

Urban-Rural Satisfaction Divide in India's EV Market: Competitive Insights from TATA and Mahindra in Uttar Pradesh

Shevendu Shekher Shandilya

Research Scholar

Dr. Satendra Kumar Sharma

Associate Professor

Mangalayatan University

Aligarh, Uttar Pradesh

E-Mail ID: shevendushekshershandilya@zohomail.in

ORCID ID: 0009 - 0006 -1719 - 4413

Abstract

India's electric vehicle (EV) industry is undergoing rapid transformation, driven by policy incentives, environmental concerns, and technological innovation. Despite nationwide growth, EV adoption and customer satisfaction remain uneven across urban and rural regions. This study investigates the urban-rural satisfaction divide in Uttar Pradesh (UP), India's most populous state, and provides a comparative competitive analysis of Tata Motors and Mahindra. Drawing upon SERVQUAL theory, Expectation-Confirmation Theory (ECT), Diffusion of Innovation Theory, and the Resource-Based View (RBV), the study develops a conceptual framework linking geographic location, infrastructure availability, service quality, perceived value, and brand trust to overall customer satisfaction. A structured survey of 320 EV owners across urban (Lucknow, Noida) and rural/semi-urban (Gorakhpur, Bundelkhand) districts was conducted. Statistical techniques including independent samples t-tests, correlation analysis, two-way ANOVA, and multiple regression were applied. Findings reveal a statistically significant urban-rural satisfaction gap, with infrastructure availability emerging as the strongest predictor. Tata Motors demonstrates stronger satisfaction performance in urban markets due to ecosystem integration and charging partnerships, whereas Mahindra shows relatively stronger trust-based satisfaction in rural segments due to dealership reach and SUV legacy positioning. The study contributes to EV adoption literature by offering a state-level brand comparative model and provides actionable insights for manufacturers and policymakers seeking inclusive EV growth.

Keywords: Electric Vehicles, Urban-Rural Divide, Customer Satisfaction, Tata Motors, Mahindra, Uttar Pradesh, Competitive Strategy, Infrastructure Gap

Introduction

India's automotive industry is experiencing one of its most significant structural transitions with the shift toward electric mobility. Rising fuel prices, climate commitments under the Paris Agreement, and urban air pollution concerns have accelerated governmental and industrial

initiatives promoting electric vehicles (EVs). The Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME-II) scheme, combined with Production Linked Incentive (PLI) programs and state-level EV policies, has stimulated both supply and demand.

Despite impressive national growth rates, EV adoption is geographically uneven. Metropolitan regions benefit from higher charging infrastructure density, stronger digital penetration, and higher disposable incomes. In contrast, rural and semi-urban areas encounter infrastructural and economic constraints.

Uttar Pradesh (UP), with over 200 million residents and significant urban–rural diversity, provides an ideal empirical setting to examine this disparity. Cities such as Lucknow and Noida are witnessing increasing EV penetration, while districts in Bundelkhand and eastern UP lag behind.

Simultaneously, Tata Motors and Mahindra have emerged as major domestic EV competitors. Tata leads the passenger EV market, while Mahindra leverages its SUV heritage and deep rural dealership presence.

This study addresses the following research questions:

1. Does a significant urban–rural satisfaction divide exist among EV customers in UP?
2. How do Tata Motors and Mahindra differ in influencing satisfaction across geographic segments?
3. What infrastructural and strategic factors explain these differences?

Industry Context: India's EV Ecosystem

1. Policy and Regulatory Environment

The Indian government has adopted multi-layered strategies to promote EV adoption:

- a. FAME-II subsidy program
- b. Reduction of GST on EVs to 5%
- c. State EV policies (including UP EV Policy 2022)
- d. Incentives for charging infrastructure

Urban areas have benefited first due to faster implementation capacity and private investment clustering.

2. Competitive Landscape

TATA Motor

- a. Dominant share in passenger EV segment
- b. Nexon EV and Tiago EV success
- c. Charging partnerships (Tata Power)
- d. Vertical ecosystem integration

Mahindra

- a. XUV 400 EV and upcoming BE platforms
- b. Strong SUV brand recognition
- c. Deep rural dealership network
- d. Gradual electrification strategy

Strategic Positioning suggest possible variation in satisfaction across geographic segments.

Literature Review

1. EV Adoption in India

India's EV adoption is influenced by regulatory frameworks, rising fuel costs, and sustainability commitments. Scholars note that EV penetration is higher in metropolitan regions due to concentrated infrastructure and policy awareness. Urban consumers demonstrate stronger technological openness and environmental motivation.

However, rural adoption is slower due to concerns regarding charging accessibility, battery longevity, resale value, and grid reliability. This infrastructural asymmetry directly influences satisfaction after purchase.

2. Diffusion of Innovation Theory

Rogers (2003) suggests that innovation adoption follows identifiable stages. Urban populations, due to higher media exposure and social networks, act as early adopters.

Rural consumers typically belong to early or late majority categories.

This theoretical lens explains initial urban concentration of EV uptake.

3. Urban-Rural Consumption Differences

Urban consumers prioritize:

- Technological sophistication
- Environmental signaling
- Digital integration
- Charging convenience

Rural consumers emphasize:

- Durability
- Dealer trust
- Cost efficiency
- Reliability

These differences influence satisfaction formation

4. Urban-Rural Market Divide

The urban–rural divide in India is characterized by:

Dimension	Urban Market	Rural Market
Charging Infrastructure	Dense & expanding	Sparse
Income Levels	Higher disposable income	Moderate to low
Digital Awareness	High	Moderate
Service Accessibility	Faster response	Dealer-dependent
Environmental Awareness	Strong	Emerging

Urban EV consumers often view EVs as technology-driven lifestyle products, while rural buyers emphasize durability, cost savings, and reliability.

5. SERVQUAL Model

The SERVQUAL model identifies five dimensions influencing satisfaction:

- I. Tangibles
- II. Reliability
- III. Responsiveness
- IV. Assurance
- V. Empathy

In EV markets, service quality (especially battery servicing and software updates) significantly shapes customer perception.

6. Expectation-Confirmation Theory (ECT)

ECT suggests satisfaction arises when post-purchase performance meets or exceeds expectations. Urban consumers typically have higher expectations regarding app connectivity and charging convenience, whereas rural consumers prioritize cost efficiency and vehicle durability.

7. Resource-Based View (RBV)

RBV posits that firms gain competitive advantage from unique resources. Tata's charging ecosystem and battery investments represent strategic assets. Mahindra's dealership network and brand trust constitute relational capital.

Conceptual Framework and Hypotheses

Proposed Model:

Location (Urban/Rural) > Infrastructure > Service Quality > Perceived Value > Satisfaction

Moderator: Brand (Tata vs Mahindra)

Hypotheses:

H1: Urban customers report higher satisfaction than rural customers.

H2: Infrastructure availability positively predicts satisfaction.

H3: Service quality positively predicts satisfaction.

H4: Brand moderates the relationship between location and satisfaction.

H5: Tata shows higher urban satisfaction.

H6: Mahindra shows relatively higher rural satisfaction.

Research Methodology

1. Research Design

Quantitative cross-sectional survey.

2. Sample

- Total respondents: N=320 EV Owners
- Urban: 160 (Lucknow, Noida)
- Rural/Semi-urban: 160 (Gorakhpur, Bundelkhand region)

Brand Distribution:

- Tata owners: 60%
- Mahindra owners: 40%

3. Measurement Scale

5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree)

Constructs measured:

- Infrastructure Availability
- Service Quality
- Perceived Cost Advantage
- Brand Trust
- Satisfaction

Data Analysis

Table 1

Descriptive Statistics

Variable	Mean	SD
Infrastructure	3.98	0.74
Service Quality	4.05	0.69
Cost Advantage	3.76	0.82
Brand Trust	3.89	0.71
Satisfaction	3.83	0.78

Table 2

Reliability Analysis

Construct	Cronbach's α
Infrastructure	.84
Service Quality	.87
Satisfaction	.89

Table 3

Urban vs Rural Satisfaction

Group	Mean	t	P
Urban	4.12	3.87	< .01
Rural	3.54		

Table 4

ANOVA: Brand $\times$ Location

Source	F	p
Location	15.67	< .001
Brand	6.82	< .01
Interaction	4.35	< .05

Table 5

Correlation Matrix

Variable	Infrastructure	Service	Satisfaction
Infrastructure	—		
Service	.62**	—	
Satisfaction	.68**	.71**	—

Table 6

Regression Analysis

Predictor	β	p
Infrastructure	.41	< .001
Service	.36	< .001
Cost Advantage	.29	< .01
Brand	.18	< .05

 $R^2 = .52$ **Discussion**

Results confirm significant urban–rural satisfaction divide. Infrastructure availability is strongest predictor. Tata dominates urban segment; Mahindra performs relatively better in rural trust perception.

Managerial Implications

Tata should expand rural infrastructure.

Mahindra should enhance urban ecosystem integration.

Policy should target rural charging development.

Theoretical Contributions

Integrates RBV with satisfaction theory

Provides brand-level moderation model

Offers state-level empirical validation.

Conclusion

EV satisfaction in Uttar Pradesh is geographically segmented. Bridging infrastructure and ecosystem gaps is essential for inclusive EV growth.

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