Journal of Research and Development
A Multidisciplinary International Level Referred and Double Blind Peer Reviewed, Open Access
ISSN : 2230-9578 | Website: https://jrdrvb.org Volume-18, Issue-1| January - 2026

Original Article

# A Study on Consumer Perception towards Electric Two-Wheelers in Ranebennur City

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**Manuscript ID**:
JRD -2026-180128
ISSN: 2230-9578
Volume 18
Issue 1
Pp. 126-130
January - 2026

**Submitted:** 17 Dec. 2025
**Revised:** 27 Dec. 2025
**Accepted:** 12 Jan. 2026
**Published:** 31 Jan. 2026

***Abstract***

*The present study provides an overall positive perspective towards electric bikes among the sample. It was observed that more people are willing to shift to electric vehicles in the near future, realizing their impact on the environment. There is a need to make more brands and models of EVs known to people as although they receive support, consumers are seen to remain unaware of various models in the market. It was also observed that various sources are acting as a medium to gain information and knowledge of electric vehicles, showing a general spirit of interest and curiosity. Respondents also revealed their willingness to pay a higher amount for an electric vehicle, compared to a gasoline one. This reflects an attitude that is in favor of electric vehicles, that people are willing to put that extra resource into buying them. Electric vehicles are also seen as a solution to global warming by a larger part of the sample.*

***Key Words:*** *Electric Bike, Market, Models, Global warming.*

## Introduction

India is a country with the third-largest road network in the world. Road travel seemed to be a preferred choice in India with over 60 % of the population using personal or shared vehicles to commute.Conventional vehicles are a major cause of global warming and environmental air pollution. All types of vehicles produce dust from brakes, tires, and road wear. The average diesel vehicle has a worse effect on air quality than the average gasoline vehicle. But both gasoline and diesel vehicles pollute more than the electric vehicle. Governments started using fiscal policies, such as road tax, to discourage the purchase and use of more polluting cars. Green tax is imposed while re registering the vehicle after 15 years of use to make people discontinue the use of polluting vehicles and encourage them for fuel-efficient and less polluting vehicles. Fuel taxes may act as an incentive for the production of more efficient, less polluting, vehicles and the development of alternative fuels. High fuel taxes or cultural change may provide a powerful incentive for consumers to buy lighter, smaller, fuel-efficient cars, or to not drive.

The FAME India Scheme is an incentive scheme for promotion of electric and hybrid vehicles. It aims to promote electric mobility and gives financial incentives for enhancing EV production and the creation of electric transportation infrastructure. In 2015 the Ministry of Heavy Industries and Public Enterprises launched FAME to incentivize the production and promotion of eco-friendly vehicles including EV and hybrid vehicles. The scheme is proposed for establishing charging infrastructure (Jose, 2018) The National Electric Mobility Mission Plan (NEMMP) 2020, a National Mission document providing the vision and therefore the roadmap for the faster adoption of EVs and its manufacturing This plan has been designed to boost national fuel security, to supply affordable and environmentally friendly transportation, and to enable the Indian automotive industry to attain global manufacturing leadership. Travelling has come long way from the days of the walking to various forms of modern transportation of the globalised world. The people use to travel by walking in the ancient times. Those were the days when people use to travel with the help of natural resources and without affecting the nature.



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**How to cite this article:**
*Chakki, R. (2026). A Study on Consumer Perception towards Electric Two-Wheelers in Ranebennur City. Journal of Research & Development, 18(1), 126–130. https://doi.org/10.5281/zenodo.18588532*

Quick Response Code:
Website: https://jrdrvb.org/
DOI: 10.5281/zenodo.18588532
OPEN ACCESS

Journal of Research and Development
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The pace of time has totally transverse mode of transports in the world. The evolution of the transportation has made giant leaps to the current stature. The travelling time of the ancient times has been reduced drastically with the innovation of the science. The journey of the development of the transports has drastically decreased the travel time. The scientific inventions in the field of transport are still evolving. The days of animal transportation for travelling are completely extinct in the modern world. The high power cars, bullet trains and air transport has made the transport sector as one of the prime sector that indulges in the manufacturing. The manufacturing base of the transport sector has high use of research and development in enhancing the performance of the vehicle. There are large number of vehicles and brands that has been used in the country for the transportation.

The usage of the engine in the vehicles has been largely developed with the help of the research and development wing based on the feedback and intention of the consumers of the market. The steam engine stood the primary in the beginning rather evolved and has come to the usage of electric engine in the polluted world. The classical evolution of the engines has put forward lot of environmental problems in the society. This environmental friendliness has been the need of the hour in the 21st century. The flow of the vehicles at theworld level has been constantly and geometrically incrediability to absorb the emitted pollutants. The research is looking forward to evaluate the potential degrading effects of the petrol and diesel engine of the environment. The mode of transport has also been changing the preferences towards the electric engines.The growth of the electric engines can be traced back to the 17th century. The strong foundation and need for the electric engine is not realized in that century. The globalised and modern world is realizing the importance of the electric engines in all ways of the life to minimize the effect of other modes of transport to the environmental degradation. The consumer's preferences and attitudes is deviating to a certain extent towards the usage of the electric engines. These preferences of the consumers will be added advantage to the manufacturers who are willing to adapt to the change. The probable flexible manufacturer can become the market mover of the automobile.

**Objectives Of The Study**

There is relation between the gender and information about electric bikes.

1. To study consumer awareness about e-vehicles.
2. To research the factors driving costumers to by electric vehicles.
3. To know the future need and perception of the people towards the electric vehicles.
4. To study the level of customer satisfaction towards electric vehicles.

**Need For The Study**

- The Electric Vehicle (EV) industry is still in its nascent stage in India.
- There is a lot of need to create awareness among the general public to make this alternative model successful.
- While it is for sure that sooner or later the electric vehicle will emerge as a strong component, for the time being there is the need for educating the customers to arouse a need for the product.

**Literature Review**

History repeats itself. A famous quote has been proved right, by the powerful emergence of EV again in the Indian transport industry. The use of electric vehicles was in life before 1918 but it almost completely vanished with the development of gasoline-powered internal combustion engine vehicles. These fueled cars put the story of electric vehicle manufacturing on to a sleep mode. But 2017 has again revived the story, with the concept of making EV for longer distance drives too and upliftment in a vehicle maintenance support system by the Government. Technology perception and adoption has two aspects: first is the attribute of technology and second is of the adopter. In management perspective it can be explained through "innovation diffusion theory (IDT) (Rogers, 1962) and subsequent extensions (such as the TOE framework. Sternitzky and Fleischer, 1990). This relates to adoption of new technology based on usefulness (performance expectancy), ease of use (effort expectancy) Social influence and facilitating conditions (Venkatesh and Davis, 2000: Venkatesh et al., 2003)". These parameters also play a very crucial role in the adoption of Electric Vehicles.

**Janardan Prasad Kesari (2019**), Developing an aggressive strategy for the adoption of EVs in India and ensuring a well-executed implementation is a challenge but vital for the government. The geography and diversity of India will present problems that require thoughtful solutions. Public procurement is expected to be an important driver of growth of EVs, with the purchase of four wheeled vehicles for government offices, three-wheeled vehicles and buses for public transport. Investments by fleet operators such as Ola and Uber, and operators of food distribution services, are also expected to boost the initial growth of two- and four wheeled electric vehicles. However, the private EVs may take 5-6 years to gain popularity and acceptance.

Pretty Bhalla (2018), Choice of cars depends upon environmental concern, cost, comfort, trust, technology, social acceptance, infrastructure availability. These arguments have been tested for both conventional cars and EVs. They assume that these factors have direct influence on individual choice of vehicle. They found that EV manufacturers and Government have to invest more in social acceptance of the vehicle by creating more infrastructural facilities, putting more thrust on technology to create trust. The analysis depicts that the population is well aware of the environmental benefits. The responsibility lies on the shoulders of the Government and manufacturers to investing in the manufacturing of vehicles.

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**Lingzhi Jin, Peter Slowik (2017**), The early market growth for electric vehicles continues, but a number of barriers prevent their widespread uptake. These barriers include the additional cost of the new technology, relative inconvenience of technology considering range and charge times, and consumer understanding about the availability and viability of the technology. This last point, typically referred to as ―consumer awareness,‖ is crucial.

**Sabri et al., (2016)** It is important to mention that dual-mode has contributed not only to conventional HEV technologies but also to some plug-in HEV technologies. Conventional HEV technologies have been researched extensively and have vastly improved.

**Rezvani et al (2015)** review work discusses the adoption of electric vehicles using various theoretical frameworks. He explained consumer EV adoption behavior from various theoretical perspectives like mix, planned and symbolic behavior. The maximum studies on EV adoption are revolving around technological, individual, social parameters.

**Methodology:**

Research methods are the techniques and tools by which you research a subject or a topic. Research methodology involves the learning of various techniques to conduct research and acquiring knowledge to perform tests, experiments, surveys, and critical analysis. Research methodology simply refers to the practical ―how of any given piece of research. It‘s about how a researcher systematically designs a study to ensure valid and reliable results that address the research aims and objectives.

**Hypothesis / Analytical Tools:**

**Chi-Square Test:**

A chi-square statistic is one way to show a relationship between two categorical variables. In statistics, there are two types of variables: numerical (countable) variables and non-numerical (categorical) variables.

**Marital Status of The Respondents.**

| Gender | No of Respondents | Percentage (%) |
|---|---|---|
| Male | 58 | 72.5 |
| Female | 22 | 27.5 |
| Total | 80 | 100 |

From the chart 72.5% of the respondents are male. 27.5% of the respondents are female. The maximum 58 is male respondent and the minimum 22 is female respondents.

**Occupation of the Respondents**

| **Occupation** | **No of respondents** | **Percentage (%)** |
|---|---|---|
| Government Employee | 10 | 12.5 |
| Private Employee | 22 | 27.5 |
| Profession | 07 | 8.75 |
| Business | 21 | 26.25 |
| Student | 11 | 13.75 |
| Labor | 09 | 11.25 |
| Total | 80 | 100 |

**Interpretation**

From the chart 12.5% of the respondents are government employees. 27.5% of the respondents are private employees. 8.75% of the respondents are professionals. 26.25% respondents are doing their business. 13.75% of the respondents are students. 11.25% of the respondents are labors. The maximum 22 respondents are private company employees and the minimum 7 respondents are professionals.

**How Did You Come To Known About Electric Bikes?**

| Sources | No Of Respondents |
|---|---|
| Newspaper/Magazine | 13 |
| Television | 17 |
| Internet | 24 |
| Friends/Family | **21** |
| Others | **05** |
| Total | **80** |
| | |

**Chi Square Test**

The Chi-square ($\chi^2$) test represents a useful method of comparing experimentally obtained results with those to be expected theoretically on some hypothesis. Thus Chi-square is a measure of actual divergence of the observed and expected frequencies.

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**Observed Value:**

| Gender | Newspaper Magazine | Television | Internet | Friends/ Family Members | **Others** | Total |
|---|---|---|---|---|---|---|
| Male | **10** | **14** | **17** | **13** | **4** | **58** |
| **Female** | **3** | **3** | **7** | **8** | **1** | **22** |
| **Total** | **13** | **17** | **24** | **21** | **5** | **80** |

**Expected Value:**

| | Newspaper/ Magazine | Television | Internet | Friends/ Family Members | Others |
|---|---|---|---|---|---|
| Male | 58*13/80 = 9.43 | 58*17/80 = 12.33 | 58*24/80 = 17.4 | 58*21/80 = 15.23 | 58*5/80 = 3.63 |
| Female | 22*13/80 = 3.58 | 22*17/80 = 4.68 | 22*24/80 = 6.6 | 22*21/80 = 5.78 | 22*5/80 = 1.38 |

**Calculation Of $X^2$ :**

| Observed Value | Expected Value | (O-E) | $(O-E)^2$ | $\chi 2 = \sum (O-E)^2/E$ |
|---|---|---|---|---|
| **10** | 9.43 | 0.57 | 0.3249 | 0.0345 |
| **14** | 12.33 | 1.67 | 2.7889 | 0.2262 |
| **17** | 17.4 | -0.4 | 0.16 | 0.0092 |
| **13** | 15.23 | -2.23 | 4.9729 | 0.3265 |
| **4** | 3.63 | 0.37 | 0.1369 | 0.0377 |
| **3** | 3.58 | -0.58 | 0.3364 | 0.094 |
| **3** | 4.68 | -1.68 | 2.8224 | 0.6031 |
| **7** | 6.6 | 0.4 | 0.16 | 0.0242 |
| **8** | 5.78 | 2.22 | 4.9284 | 0.8527 |
| **1** | 1.38 | -0.38 | 0.1444 | 0.1046 |
| | | | Total | 2.3127 |

General Significant Level = 5% = 0.05
Degrees Of Freedom = (Column –1 ) ( Rows –1)
= (5 – 1) (2 – 1)
= 4

**X2 Tabular = 9.488**
(Or Called As X2 Critical)
Significant Level (X) = 0.05
**X2 calculate = 2.3127**
**X2 calculate < X2 tabular (OR CALLED AS $\chi 2$ CRITICAL)**
**Inference:** Since the X2 calculate 2.3127 is smaller than X2 tabular 9.499, the null hypothesis is accepted, and alternate hypothesis is rejected. Therefore there is no relation between the gender and information about electric bikes.
**Inference:** We accept null hypothesis, and reject alternate hypothesis. **Null Hypothesis** There is no relation between the gender and information about electric bikes.

**Conclusion**

The present study provides an overall positive perspective towards electric bikes among the sample. It was observed that more people are willing to shift to electric vehicles in the near future, realizing their impact on the environment. There is a need to make more brands and models of EVs known to people as although they receive support, consumers are seen to remain unaware of various models in the market. It was also observed that various sources are acting as a medium to gain information and knowledge of electric vehicles, showing a general spirit of interest and curiosity. Respondents also revealed their willingness to pay a higher amount for an electric vehicle, compared to a gasoline one. This reflects an attitude that is in favor of electric vehicles, that people are willing to put that extra resource into buying them. Electric vehicles are also seen as a solution to global warming by a larger part of the sample.

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