

**CUSTOMER PERCEPTION TOWARDS ARTIFICIAL INTELLIGENCE –
ENABLED E-SCOOTERS**

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ABSTRACT

The integration of artificial intelligence (AI) into electric mobility is changing how consumers evaluate electric scooters. AI-enabled e-scooters may provide intelligent navigation, predictive maintenance, battery diagnostics, adaptive safety assistance, connected applications, voice interaction and data-driven range estimation. This paper examines customer perception towards such scooters, focusing on perceived usefulness, ease of use, safety, trust, affordability, privacy, reliability, charging convenience and purchase intention. The study uses secondary research and a conceptual framework based on technology-acceptance principles. Recent research indicates that safety perception and trust are particularly important in willingness to use AI-assisted e-scooters, while Indian electric two-wheeler research identifies cost, charging infrastructure, range and awareness as important adoption factors. The study argues that AI creates customer value only when its benefits are understandable, reliable, transparent and useful in everyday riding. Manufacturers should therefore combine innovation with safety communication, affordable feature packages, strong after-sales support and responsible data practices.

KEYWORDS: Artificial Intelligence, E-Scooter, Customer Perception, Electric Two-Wheeler, Trust, Safety, Technology Acceptance, Purchase Intention.

1. INTRODUCTION

Electric mobility is becoming an important part of urban transportation. In India, two-wheelers are especially significant because they provide relatively affordable and flexible personal mobility. Research on Indian road users has found that lower operating costs and environmental concerns encourage electric two-wheeler

adoption, while high purchase cost, charging limitations, lower speed and lack of awareness can discourage adoption.

The next stage is connected and software-driven mobility. AI can support route optimisation, predictive maintenance, intelligent range estimation, battery-health monitoring, voice interaction and rider assistance. These functions can change the customer experience from simply operating a vehicle to interacting with a technology-enabled mobility system.

However, technological sophistication does not automatically create acceptance. Customers may question safety, reliability, privacy, cyber security, ease of use and whether additional technology justifies a higher price. Research on AI-assisted e-scooters has found that perceived safety and trust are particularly important predictors of willingness to use such systems.

2. STATEMENT OF THE PROBLEM

Conventional electric-scooter decisions depend on price, range, charging time, battery life, design, performance, service and brand reputation. AI-enabled scooters add another layer because customers must evaluate software functions whose benefits may be less visible than physical features. Customers may appreciate intelligent technology while worrying about malfunction, data privacy, complexity and additional cost.

This creates a perception gap. Understanding this gap is important for manufacturers because customer acceptance determines whether AI becomes a genuine competitive advantage or merely a marketing label.

3. OBJECTIVES OF THE STUDY

- To examine customer perception towards AI-enabled e-scooters.
- To identify AI features valued by customers.
- To examine the importance of safety and trust.
- To study the influence of affordability, ease of use and reliability.
- To identify concerns regarding privacy, technology failure and service.
- To suggest strategies to improve acceptance.

4. SCOPE OF THE STUDY

The study covers consumer perception of electric scooters equipped with AI-supported digital functions, including smart navigation, predictive maintenance, battery management, range prediction, connected applications, voice interaction and safety assistance. It focuses on consumer behaviour rather than technical evaluation of individual algorithms.

5. REVIEW OF LITERATURE

Indian electric two-wheeler research consistently identifies operating cost, environmental benefits, performance and infrastructure as important adoption factors. A study based on 522 Indian road users found that environmental concerns and lower operating costs encouraged adoption, while charging infrastructure, purchase

cost, speed and awareness were barriers.

A discrete-choice study in Transport Policy found that infrastructure, demand incentives and long-term cost savings can support acceptance of electric two-wheelers in India.

Recent research has moved toward technology-specific perception. A study of AI-assisted e-scooters involving 405 participants examined safety, trust and willingness to use AI-enabled scooters and found safety perception and trust to be strong predictors.

Indian research on AI-enabled EV features indicates that predictive maintenance, range estimation and adaptive assistance can be attractive, while cost, trust and limited awareness constrain adoption. Broader 2026 automotive research also reports strong Indian consumer interest in software-defined and AI-enabled vehicle functions.

6. CONCEPTUAL FRAMEWORK

The study is conceptually based on the Technology Acceptance Model, in which perceived usefulness and perceived ease of use influence technology acceptance. For AI-enabled e-scooters, usefulness means that intelligent functions improve safety, convenience, efficiency or vehicle management. Ease of use means that customers can understand and operate the functions without unnecessary complexity.

Trust and perceived safety are added because mobility technology involves physical risk. Perceived risk, price fairness, privacy and after-sales support are additional factors that can influence purchase intention.

7. RESEARCH METHODOLOGY

The paper follows a descriptive and conceptual research design based on secondary sources. Academic studies, industry reports and consumer research were reviewed to identify recurring variables associated with AI-enabled mobility and electric two-wheeler adoption. The paper does not fabricate a primary survey dataset or statistical results.

The major variables are perceived usefulness, ease of use, safety, trust, affordability, reliability, privacy, charging convenience and purchase intention. A limitation is that perceptions can vary by city, age, income, riding experience and technology familiarity.

8. CUSTOMER PERCEPTION TOWARDS AI FEATURES

Customers are likely to respond positively when AI solves an obvious everyday problem. Intelligent range estimation can reduce range anxiety by using battery status, riding behaviour and route conditions. Predictive maintenance can warn users about potential problems before breakdowns.

Smart navigation may recommend energy-efficient routes and charging opportunities. Voice controls can reduce screen interaction, although safety depends on system design. Adaptive safety assistance may be especially valuable because safety directly affects trust.

The strongest adoption pathway is therefore practical usefulness rather than novelty. Customers are more likely to value AI when they can see a direct improvement in ownership or riding.

9. PERCEIVED SAFETY AND TRUST

Safety is a sensitive dimension because an AI malfunction can have physical consequences. Customers need confidence that systems have been tested, warnings are meaningful and manual control remains available where appropriate.

Trust develops through reliability, transparency and experience. Accurate range estimates, useful maintenance alerts and predictable behaviour can strengthen confidence, while false warnings or unexplained behaviour can damage it.

Manufacturers should clearly explain what each AI function does, what it does not do and what happens if it fails. Exaggerated claims can create unrealistic expectations and damage long-term credibility.

10. PRICE AND VALUE PERCEPTION

Price remains central to Indian electric two-wheeler adoption. Customers compare purchase price with fuel savings, maintenance, battery life, financing and resale value. AI adds another question: whether its benefits justify a price premium.

Some AI functions can be delivered through software and smartphone integration. Manufacturers can therefore provide essential functions as standard while offering optional premium services. Safety-related functions should not become inaccessible because of excessive pricing.

11. EASE OF USE AND CUSTOMER EXPERIENCE

A technically advanced scooter can create negative perception if users struggle with controls or receive excessive alerts. AI should be integrated into normal riding rather than presented as a complicated separate system.

Applications should use clear language, simple dashboards and actionable notifications. Dealers and service centres must also understand intelligent functions because customer experience continues after purchase.

12. PRIVACY, DATA AND CYBER SECURITY

Connected scooters can generate information about location, riding behaviour, battery status and usage. This data can improve services but can also create privacy concerns. Customers should understand what information is collected, why it is collected and who can access it.

Transparent consent, reasonable data collection and strong security practices can improve trust. Cyber security is especially important because customers expect connected vehicles to be protected against misuse.

13. DEMOGRAPHIC AND TECHNOLOGY-READINESS FACTORS

Perception is unlikely to be uniform across demographic groups. Younger consumers and frequent digital-service users may be more comfortable with AI, while less technology-oriented customers may need demonstrations and stronger assurance.

Income can influence willingness to pay for premium technology. Recent AI-assisted e-scooter research found demographic differences in preferences and identified age and income as significant drivers.

14. DISCUSSION OF CUSTOMER ADOPTION

Customer adoption can be understood as a balance between benefits and risks. Benefits include convenience, safety assistance, vehicle management and range confidence. Risks include technology failure, privacy concerns, higher price, complexity and dependence on connectivity.

Manufacturers should identify real customer problems and use AI to solve them reliably. India's increasing familiarity with AI provides a favourable environment, but awareness should not be confused with trust. Consumers may understand AI and still demand proof of safety and value.

15. FINDINGS OF THE STUDY

- Practical usefulness is more important than technology novelty.
- Perceived safety is a critical factor.
- Trust strongly influences willingness to use AI assistance.
- Range estimation, predictive maintenance, navigation and safety assistance are understandable AI applications.
- High purchase price can reduce acceptance.
- Ease of use is essential.
- Privacy and cyber-security concerns are increasingly relevant.
- Younger and technology-oriented consumers may show greater acceptance.
- Charging infrastructure and battery confidence remain important.
- AI should complement rather than replace rider responsibility.
- Transparent communication can strengthen trust.
- After-sales service must address both mechanical and software problems.

16. SUGGESTIONS

- Prioritise AI features with measurable everyday benefits.
- Test safety functions rigorously and explain them clearly.
- Provide dealership demonstrations.
- Design simple interfaces for different levels of digital literacy.
- Communicate total cost of ownership and maintenance savings.
- Use transparent privacy policies.
- Make software updates reliable.
- Train service technicians in hardware and software diagnosis.
- Provide fallback procedures for connectivity or AI failure.
- Collect customer feedback continuously.

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- Avoid exaggerated autonomy claims.
 - Strengthen charging, safety standards and consumer information.

17. CONCLUSION

Artificial intelligence can transform an electric scooter into an intelligent mobility platform, but success ultimately depends on customer perception. Customers are likely to accept technology when they understand its purpose, observe its benefits and trust its reliability.

The evidence indicates that safety, trust, usefulness, affordability and ease of use are central to acceptance. At the same time, conventional barriers such as purchase cost, charging infrastructure and awareness remain relevant. AI should therefore strengthen—not replace—good engineering, reliable batteries, reasonable pricing and accessible service.

Future research can collect primary data across Indian cities and test relationships among usefulness, safety, trust, price sensitivity, privacy and purchase intention using correlation, regression or structural equation modelling.

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