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Consumer Response Towards Electric Cars in Jharkhand: A Study on Tata Motors India Limited

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Abstract

The rise of electric vehicles has prompted significant changes and transformations within the automotive industry, as manufacturers strive to adapt and respond to the shifting consumer preferences towards eco-friendly transportation options, as well as the evolving environmental regulations and policies aimed at reducing carbon emissions and promoting sustainability. The present study aims to investigate the consumer response towards electric cars in Jharkhand, with a focus on the products offered by Tata Motors India limited. The study examines factors influencing consumer purchase intentions for electric vehicles, including the role of marketing on social media platforms, as well as the impact of consumer perceptions and behaviour. The findings provide insights into the effective marketing strategies that can be employed by Tata Motors and other electric vehicle manufacturers to increase adoption in the state of Jharkhand.

Keywords: *Consumer Response, Electric Cars, Marketing, TATA Motors.*

Introduction

The global automotive industry is undergoing a significant transformation with the rise of electric vehicles (EVs) as a sustainable alternative to conventional internal combustion engine (ICE) vehicles. Governments worldwide are actively promoting EV adoption to mitigate carbon emissions and reduce dependence on fossil fuels (IEA, 2022)[1]. In India, the government has introduced several initiatives, such as the Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme, to encourage EV penetration (Ministry of Heavy Industries, 2021)[2]. Despite these policy interventions, consumer response to EVs remains inconsistent across different states and regions, influenced by factors such as infrastructure, affordability, and technological advancements.

Jharkhand, a mineral-rich state experiencing rapid urbanization, presents a unique case for studying EV adoption. Factors such as charging infrastructure, economic incentives, consumer perceptions,

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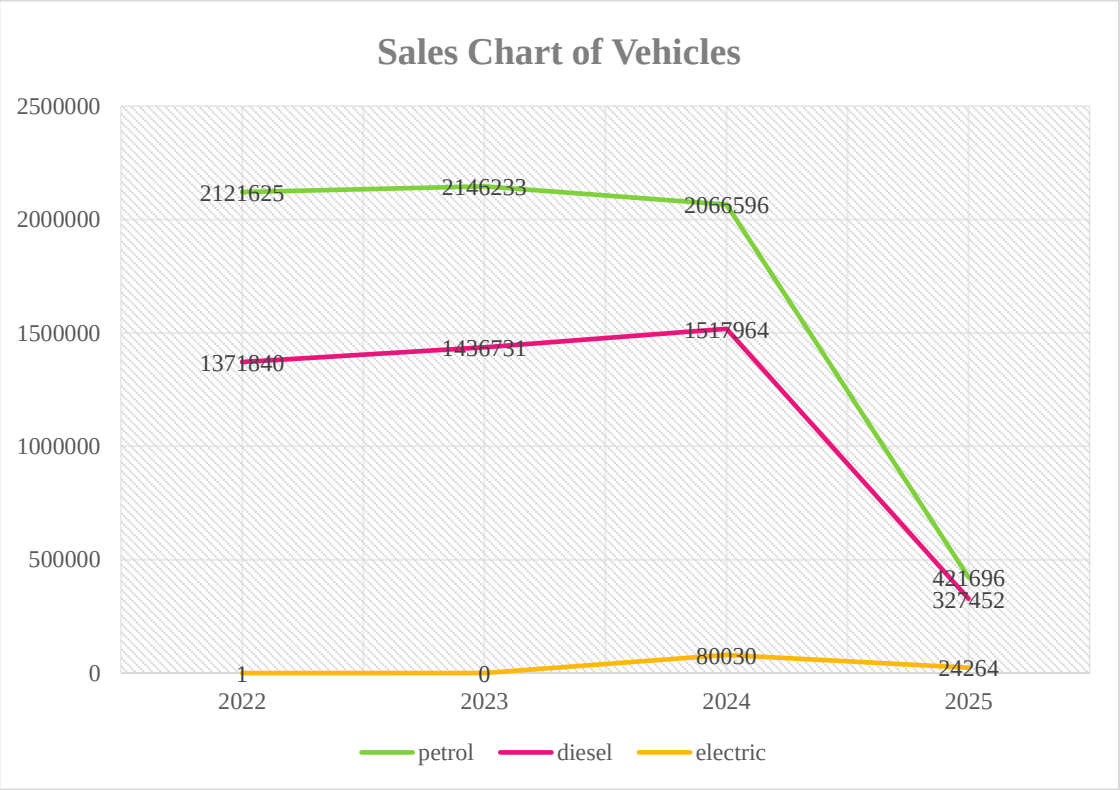
and environmental awareness play a crucial role in determining the acceptance of EVs in this region (Shukla et al., 2020)[3]. As one of India's leading automobile manufacturers, Tata Motors has been at the forefront of the EV revolution with models such as the Tata Nexon EV and Tigor EV (Tata Motors, 2023)[4]. The company's market strategy, combined with state-level policies and consumer attitudes, influences EV adoption patterns in Jharkhand. However, significant challenges, including range anxiety, limited charging facilities, and affordability, continue to impact mainstream EV acceptance (Carley et al., 2013; Sankaran, Venkatesan & Prabhahar, 2020)[5,6].

While automakers like Tata Motors have made considerable progress in India's EV sector, a deeper understanding of consumer response in key regions like Jharkhand is essential. The evolution of the global automotive industry, historically dominated by markets such as the United States, has now diversified with emerging players from India, China, and Brazil (Bharadwaj, 2018)[7]. With increasing consumer awareness of eco-friendly mobility solutions, electric vehicles offer a viable option for reducing carbon footprints and fostering sustainable transportation (Varaprasad & Mathew, 2020; Rajendran, Muralidharan & Krishnamurthy, 2022)[8,9]. This study aims to analyse consumer perceptions, barriers, and motivations towards EV adoption in Jharkhand, focusing on Tata Motors' role in shaping market trends. By examining these dynamics, this research will contribute to the broader understanding of EV adoption in India's evolving automotive landscape.



Source – Vahan Dashboard

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The adoption of electric vehicles (EVs) in recent years has shown a transformative shift, but the years 2022 and 2023 highlight the initial struggles of EV penetration in the market. In 2022, only one EV was registered, and in 2023, there were none, indicating a lack of consumer confidence, limited charging infrastructure, and possibly higher costs compared to conventional fuel vehicles. These years reflect the early challenges of EV adoption, where factors like range anxiety, insufficient government incentives, and low public awareness may have contributed to the minimal uptake. However, the scenario changed dramatically in 2024, with 80,030 EV registrations, showcasing a growing acceptance of sustainable transportation. As February 2025 progresses the current recorded registrations stand at 24,264, which might not reflect the full-year trend as the year is still ongoing. The market is expected to build on this momentum, although overcoming infrastructure and affordability barriers remains crucial for widespread EV adoption.

District Wise Registered Vehicle of Jharkhand 2024
Source- Vahan Dashboard

S. No	RTO	Diesel	Petrol	Petrol/CNG	Electric & Hybrid EV	Total
1	BOKARO	520	2,232	276	20	3,048
2	CHATRA	91	64	9	0	164
3	DEGOGHR	568	1,459	146	10	2,183
4	DHANBAD	1,588	5,259	361	61	7,269
5	DUMKA	325	1,181	19	0	1,526
6	JAMSHADPURE	1,909	6,232	404	79	8,624
7	GHARWA	27	24	1	0	52
8	GIRIDIH	66	458	32	6	562
9	GOODA	200	391	8	0	599
10	GUMLA	45	59	1	2	107
11	HAZARIBAG	981	2,637	294	16	3,928
12	JAMTARA	31	66	7	0	104
13	KHUNTI	9	7	0	0	16
14	KODERMA	72	265	33	1	371
15	LATEHAR	18	5	0	0	23
16	LOHARDAGA	6	6	0	0	12
17	PAKUR	95	60	0	0	155
18	PALAMU	513	720	109	5	1,347
19	RAMGHAR	31	572	38	3	644
20	RANCHI	4,735	13,645	793	179	19,352
21	SAHEBGANJ	96	76	0	2	174
22	SARAIKELA	132	314	14	8	468
23	SIMDEGA	11	11	0	0	22
24	CHAIBASA	35	113	2	3	153

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Electric Vehicle in Jharkhand

Year	Bokaro	Ranchi	Jamshedpur	Dhanbad	Hazaribag
No. of Vehicles	20	179	79	61	16
Percentage share of EV in total vehicle sales	0.65	0.92	0.91	0.83	0.40

The adoption of electric vehicles (EVs) in Jharkhand remains relatively limited in comparison to conventional fuel-powered vehicles, with significant disparities observed across different districts. Ranchi leads in EV registrations with 179 vehicles, followed by Jamshedpur (79) and Dhanbad (61), indicating a higher level of acceptance in urban centers where better infrastructure, economic capacity, and public awareness contribute to greater adoption compared to other cities. These cities are also likely to have more charging stations and government incentives promoting sustainable mobility. Conversely, several districts, particularly those in rural and semi-urban areas, report zero EV registrations, such as Simdega, Lohardaga, Chatra, Simdega, Latehar, Pakur, Khunti Jamtara Gooda and Gharwa suggesting that challenges related to infrastructure, affordability, and accessibility continue to hinder widespread EV adoption. While urban centers demonstrate a positive trend in transitioning towards cleaner energy alternatives, the overall penetration of EVs in Jharkhand remains relatively low. This disparity underscores the need for strategic policy interventions, such as the expansion of charging networks, increased financial incentives, and public awareness campaigns to enhance consumer confidence and encourage adoption in less developed regions. Addressing these challenges is crucial for achieving sustainable transportation goals and reducing the state's reliance on fossil fuels in the long run.

Challenges and Consumer Perception in Jharkhand

Jharkhand, with its blend of urban and rural demographics, presents a unique market for electric vehicles. The urban centres like Ranchi and Jamshedpur are more likely to see faster adoption of EVs, while rural areas may take longer due to factors such as infrastructure, awareness, and affordability. Below, I outline the key challenges based on available information and contextual understanding, with references to relevant sources where applicable.

1. Insufficient Charging Infrastructure

One of the most significant barriers to adopting electric cars in Jharkhand is the lack of adequate charging infrastructure. While the Jharkhand Electric Vehicle Policy 2022 proposes installing at least one charging station in a 3km-by-3km grid or a minimum of 50 stations per 10 lakh people, and charging stations every 25 kilometres on national highways (Jharkhand ev policy 2022)[10], the current reality lags far behind. As of 2018, only 12 charging stations had been set up in Ranchi, the state capital, with promises of more to come (News18, 2018)[11]. However, progress has been slow, and

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rural areas remain largely underserved. This scarcity fuels "range anxiety" among potential users, who fear running out of power without access to a charging point, a challenge also noted broadly in India (Bolt. Earth, 2023)[12].

One of the key concerns expressed by consumers is the insufficient charging infrastructure, especially outside major cities. Lack of accessible charging stations can create a barrier to adopting electric cars. Jharkhand's nascent charging infrastructure, with fewer than 100 of India's 6,000+ public stations, undermines EV practicality (Tata Motors, 2023)[13]. This gap exacerbates range anxiety, a key deterrent identified in national studies (Bhalla, 2018)[14].

2. High Upfront Costs

Electric cars generally have a higher initial purchase price compared to internal combustion engine (ICE) vehicles, primarily due to expensive battery components. In Jharkhand, despite incentives like reimbursements of up to Rs 30,000 for electric cars and Rs 1.5 lakh for the first 15,000 buyers under the 2022 policy (E Vehicle Info, 2024)[10], the cost remains a deterrent for many. For instance, popular models like the Tata Nexon EV still cost between INR 15-20 lakhs even after subsidies, while equivalent ICE vehicles are cheaper (Bannari Amman Institute of Technology, 2023)[15]. In a price-sensitive market like Jharkhand, where economic constraints are significant, this price gap hinders widespread adoption.

3. Limited Awareness and Consumer Mind Set

Surveys show that urban consumers in Jharkhand are more aware of electric vehicles (EVs), with Tata Motors leading the way, but there are still knowledge gaps about their benefits, technology, and government incentives. Tata Motors' strong historical presence in Jharkhand boosts its brand equity, with national surveys reporting a 92% awareness rate for its EV portfolio (Consumer Behaviour - Tata Motors, n.d.)[16], fostering trust among consumers. However, overall awareness about EVs remains low in the state, largely due to a general indifference to sustainability and a lack of effective awareness campaigns. Studies on EV adoption in India reveal that limited understanding of long-term savings, environmental benefits, and government incentives has slowed the uptake of EVs (Medium, 2024)[17], and in Jharkhand—where the state has fallen behind national targets like FAME-II (Times of India, 2021)[18] many residents may not even consider EVs as viable alternatives to traditional vehicles.

4. Dependence on Coal-Based Electricity

Jharkhand's electricity grid relies heavily on coal, a major source of carbon emissions. This undermines the environmental benefits of electric cars, as charging them with coal-generated power defeats the purpose of reducing emissions. Nationally, India faces this challenge, with coal still dominating power generation (Bolt. Earth, 2023)[12]. In Jharkhand, a mineral-rich state with a strong industrial base, transitioning to cleaner energy sources like solar or wind is critical but progressing slowly, posing a long-term challenge to sustainable EV adoption (CEED India, 2024)[19].

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5. Limited Variety of EV Models

The availability of electric car models in Jharkhand, as in India generally, is limited compared to ICE vehicles. With only 10-15 EV models available nationally as of 2023 (Bannari Amman Institute of Technology, 2023)[15], consumer choice is restricted. This lack of variety—coupled with Jharkhand's specific needs, such as vehicles suited for rural terrains or heavy-duty use in industrial areas—limits appeal and practicality for potential buyers.

6. Slow Policy Implementation and Adoption Rates

Despite the ambitious goals of the Jharkhand Electric Vehicle Policy 2022—such as making Jharkhand a hub for EV manufacturing in eastern India and achieving a phase-wise shift to EVs by 2030—implementation has been sluggish. As of 2021, only 0.16% of the state's 60.24 lakh registered vehicles were battery-operated, far below the national FAME-II target of 30% by 2030 (Times of India, 2021)[18]. The state's failure to offer subsidies comparable to other states, beyond a 25% discount on registration fees, further hampers adoption (Times of India, 2021)[18].

7. Economic and Infrastructure Constraints in Rural Areas

Jharkhand's population is predominantly rural, and its economy is less developed compared to urbanized states. Rural areas lack not only charging stations but also the economic capacity to support EV purchases, even with subsidies. The state's industrial focus on mining and heavy industry, which contributes to emissions via heavy-duty trucks (CEEDIndia, 2024)[19], diverts attention from consumer-oriented EV infrastructure, making adoption uneven across urban and rural divides.

Adopting electric cars in Jharkhand faces multifaceted challenges: inadequate charging infrastructure, high costs, low awareness, reliance on coal-based power, limited model variety, slow policy execution, and rural economic constraints. While the Jharkhand Electric Vehicle Policy 2022 offers a framework to address these issues—through subsidies, infrastructure goals, and manufacturing incentives—effective implementation and broader societal shifts are needed. For instance, expanding renewable energy use and launching targeted awareness campaigns could accelerate progress. Without these, Jharkhand risks falling short of its EV adoption ambitions.

Marketing Strategy to Promote Electric Cars in Jharkhand by Tata Motors

In Jharkhand, consumer preferences and attitudes towards EVs are shaped by both environmental awareness and the economic feasibility of EV ownership. Given the region's demographic characteristics and socio-economic conditions, Tata Motors must develop targeted awareness campaigns that highlight the long-term savings, environmental benefits, and government incentives, while addressing challenges related to infrastructure and affordability. By aligning its marketing strategy with these local needs and insights, Tata Motors can pave the way for greater EV adoption in

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Jharkhand. Tata Motors can capitalize on the state's industrial growth and the increasing consumer interest in sustainable mobility, but understanding the barriers to adoption is crucial. Studies have highlighted that socio-technical barriers, environmental concerns, and the influence of social networks significantly impact EV adoption (N. Mathew & G. Varaprasad, 202022; R. Krishnamurthy et al., 2022)[20].

1. Market Research and Segmentation

To promote electric vehicle (EV) adoption in Jharkhand, it is essential to understand consumer preferences and segment the market effectively. Research indicates that cost is a primary concern for EV adoption in developing regions (MDPI, 2023)[21]. The market can be segmented into three key groups: Urban Professionals, who are middle-income individuals (₹4-10 lakh p.a.) in cities like Ranchi, Jamshedpur, and Dhanbad, seeking affordable, eco-friendly transportation options; Industrial and Fleet Owners, businesses in the mining and manufacturing sectors needing cost-effective fleet solutions, where vehicles like the Tata Nexon EV would be ideal for reducing fuel costs; and Youth and First-Time Buyers, including students and young professionals in urban centres, interested in trendy, budget-friendly options like the Tata Tiago EV or TATA Punch. Tata Motors' experience with demographic segmentation, such as the Nano for low-income groups and Jaguar for premium buyers, offers valuable insights that can be adapted to Jharkhand's diverse market (Marketing91, 2024)[22]. By targeting these segments with suitable EV models, addressing affordability concerns, and reducing range anxiety, the strategy can drive greater EV adoption in the region.

2. Product Positioning: Affordable and Sustainable Mobility

To position Tata EVs as affordable, reliable, and environmentally responsible options for Jharkhand, the Tata Tiago EV (starting at ₹7.99 lakh) will be promoted as the "People's Electric Car" for urban commuters, highlighting its low running cost of ₹1/km, compared to ₹7/km for petrol cars (Tata Motors, 2023)[23]. Additionally, the Tata Nexon EV will be positioned for fleet operators and families, emphasizing its 312 km range and suitability for intercity travel, such as trips between Ranchi and Jamshedpur. The messaging, "Drive Green, Save More – Tata EVs for Jharkhand's Future," will focus on the value-for-money proposition that appeals to cost-conscious consumers. Tata Motors' success with the Tiago EV's disruptive pricing strategy has proven effective in broadening EV appeal across India (Outlook India, 2022)[24], and this approach will resonate with Jharkhand's market, encouraging the adoption of sustainable mobility. The facility's existing infrastructure and skilled workforce provide a strong foundation for scaling up EV production, aligning with the company's goal of achieving zero carbon emissions in the automobile sector over the next 25-30 years (Times of India, 2023)[25].

3. Pricing Strategy: Penetration and Incentives

To make electric vehicles (EVs) accessible in Jharkhand, Tata Motors will implement a penetration pricing strategy, offering introductory discounts on the Tata Tiago EV and Tata Nexon EV to undercut internal combustion engine (ICE) competitors. The company will also collaborate with the

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Jharkhand government to take advantage of EV policy incentives, such as 100% exemption on stamp duty and registration fees or land subsidies (The Economic Times, 2021)[26]. Additionally, Tata Motors will introduce financing schemes with low EMIs (e.g., ₹10,000/month for Tiago EV) through Tata Finance and local banks to make EVs more affordable. This strategy draws from Tata Motors' history of using penetration pricing successfully, such as the Nano at ₹1 lakh, which helped capture market share in price-sensitive regions (Slideshare, 2018)[27]. These combined efforts will help increase EV adoption by making them more affordable and accessible to Jharkhand's cost-conscious consumers.

4. Place and Distribution: Expanding Reach

To enhance accessibility and promote EV adoption in Jharkhand, Tata Motors will expand its dealership network beyond Jamshedpur to other key cities such as Ranchi, Dhanbad, and Bokaro, along with smaller towns like Hazaribagh, targeting 10 new outlets by 2026 (Tata Motors, 2025)[28]. The company will also launch Tata. ev Experience Centres in Jamshedpur and Ranchi, offering test drives, workshops, and EV education, similar to the branded showrooms in Gurugram (The Drum, 2024)[29]. Furthermore, Tata Motors will collaborate with Tata Power to install 50 new charging stations along key routes, such as NH-33 between Ranchi and Jamshedpur, and in industrial hubs, expanding upon the existing 6,000+ nationwide charging network (Tata Motors, 2023)[23]. This expansion of the dealership network and charging infrastructure addresses one of the primary barriers to EV adoption—limited charging infrastructure (MDPI, 2023)[21] and leverages Tata's "Tata Universe" ecosystem, ensuring seamless integration of charging solutions (Tata Motors, 2023)[23].

5. Promotion: Multi-Channel Awareness Campaign

To build awareness and trust in electric vehicles (EVs) in Jharkhand, Tata Motors will implement a multi-channel awareness campaign targeting local consumers. The digital marketing strategy includes launching social media campaigns on Instagram, Facebook, and Twitter using hashtags like #JharkhandGoesElectric, focusing on the 18-35 age group, who represent a significant portion of social media users 242k Instagram followers (Digital Scholar, 2024)[30]. Google Ads with keywords such as "Tata EV Jharkhand" will drive traffic to a dedicated landing page (14.35% traffic from keywords) (Digital Scholar, 2024)[30]. In traditional media, Tata Motors will air TV and radio ads in Hindi and regional languages like Santali and Mundari on platforms like Door darshan Jharkhand and All India Radio, emphasizing the affordability and eco-benefits of EVs. Billboards will be placed in industrial zones and urban centres to showcase Tata EVs. The company will also engage with the community by hosting "EV Awareness Drives" in Jamshedpur, offering free test rides and collaborating with local influencers, such as Jharkhand-based YouTubers. Additionally, Tata Motors will sponsor events like the Jharkhand Industrial Expo to demonstrate EVs to businesses. A "Refer-a-Friend" program will offer ₹10,000 discounts for both buyers and referrers, leveraging word-of-mouth marketing (Esomar, 2022)[31]. Tata's previous success with the gamified Bolt campaign, which

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garnered over 1,500 Twitter mentions, demonstrates the effectiveness of creative digital strategies (Digital Scholar, 2024)[30]. This multi-faceted approach will help increase awareness and drive trust in Tata EVs across Jharkhand. According to a statement from the Jharkhand government, Tata Motors highlighted the "immense possibilities of investment" in expanding green technology manufacturing, emphasizing Jamshedpur as a strategic location (Times of India, 2023)[25]. This aligns with the state's push to attract investments worth Rs 1 lakh crore and generate 5 lakh jobs, as outlined in its Industrial and Investment Promotion Policy (The Economic Times, 2021)[26].

6. Partnerships and CSR Initiatives

To strengthen brand loyalty and infrastructure, Tata Motors will engage in strategic partnerships and corporate social responsibility (CSR) initiatives in Jharkhand. The company will partner with Jharkhand State Electricity Board and Tata Power to develop solar-powered charging stations, aligning with Tata. ev's sustainability ethos and expanding clean energy infrastructure (The Hard Copy, 2024)[32]. Collaborations with mining companies like Tata Steel will pilot EV fleets, demonstrating the cost savings and emission reductions possible in industrial sectors. Additionally, Tata Motors will launch the "Green Jharkhand" CSR campaign, providing subsidized EVs to rural cooperatives and offering training in EV maintenance at ITIs in Jamshedpur to empower local youth. These initiatives reflect Tata Motors' commitment to enhancing its EV ecosystem and building trust with the community, as demonstrated by its successful partnerships with Tata Power and other socially-focused efforts (Tata Motors, 2023)[23]. The company has advocated for policies that support EV manufacturing and adoption. The proposed Jharkhand EV policy, presented to Tata Motors and other carmakers in 2021, reflects inputs from such interactions, offering incentives tailored to encourage investment in the sector (HT Auto, 2021)[33]. Despite its efforts, Tata Motors faces challenges in Jharkhand, including the need for localized battery production to reduce costs further and competition from emerging players like Mahindra, Hyundai, and Maruti Suzuki, which plan to launch EVs in India in 2025 (Reuters, 2025)[34]. However, the company's $1.5 billion investment in a battery gigafactory through its sister company Agratas, expected to begin production in 2026, will strengthen its supply chain and cost competitiveness, benefiting its operations in Jharkhand (Reuters, 2025)[34]. With Jamshedpur as a key industrial base and the state government's support, Tata Motors is well-positioned to expand its EV footprint in the region.

This marketing strategy capitalizes on Tata Motors' strengths—affordable EVs, a strong base in Jamshedpur, and the Tata Universe ecosystem—to effectively penetrate Jharkhand's market. By combining competitive pricing, localized promotions, and infrastructure development, Tata Motors can establish itself as the leader in Jharkhand's electric vehicle (EV) revolution. This approach aligns with India's ambitious target of achieving 30% EV penetration by 2030 (Reuters, 2022)[34], positioning Tata Motors to drive sustainable mobility in the region while contributing to the broader national transition toward greener transportation

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Research Methodology

This study employs a quantitative research design utilizing secondary data sourced from the Vahan Dashboard, an online platform managed by the Ministry of Road Transport and Highways, Government of India. The Vahan Dashboard provides real-time, numerical data on vehicle registrations, ownership, and transport-related metrics across India, updated as of March 19, 2025.

Significance of the Study

- To analyse the consumer perception and attitude towards electric vehicles in Jharkhand.
- The key factors influencing the adoption of electric vehicles among consumers in Jharkhand.
- To identify the barriers and challenges limiting the widespread adoption of electric vehicles in Jharkhand.
- To provide recommendations to enhance the appeal and uptake of its electric vehicle offerings in the state.

Conclusion and Recommendations

To enhance the adoption of electric vehicles (EVs) in Jharkhand, Tata Motors should leverage the growing environmental consciousness among consumers by emphasizing the environmental and cost-saving benefits of its EV offerings. Expanding charging infrastructure in collaboration with the state government and other stakeholders is crucial to overcoming range anxiety. Tata should target younger, educated, and higher-income demographics through tailored marketing campaigns that highlight the technological advancements and prestige of owning an EV. Engaging with policymakers to advocate for supportive policies and incentives will help build a favourable ecosystem for EV adoption. Furthermore, Tata Motors can strengthen its position as a leader in the market, given its status as a prominent domestic automaker and its introduction of models like the Nexon EV. By utilizing social influence and peer recommendations, Tata can drive consumer interest and build a network of brand advocates. Through these efforts, Tata Motors can contribute to the state's sustainable mobility goals while capitalizing on the emerging EV market.

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