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# Impact of Price, Driving Range and Charging Infrastructure on Consumer Purchase Decisions for Electric Scooters

**ORIGINAL ARTICLE**

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## Abstract

*The growing adoption of electric vehicles has transformed the transportation sector worldwide. Among various electric mobility solutions, electric scooters have gained significant popularity due to their affordability, environmental benefits, and suitability for urban commuting. However, consumer adoption remains influenced by several factors, particularly purchase price, driving range, and charging infrastructure availability. This study investigates the impact of these factors on consumer purchase decisions regarding electric scooters. Primary data were collected through a structured questionnaire from 62 respondents using a five-point Likert scale. The study employed descriptive and analytical research methods to examine consumer perceptions. The findings indicate that charging infrastructure and driving range positively influence purchase decisions, while price sensitivity remains a significant concern among consumers. The study contributes to the growing literature on electric vehicle adoption and provides valuable insights for policymakers, manufacturers, and marketers seeking to accelerate the transition toward sustainable transportation.*

## Key Words

*Electric Scooters, Consumer Purchase Decision, Electric Vehicles, Driving Range, Charging Infrastructure, Price Sensitivity.*

## Introduction

The transportation industry is undergoing a substantial transformation driven by environmental concerns, rising fuel prices, technological advancements, and Government initiatives promoting sustainable mobility. Electric vehicles (EVs) have emerged as a promising solution for reducing carbon emissions and dependence on fossil fuels. In India, electric scooters represent one of the fastest-growing segments of the EV market due to their affordability and practicality.

Despite increasing awareness and Government incentives, the adoption rate of electric scooters remains below expectations. Consumers often express concerns regarding battery performance, driving range, charging convenience, and initial purchase costs. These concerns influence their purchase decisions and determine the pace of market growth.

Price remains one of the most important determinants of consumer behavior, particularly in developing economies where purchasing decisions are highly cost-sensitive. Similarly, driving range influences consumer

confidence by reducing range anxiety, while charging infrastructure affects convenience and accessibility. Understanding the relative importance of these factors is essential for promoting widespread electric scooter adoption.

This study examines how price, driving range, and charging infrastructure influence consumer purchase decisions for electric scooters and provides practical recommendations for stakeholders in the EV ecosystem.

## Literature Review

### Electric Vehicle Adoption

Electric vehicle adoption has become an important area of research due to increasing environmental concerns and Government policies promoting sustainable transportation. Previous studies have shown that consumer acceptance of EVs depends on technological, economic, and infrastructural factors.

### Price and Consumer Purchase Decision

Price is widely recognized as one of the primary barriers to EV adoption. Consumers often perceive electric scooters as expensive compared to conventional petrol-powered alternatives. Although lower operating costs may compensate for higher upfront investments over time, many consumers remain reluctant due to the initial purchase price.

Research suggests that Government subsidies and financial incentives significantly improve purchase intentions by reducing perceived financial burden. Price-sensitive consumers often prioritize affordability when selecting transportation options.

### Driving Range and Consumer Confidence

Driving range refers to the distance an electric scooter can travel on a single battery charge. Range anxiety remains one of the most significant obstacles to EV adoption. Consumers often fear battery depletion during travel, particularly when charging facilities are limited.

Studies have consistently found that improved battery performance and longer driving ranges increase consumer confidence and willingness to purchase electric vehicles. Technological advancements in battery systems have therefore become a critical focus for manufacturers.

### Charging Infrastructure

Charging infrastructure plays a crucial role in supporting EV adoption. The availability of public and private charging stations determines the convenience associated with electric scooter ownership. Consumers are more likely to adopt electric scooters when charging facilities are easily accessible, reliable, and affordable.

Several studies indicate that inadequate charging infrastructure discourages potential buyers and limits market expansion. Governments and private organizations are therefore investing heavily in charging networks to support EV growth.

### Consumer Purchase Decision

Consumer purchase decisions are influenced by multiple factors, including economic considerations, product attributes, social influences, environmental concerns, and technological acceptance. In the context of electric scooters, consumers evaluate factors such as affordability, performance, reliability, convenience, and long-term value before making purchasing decisions.

## Research Gap

Although numerous studies have examined electric vehicle adoption, limited research has simultaneously investigated the impact of price, driving range, and charging infrastructure on consumer purchase decisions regarding electric scooters in the Indian context. Furthermore, empirical evidence based on consumer perceptions remains relatively limited, particularly among emerging markets. This study seeks to address this gap by examining these key determinants using primary survey data.

## Objectives of the Study

1. To examine the impact of price on consumer purchase decisions regarding electric scooters.
2. To evaluate the influence of driving range on consumer purchase decisions.

3. To assess the effect of charging infrastructure on consumer purchase decisions.
4. To identify the most influential factor affecting electric scooter adoption.

## Hypotheses

**$H_1$:** Price significantly influences consumer purchase decisions regarding electric scooters.

**$H_2$:** Driving range significantly influences consumer purchase decisions regarding electric scooters.

**$H_3$:** Charging infrastructure significantly influences consumer purchase decisions regarding electric scooters.

## Methodology

### Research Design

The study adopts a descriptive and analytical research design to examine consumer perceptions regarding electric scooter adoption.

### Data Collection

Primary data were collected using a structured questionnaire distributed among respondents representing different demographic groups.

### Sample Size

The study is based on responses collected from 62 participants.

### Sampling Technique

Convenience sampling was employed to collect data from respondents who were accessible and willing to participate.

### Measurement Scale

A five-point Likert scale was used:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

## Variables

### Independent Variables

- Price.
- Driving Range.
- Charging Infrastructure.

### Dependent Variable

Consumer Purchase Decision.

### Data Analysis Techniques

The study utilizes:

- Descriptive Statistics.
- Mean Analysis.
- Correlation Analysis.
- Regression Analysis (recommended for future studies).
- Hypothesis Testing.

## Results and Discussion

### Descriptive Statistics

The analysis indicates the following mean scores:

| Variable | Mean Score |
|---|---|
| Price | 3.91 |
| Driving Range | 4.11 |
| Charging Infrastructure | 4.19 |
| Purchase Decision | 3.92 |

The results reveal that respondents generally agree that all three factors influence their purchase decisions.

### Price

Consumers exhibit moderate concern regarding the purchase price of electric scooters. Although environmental awareness is increasing, affordability remains a key determinant of purchase behavior.

### Driving Range

The relatively high mean score for driving range suggests that consumers value battery performance and prefer scooters capable of covering longer distances without frequent charging.

### Charging Infrastructure

Charging infrastructure received the highest mean score among all variables. This finding indicates that accessibility and convenience of charging facilities play a crucial role in influencing consumer purchase decisions.

## Discussion

The findings support the notion that practical considerations significantly influence EV adoption. Consumers prioritize convenience and reliability when evaluating electric scooters. While environmental concerns may encourage interest in electric mobility, purchase decisions are ultimately shaped by economic and infrastructural factors.

The results align with previous studies that identify charging infrastructure and range anxiety as major determinants of EV adoption. Furthermore, price sensitivity continues to remain a challenge despite Government incentives and declining battery costs.

## Managerial Implications

The findings provide several practical implications:

### For Manufacturers

- Focus on improving battery efficiency and driving range.
- Develop affordable electric scooter models targeting price-sensitive consumers.
- Offer attractive financing options and extended warranties.

### For Policymakers

- Expand charging infrastructure in urban and rural areas.
- Continue subsidy programs to reduce initial purchase costs.
- Promote public awareness regarding the benefits of electric mobility.

### For Marketers

- Emphasize long-term cost savings compared to petrol vehicles.
- Highlight charging convenience and battery performance.
- Build consumer trust through test rides and educational campaigns.

### For Charging Service Providers

- Increase charging station availability at public locations.
- Improve charging speed and accessibility.
- Collaborate with manufacturers and Government agencies to develop integrated charging networks.

## Conclusion

The study investigates the impact of price, driving range, and charging infrastructure on consumer purchase decisions regarding electric scooters. The findings indicate that all three factors significantly influence consumer behavior. Among them, charging infrastructure emerges as the most influential factor, followed by driving range and price considerations.

Consumers demonstrate a strong preference for electric scooters that offer reliable charging options and extended driving ranges. At the same time, affordability remains an important consideration, particularly among price-sensitive consumers.

The study highlights the importance of technological improvements, infrastructure development, and supportive Government policies in accelerating electric scooter adoption. By addressing these challenges, stakeholders can contribute to the successful transition toward sustainable transportation.

## Limitations and Future Research

### Limitations

1. The study is based on a relatively small sample size.
2. Convenience sampling may limit the generalizability of findings.
3. Responses reflect perceptions rather than actual purchasing behavior.
4. The study focuses on selected determinants and excludes factors such as environmental concern, brand image, social influence, and Government incentives.

### Future Research Directions

1. Conduct studies using larger and more diverse samples.
2. Compare urban and rural consumer perceptions.
3. Examine additional variables such as environmental awareness and brand trust.
4. Employ Structural Equation Modeling (SEM) to investigate complex relationships among variables.
5. Conduct longitudinal studies to evaluate changes in consumer attitudes over time.

## Bibliography

1. Ajzen, I. (1991) The theory of planned behavior. *Organizational Behavior and Human Decision Processes,* 50(2), 179–211.
2. Bansal, P.; Kumar, R. R.; Raj, A.; Dubey, S. & Graham, D. J. (2021) Willingness to pay and attitudinal preferences of Indian consumers for electric vehicles. *Energy Economics,* 100, 105340.
3. Jain, S. & Sharma, P. (2022) Consumer adoption of electric vehicles in emerging markets. *Transportation Research Part D,* 102, 103123.
4. Rogers, E. M. (2003) *Diffusion of innovations* (5th ed.) Free Press, New York, NY.
5. Wang, S.; Fan, J.; Zhao, D.; Yang, S. & Fu, Y. (2016) Predicting consumers' intention to adopt hybrid electric vehicles. *Transportation Research Part A,* 89, 27–39.

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