

# A COMPARATIVE STUDY USING THE INDIAN MARKET TO EXAMINE CONSUMER ACCEPTANCE OF ELECTRIC VS PETROL BIKES

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## Abstract

The motorcycle is the most well-known vehicle in the world. A higher percentage of people use two-wheelers globally. Since two-wheelers are more practical for driving, most young people in India prefer to ride bikes instead of driving cars. India is the second-largest two-wheeler manufacturer in the world. On the market, a large variety of two-wheelers with contemporary technology and mileage are available. Large vehicle riding on India's city roadways is a very difficult experience. However, as fuel-powered motorbikes become more popular, there will be a shortage of fuel and an increase in global warming, necessitating the urgent adoption of alternative, ecologically friendly bike kinds. Since they produce less pollution in the environment, electric bikes are among the more environmentally friendly modes of transportation. The main objective of this step is to ascertain the level of public awareness regarding electric bikes.

**Keywords:** Motorcycle, Mileage, Transportation, Pollution, Environment

**Introduction** A major change toward sustainable transportation options has been observed in the automotive industry in recent years, as a result of increasing environmental concerns and the necessity to wean off of fossil fuels. The rise of electric cars (EVs) as a competitive substitute for conventional internal combustion engine vehicles is one noteworthy shift. When it comes to two-wheelers, electric bikes, or e-bikes, have drawn a lot of attention as an environmentally benign form of transportation that might completely change urban mobility. In contrast, because of their existing infrastructure, perceived performance benefits, and ease of use, petrol bikes continue to be the preferred option for a large number of consumers. In the context of the Indian market, this dissertation attempts to investigate and contrast customer acceptability of electric bikes vs

gasoline bikes, giving light on the factors influencing purchasing decisions and the implications for the future of mobility in India. Future transportation systems that are sustainable must be accessible, inexpensive, inclusive, and quiet in addition to being safe, secure, and green. The environment and society have benefited greatly from the electrification of road vehicles, primarily in terms of improved urban air quality and decreased reliance on fossil fuels. Carbon dioxide (CO<sub>2</sub>) and other pollutants like nitrogen oxides (NO<sub>x</sub>) are not released by electric vehicles. An electric bicycle, commonly referred to as an e-bike or e-bike, is a bicycle that has an integrated electric motor for propulsion assistance.

While there are many different types of e-bikes on the market, they may be divided into two main categories. Bikes that integrate moped-

like functionality, such as those that support the rider's pedaling style and those with an added throttle. Since both still allow the rider to pedal, they cannot be classified as electric motorcycles.

Many people think electric bicycles are a new invention, but they are not. The first electric bikes appeared in the late 1890s and were documented by various U.S. patents. In December of 1895, Ogden Bolton jr. was granted U.S. patent 552,271 for a battery – powered bicycle with “6-pole brush-and-commutator direct current hub motor mounted in the rear wheel”. There were no gears and the motor could draw up to 100

### **Key issues and challenges**

E-bike adoption is sluggish in India, where gas bikes continue to rule the market due to a number of important problems and obstacles.

1. **Limited Knowledge and Experience:** Given that petrol bikes have long dominated the Indian market, many buyers there may not be familiar with or aware of e-bikes, supposing them to be novel or unproven.
2. **Perceived dependability and Performance:** Based on their perceptions, consumers may favor petrol bikes over e-bikes for their transportation needs because
5. **Policy and Regulatory Support:** In India, the lack of incentives and supportive policies for e-bikes could prevent e-bikes from being widely adopted since customers might lose faith in the long-term sustainability and legality of e-bike use.

### **RESEARCH METHODOLOGY**

In order to examine customer adoption of electric bikes (e-bikes) over petrol bikes in the Indian market, this dissertation used a

amperes from a 10-volt battery. Two years later, in 1897, Hosea W. Libbey of Boston invented an electric bicycle that was propelled by a “double electric motor”. The motor was designed within the hub of the crankset axle. This model was later 1990s by giant lafree electric bicycles, By 1898 a rear wheel drive electric bicycle, which used a driving belt along the outside edge of the wheel was patented by Mathew J. Steffens, And in 1899 U.S. patent 627,066 by John Schnepf depicted a rear wheel function “roller-wheel” style drive electric bicycle. Schnepf’s invention was later reexamined and explained in 1969 by G.A. Wood’s device motors, connected through a series of gears.

they believe that petrol bikes offer better dependability, performance, and range.

3. **Infrastructure constraints:** Customers may be worried about range anxiety and the hassle of charging their vehicles if there is insufficient infrastructure in India for e-bikes. This could be a major obstacle to adoption.
4. **Cost considerations:** Given that petrol bikes have a lower beginning cost than e-bikes, many Indian buyers may view the former as being too expensive. Prospective buyers may also be discouraged by worries about the expense of replacing batteries and ongoing maintenance for e-bikes.

mixed-methods strategy that combined quantitative and qualitative techniques.

The methodical approach to conducting research and gathering data in order to answer a certain study question or goal is known as research methodology. It involves a number of steps, such as establishing the research problem, choosing suitable approaches and strategies, gathering and evaluating data, and formulating findings supported by empirical evidence. To ensure that study findings are valid, reliable, and

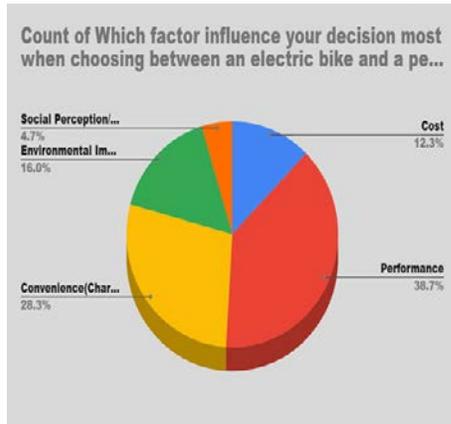
generalizable, a well-designed research technique is necessary.

**DATA COLLECTION:** The data for the purpose of the present study have been collected through primary and secondary data. Primary data has been collected through constructed questionnaire.

The secondary data has been collected from magazines and published journals. A total of 106 respondents have been collected for sample.

**RESEARCH DESIGN:** To gather quantitative data on consumer acceptability of petrol and e-bikes, together with

**DATA ANALYSIS**



Performance is the most influential factor when choosing a bike.

Convenience such as charging or refueling is the second most influential factors.

Social perception, cost and Environmental Impact are the least influential Factors.

**FINDINGS**

**Consumer Perceptions and Preferences:**

Due to factors including ease, cost savings on gasoline, and environmental sustainability, the majority of respondents had a positive view

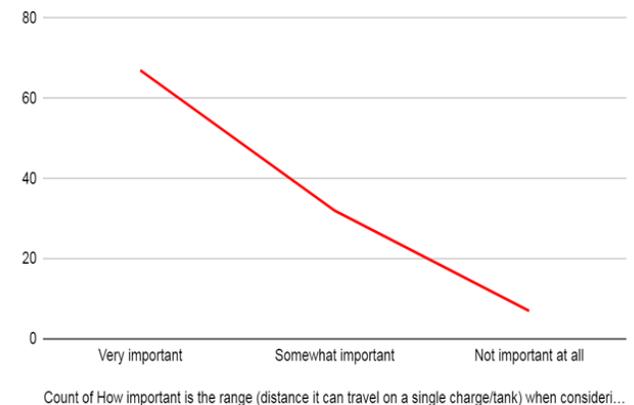
demographic data and other pertinent variables, a survey instrument was created. Because of its accessibility, user-friendliness, and real-time data collection and analysis capabilities, Google Forms was chosen as the survey platform.

**METHOD OF SAMPLING:**

Convenience sampling was used in the study to select participants from a range of Indian geographic regions and demographic backgrounds.

The poll was distributed to participants via a number of methods, such as professional networks, and social media sites.

**Count of How important is the range (distance it can travel on a single charge/tank) when consid...**



Most of the respondents consider Range (distance it can travel on a single Charge/tank) as very important factor.

Very few responded as somewhat Important

about e-bikes. Performance, range, battery life, charging infrastructure, and brand reputation were some of the elements that shaped people's perceptions of e-bikes.

**Reliability and Performance:**

High levels of satisfaction were expressed by e-

bike owners with the vehicles' dependability and performance, especially in urban environments where e-bikes provide benefits including easier parking, less traffic, and increased maneuverability.

Although improvements in charging infrastructure and battery technology were mentioned as mitigating factors, adoption of e-bikes was found to be potentially hampered by worries about their range and battery life.

### **Cost-related factors:**

Respondents acknowledged the long-term cost benefits of electric mobility, such as cheaper fuel and maintenance expenses, even though they thought e-bikes were initially more expensive than gas-powered bikes. Making e-bikes more accessible and cheap for a larger variety of consumers can be achieved through government subsidies, incentives, and financing alternatives.

### **Awareness of the Environment:**

Consumer choices for e-bikes were heavily influenced by environmental factors; many respondents cited concerns about air pollution, greenhouse gas emissions, and climate change as reasons for selecting electric mobility options. The growth of e-bikes among environmentally aware consumers was mostly driven by their perceived environmental benefits, especially in urban areas with high levels of air pollution and traffic congestion.

## **CONCLUSION**

The research comparing the acceptability of electric motorcycles (e-bikes) versus gasoline bikes in the Indian market has shed light on the variables affecting customers' attitudes, behaviors, and decisions to choose sustainable transportation options. In light of India's changing mobility scenario, this study has shown the subtleties and complexities of consumer preferences through a thorough review of survey

data, qualitative responses, and previous research.

### **Consumer Preferences:**

Because e-bikes are convenient, economical, and environmentally friendly, many consumers have positive opinions about them. However, adoption is still hampered for some by issues with performance, range, and upfront expenses.

### **Performance and Reliability:**

People who ride e-bikes express great pleasure with the vehicles' performance and dependability, especially in urban environments where e-bikes provide benefits including easier maneuverability and less traffic.

### **Cost considerations:**

Although the initial cost of an e-bike may be higher than that of a gas-powered bike, customers view the long-term cost savings—such as reduced fuel and maintenance expenses—as a major advantage of electric mobility.

### **Environmental Awareness:**

Consumer preferences for e-bikes are heavily influenced by environmental factors. A lot of consumers cite their concerns about air pollution, greenhouse gas emissions, and climate change as reasons for selecting electric mobility solutions.

**Policy Support and Incentives:** Respondents advocated for policies like subsidies, tax breaks, and investments in charging infrastructure to promote sustainable transportation. Government policies, incentives, and regulatory frameworks are highlighted as significant drivers of e-bike adoption.

### **Implications and Recommendations:**

The dissertation's findings have a number of implications for researchers, industry stakeholders, and politicians who want to

encourage the use of e-bikes and speed India's shift to sustainable mobility. These include:

#### Policy Support:

To encourage the use of electric vehicles, including e-bikes, policymakers should give top priority to the creation and execution of favorable laws and incentives. This might involve investments in infrastructure for charging, tax breaks, and other measures to increase consumer access to and affordability of e-bikes.

#### Infrastructure Development:

To encourage the broad use of e-bikes in both urban and rural regions, investments should be made in cycling infrastructure, including as designated bike lanes, bike parking facilities, and charging stations.

#### Public Awareness:

To shatter myths and misconceptions regarding electric mobility and to increase awareness of the advantages of e-bikes, public awareness campaigns and educational initiatives should be started. The adoption and uptake of e-bikes by consumers can be increased through outreach and targeted messaging.

#### Product Innovation:

To reach a larger user base, manufacturers and industry participants should concentrate on enhancing the e-bikes' performance, affordability, and design. To address consumer concerns and spur innovation in the e-bike business, research and development initiatives should give priority to breakthroughs in battery technology, range, and charging infrastructure.

Finally, the research highlights the benefits and difficulties involved in promoting sustainable transportation options and offers insightful information about customer acceptability of e-bikes versus petrol bikes in the Indian market. India can promote the adoption of e-bikes and encourage a shift towards more environmentally friendly and sustainable transportation systems by tackling regulatory hurdles, infrastructure deficiencies, and consumer preferences. E-bikes have the power to significantly reduce carbon emissions, improve air quality, and increase mobility for millions of people in India with coordinated efforts by policymakers, industry stakeholders, and the general public. Giving e-bikes top priority as a practical form of transportation can help ensure that everyone has a more inclusive, egalitarian, and environmentally friendly future as the nation continues to urbanize and develop its transportation network.

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