 (8%) respondents are unemployed and retired persons also using e-bikes for their daily ride purpose.

Table No. 6: Monthly income of the respondent

Monthly income	**Respondents**	**Percentage**
Up to Rs. 10000	03	6.0
Rs.10001-Rs.20000	19	38.0
Rs.20001-Rs.30000	14	28.0
Rs. 30001-Rs.40000	06	12.0
Above Rs.40000	08	16.0
Total	**50**	**100.0**

Sources: Field Survey

Table No. 6 and the graph show the monthly income of the respondent. Out of 50 respondents, a maximum of 19 (38%) e-bike users are earning monthly Rs. 10,001 to Rs 20,000 in Kalaburagi city means these respondents are middle class people followed by 14 (25%) respondents are earning monthly income from Rs.20,001 to Rs.30,000, 8 (16%) e-bike users have more than Rs.40,000 income per month, 6 (12%) respondents have their family income Rs.30,001 to Rs.40,000 month and only 3 (6%) e-bike users earning monthly income less than Rs.10,000.

Table No. 7: Which company's E-Bike are you using

Using different companies' E-bikes	**Respondents**	**Percentage**
Hero Electric bikes	10	20.0
Bajaj E-Bikes	10	20.0
Ola E-Bikes	10	20.0
Elthor Electric Bike	10	20.0
ADMS Electric Bikes	10	20.0
Total	**50**	**100.0**

Sources: Field Survey

From the data, it can be interpreted that most of the respondents have purchased different companies' e-bikes in Kalaburagi City, but the researcher has taken only five reputed company products, which are mentioned in the table No. 7. Out of 50 respondents researcher has taken sample 10 each five companies from Hero Electric bikes, Bajaj E-Bikes, Ola E-Bikes, Elthor Electric Bike and ADMS Electric Bikes.

Table No. 8: Factors influencing the knowledge about E-Bike for the first time

Knowing about E-bikes	Respondents	Percentage
Online search	07	14.0
Friend/Family	17	34.0
Retail store	05	10.0
Advertisement	18	36.0
Social media	03	6.0
Total	**50**	**100.0**

Sources: Field Survey

From the data, it can be interpreted that most of the respondents have knowledge about E-Bikes, but how they got information for the first time in their lives in Kalaburagi city. Out of 50 respondents, maximum 18 (36%) e-bike users told from advertisement we got information about this product in first time in our life followed by 17 (34%) respondents told that we got information in first time from our family or friends, 7 (14%) customer are said from online, 5 (10%) respondents were told from retail stores of e-bikes and 3 (6%) users told from social media.

Table No. 9: Purpose of using E-Bike services

Purpose of using E-Bike services	Respondents	Percentage
For business purposes	09	18.0
For going to School/College	08	16.0
Going to the job every day	21	42.0
For casual use	12	24.0
Total	**50**	**100.0**

Sources: Field Survey

Table No. 9 illustrates the Purpose of using E-Bike services in Kalaburagi city. Out of 50 respondents, maximum 21 (42%) e-bike users have said going to the job every day by e-bike, these persons are teachers, daily wages people etc., 12 (24%) respondents are told for casual use purpose purchased e-bike, 9 (18%) customers told for business purpose using this bike especially for delivery persons, material suppliers etc., and 8 (16%) respondents are said for going to school or colleges purpose using this bike these are students only.

Table No. 10: Distance/duration of E-bike rides on every day

Distance/duration of E-bike rides on every day	Respondents	Percentage
Less than 1km	05	10.0
1 to 5 kms	09	18.0
5 to 10 kms	11	22.0
10 to 15 kms	17	34.0
More than 15 kms	08	16.0
Total	**50**	**100.0**

Sources: Field Survey

From the data, it can be interpreted that most of the respondents ride every day in Kalaburagi city and even interpreted as the riding distance of e-bike riding every day. Out of 50 respondents, maximum 17 (34%) respondents are told 10 to 15 Kms riding every day followed by 11 (22%) of them said 5 to 10 Kms running in every day, 9 (18%) respondents are told 1 to 5 Kms running every day, 8 (16%) e-bike users told that more than 15 Kms running and 5 (10%) respondents told less than 1 Kms per day.

Table No. 11: Biggest challenges or drawbacks of e-bike ownership

Challenges or drawbacks of e-bike ownership	Respondents	Percentage
Battery life	22	44.0
Safety	03	6.0
Charging Issue	15	30.0
Risk of theft	08	16.0
Maintenance	02	4.0
Total	**50**	**100.0**

Sources: Field Survey

From the data, it can be interpreted that the biggest challenges or drawbacks of e-bike ownership in Kalaburagi city. Out of 50 respondents, maximum 22 (44%) e-bike users face problems and challenges of battery, 15 (30%) respondents are faced charging issues of this bike when customer go to long ride, 8 (16%) respondents are told Facing risk of theft, 3 (6%) e-bike users said facing of safety and 2 (4%) respondents faced Maintenance of this bike.

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Table No. 12: Consumer thoughts regarding the price of e-bikes

Thoughts on the price of e-bikes	Respondents	Percentage
Very high price	02	4.0
High price	07	14.0
Average price	23	46.0
Low price	15	30.0
Very low price	03	6.0
Total	**50**	**100.0**

Sources: Field Survey

The above table explains consumer thoughts regarding the price of e-bikes in Kalaburagi city of Karnataka state. Out of 50 respondents, a maximum of 23 (46%) e-bike users told e-bikes price is not higher and not lesser but it's in the average price of comparing to traditional bikes, 15 (30%) respondents were said less price of e-bike, 7 (14%) customer told high price, 5 (10%) respondents told very less price and 2 (4%) customer told very high price. But these people's perception was different; they think that electrical bikes, the government should reduce the maximum price on these bikes.

Table No. 13: Satisfaction with the design, comfort, and build quality of E-Bike

Satisfaction with factors of E-Bike	Respondents	Percentage
Highly satisfied	11	22.0
Satisfied	23	46.0
Neutral	14	28.0
Dissatisfied	01	2.0
Highly dissatisfied	01	2.0
Total	**50**	**100.0**

Sources: Field Survey

From the data, it can be interpreted that Satisfaction with the design, comfort, and build quality of the E-Bike in Kalaburagi city. A maximum of 23 (46%) respondents were told satisfied with the design, comfort, and build quality of E-Bike, 14 (28%) respondents are neither satisfied nor dissatisfied about it, 11 (22%) customers were highly satisfied with these all factors, and each one respondent dissatisfied as well as highly dissatisfied regarding design, comfort, and build quality of E-Bike.

Table No. 14: Satisfaction with overall e-bike experience

Satisfaction with overall e-bike experience	Respondents	Percentage
Highly satisfied	07	14.0
Satisfied	26	52.0
Neutral	08	16.0
Dissatisfied	07	14.0
Highly dissatisfied	02	4.0
Total	**50**	**100.0**

Sources: Field Survey

The table above explains the Satisfaction level of the overall e-bike experience as reported by customers in Kalaburagi city. Out of 50 respondents, the majority of 26 (52%) e-bike users are satisfied with the overall e-bike experience, 8 **(**16%) respondents are neutral about it, and they are neither satisfied nor dissatisfied. 7 (14%) customers are highly satisfied as well as dissatisfied, and 2 (4%) respondents are highly dissatisfied.

IX. Suggestions:

- There is a need to increase the convenience for the Electric Bikes users in the areas of charging, mileage and carrying capacity of bikes. These areas have to be concentrated by the Research and Development of the Electric Bikes companies to enhance the convenience of Electric Bikes. This will promote the Electric Bikes.
- Electric Bikes are used only for short distances because of low battery capacity, so manufacturers should concentrate on research and development to increase the capacity of Electric Bikes.
- Another major problem in Electric Bikes is the need for frequent and quick charging of the batteries. To overcome this problem, charging centers should be opened at various places.
- Governments should make more environmental awareness programs and promote to use of electric vehicles by giving subsidies on prices. The government has given several schemes, but its awareness has not reached to the public properly, so please give the public awareness programs more and more.
- E-bike sellers and manufacturers should make a scheme of exchange for traditional bikes with e-bike purchases.

X. Conclusion:

The Electric Bikes have been the order of the day in this polluted world. The Electric Bikes are slowly and steadily finding it's space in the two-wheeler segment. The segment is now facing stiff competition from the availability of Electric Bikes. The need for pollution reduction is taken by consumers who are environmentally conscious. The study has highlighted that the awareness and satisfaction levels of the consumers are high when it understands the Electric Bikes. The conventional bikes are gradually losing their market space to the Electric Bikes. This is due to the enhanced awareness among the public regarding the pollution created by the

conventional system of travelling. The study throws up some interesting aspects regarding the transition of the public from the conventional system to Electric Bikes. The awareness levels of the Electric Bikes users are revolutionising at this point of time as there is a need for replacing the conventional system that pollutes the environment. This acts as major support for the producers of the Electric Bikes to attract consumers. The study also identified some of the areas of concern where the producers must concentrate to improve the goodwill and attract potential consumers towards the usage of the Electric Bikes. The post-purchase satisfaction of the Electric Bikes has also been acting as support for the promotion of the Electric Bikes. The areas that are provided in the suggestions remain to be solved, which will reduce the problems of the existing users and attract the potential users towards the Electric Bikes segment.

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