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The Market Share and Development Prospects of Electric Scooters and Bicycles in NCR of Delhi

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ABSTRACT

The executive summary of the study emphasizes the severe environmental degradation, rising gas prices, and growing traffic in Delhi NCR. It is argued that electric mobility—particularly electric two-wheels—is a viable and sustainable option. Using primary and secondary data, the report evaluates the electric two-wheeler market's current state, trends, and future. About 56% of respondents chose electric cars (E Vs) because of cost savings, environmental concerns, and government incentives, according to a study based on government documents, interviews with stakeholders and a poll of 100 people. However, 44% of respondents said they were hesitant because of the expensive initial costs, limited range, and poor infrastructure for charging. The FAME I and II programs and Delhi's 2020 EV Policy are credited with hastening the EV transition, as seen by the more than 20% increase in public charging stations over the previous 12 months. With steady policy support, expanding infrastructure, and raised public awareness, Delhi NCR might become a leader in the adoption of electric two-wheels, according to the report's estimates, investment prospects, and policy recommendations.

Introduction

Because of the fast urbanization and environmental concerns, especially in India's main cities with high levels of air pollution, such as Delhi NCR extremely high, the introduction highlights the urgent need for environmentally friendly transportation options. Electric two-wheels are becoming a game-changing substitute because of their affordability, energy efficiency, and lack of exhaust pollution. To encourage the growth of the EV ecosystem, the Indian government has started programs such as the FAME initiative FAME I and FAME II in 2015 from 2019), which provides financial incentives and supports the construction of charging infrastructure. With the help of numerous incentives and more charging stations, Delhi's EV strategy (2020) also seeks to register 25% of electric vehicles by 2024. Even though E Vs frequently have a cheaper whole cost of ownership than conventional vehicles, the high initial cost remains a major barrier to mainstream adoption despite advancements. Additional difficulties include "range anxiety" and insufficient charging infrastructure, particularly in low-income communities. However, Short-distance transport and the dense population of Delhi NCR patterns, and growing digital awareness all point to enormous development potential for the sector. Public-private partnerships and battery technology advancements are also helping to reduce adoption barriers.

The study intends to investigate in detail the market share and growth potential of Delhi NCR's electric two-wheels by examining infrastructure, technology, consumer acceptance, and government regulations.

Transitioning to Electric Two-Wheelers



Literature Review

The literature study emphasizes how favorable government policies, advances in clean technology, FAME I (2015) and FAME II (2019) established by the Indian government have accelerated the adoption of electric vehicles (E Vs) globally. In densely crowded and polluted areas like Delhi NCR, electric two-wheels are especially important because they are both environmentally necessary and economically viable. Along with Delhi's EV Policy (2020), In 2015, FAME I, and in 2019, FAME II established by the Indian government programs seek to build charging infrastructure and offer financial incentives. FAME II specifically allots ₹10,000 crore for E Vs with two or three wheels. The adoption of EVs is facilitated by government legislation, according to academic and commercial studies. Consumer readiness is also greatly influenced by reduced operating costs, increased public awareness, and improved battery efficiency. Dependency on foreign battery parts and range anxiety, expensive initial car expenses, and inadequate charging infrastructure are enduring issues, nevertheless. Even if battery prices are dropping, research shows that substantial supply chain localization is required for long-term sustainability. For the burgeoning Two-wheeler electric vehicle in Delhi NCR business, it is widely acknowledged in the literature that sustained policy support, infrastructure development, and consumer involvement are essential.

Research Methodology

- The study uses a mixed-methods strategy, integrating quantitative and qualitative techniques to give a thorough picture of the electric twowheeler market in Delhi NCR. There were four major phases to the methodology:
- Secondary Research: Government rules (Delhi EV Policy 2020, industries FAME I and II publications (ICCT, TERI, CEEW, NITI Aayog), and
 market estimates, and scholarly publications from sources like SMEV, Auto-car Pro, and EV reporter were all thoroughly examined.
- Original Studies: In Delhi NCR, 100 respondents—including EV owners, dealerships, service providers, fleet managers, and non-EV two-wheeler rider such as Zomato, Blinkit, and Amazon delivery partners)—were given structured questionnaires. Price, resale value, range anxiety, brand/model preferences, infrastructure satisfaction, and purchasing motive (financial, policy, and environmental incentives) were among the data gathered.
- Interviews: To acquire qualitative insights and real-world perspectives Regarding policy, market dynamics, and execution alignment, ten important stakeholders—including policy experts, EV startup executives, charging infrastructure providers, and scholars of sustainable mobility—were interviewed in-depth.

• Comparative Analysis: The study evaluated initial cost versus total cost of ownership (TCO), fuel cost versus Costs of electricity, upkeep, and the effects on the environment (CO2 emissions) in order to compare the cost and performance of traditional gasoline-powered scooters versus electric two-wheelers.



Unveiling the Electric Two-Wheeler Market in Delhi NCR

The findings indicated that although EVs are more expensive initially, they can eventually result in operating cost savings of 40-60%.

- In order to assess the Delhi NCR electric two-wheeler market, a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) framework was employed.
- Methods of Data Analysis: Using Google Forms and Microsoft Excel, Survey quantitative data were examined using descriptive statistics (occurrence, average), % distribution) and displayed as bar charts, pie charts, and histograms. Recurring themes pertaining to policy, infrastructure, and consumer conduct were found by applying thematic coding to the interpretation of qualitative data from interviews.



Choose the most cost-effective vehicle option for long-term savings.

The restricted accessibility of primary surveys, , possible bias in self-reported data, and short interview times are some of the drawbacks that the study admits. Nonetheless, the conclusions' validity and dependability were enhanced using triangulation methods and a variety of data sources.

Results

The Delhi NCR poll, which had 100 participants, produced significant results about the public's perception of electric cars (EVs).

- **EV Preference:** There is a favorable trend, with 56% of respondents favoring electric cars and e-bikes for personal mobility. Environmental concerns, government subsidies (such as the Delhi EV Policy and FAME II), and rising petrol prices all contributed to this desire.
- Skepticism/Lack of Preference: 44% of respondents said they were hesitant or uninterested in making the conversion to electric vehicles (EVs), citing a number of primary deterrents such as high upfront costs, poor infrastructure for charging, range concern, and a lack of confidence in battery performance or resale value.
- Changes in Demographics: Younger people (18–30 years old) were far more supportive of EVs (70%) than older participants, who were reluctant because they were unfamiliar with them or believed they weren't reliable. Respondents who were younger and working professionals were more likely using two-wheels that are electric
- Awareness Gaps: The study found that people were not well-informed on certain government initiatives, such as the FAME II and Delhi EV
 Policy, indicating that public communication has to be improved.
- Validation of Secondary Data: These findings were corroborated by secondary research, which revealed that From 2019 to 2023, sales of electric two-wheelers in India grew at a compound annual growth rate (CAGR) of over 40%, with Delhi NCR playing a major role as a result of policy pressures and customer de
- Between 2023 and 2024, the number of public charging outlets located within the area increased by 20% as a result of infrastructure improvements funded by the government.
- By expanding their market presence, companies such as TVS, Ola Electric, and Ather Energy have raised consumer confidence. EV awareness
 and adoption in urban areas have also grown as a result of fleet electrification initiatives by businesses like Zomato and Amazon.
- Results of Comparative Analysis: Based on lower fuel and maintenance expenses as well as government subsidies, electric two-wheelers have a reduced total ownership costs (TCO) than gasoline-powered two-wheelers.
- Even though EVs have no exhaust emissions, problems like limited charging stations and degrading batteries still provide gas-powered cars a competitive edge in terms of dependability and convenience.



Public Perception of Electric Vehicles in Delhi NCR

Made with l Napkin

Discussion

With more than half of the population polled having favorable sentiments, the results show a promising trend towards EV adoption. Rising petrol prices, which make EVs more affordable, and government incentives are mostly to blame for the growing desire. Another important motivator is environmental concerns, especially for younger urban commuters. Nonetheless, 44% of the population's hesitancy draws attention to real-world limitations that must be overcome. These include lowering EV costs through financing or subsidies, enhancing public and home charging infrastructure, and boosting confidence in the long-term performance of batteries. Consumer education, infrastructure improvement, and targeted legislative support are necessary to convert this resistant population. Ola Electric's expansion is used as an example to show how the EV two-wheeler sector is being disrupted. Ola Electric, which was founded in 2017 and joined the electric scooter market in 2021, has revolutionized the market by using direct sales, aggressive pricing, and mass production. large-scale domestic battery cell investment manufacture, low pricing (beginning from ₹90,000 after subsidies), and competitive models (Ola S1, S1 Air, and S1 Pro) with smart interfaces and good range are some of the key attributes. Particularly for tech-savvy urban consumers, Ola's direct-to-consumer (D2C) business model simplifies the buying process, as well as their subscription and exchange schemes lower the cost of switching to electric vehicles.

Ola's Programs for subscriptions and exchange make the switch to electric vehicles more affordable, and their direct-to-consumer (D2C) business model simplifies the buying process, particularly for tech-savvy urban consumers. Notwithstanding their achievements, Ola is addressing issues like range anxiety and enhancing post-purchase support by creating its own network of Hyper chargers. A little discrepancy in EV preferences is revealed when comparing main and secondary data. Although secondary data indicates that sales of electric scooters have increased, the main poll indicates that interest in electric bikes is higher, particularly among male bikers who are younger who place a higher value on performance and range. Consumer demand and product availability may not be aligned, which presents a chance for EV bike makers to provide better features and more affordable prices. For regional success, closing this gap through improved infrastructure, balanced product portfolios, and customer education will be essential. The strategic environment of the electric two-wheeler market in Delhi NCR is described by a SWOT analysis. Strengths include strong policy backing, growing public interest, and cheap operational costs. Low battery life, expensive initial purchase prices, and a lack of charging infrastructure are drawbacks that erode customer confidence. Possibilities include utilizing Online leasing and financing alternatives, providing reasonably priced EVs, and growing battery-swapping networks—particularly with the rise of green delivery services. Supply chain disruptions (especially regarding lithium-ion batteries), regulations ambiguity, competition from traditional automakers, and ongoing problems with consumer trust are among the threats.

Conclusion

- According to the study's findings, the Delhi NCR electric two-wheeler market has a lot of room to develop due to factors like growing fuel prices, environmental concerns, and encouraging government initiatives such as the FAME programs and EV Policy 2020 in Delhi.
- Even though 56% of respondents said they preferred EVs, there are still significant obstacles to overcome, such as high upfront prices, a lackluster infrastructure for charging, and range anxiety.
- Targeted consumer education, ongoing infrastructural development, and consistent policy support are needed to overcome challenges.
- The study highlights how these issues might be resolved to speed up market penetration by encouraging localized production, making calculated expenditures on charging network, and creating creative business models (such as battery swapping and last-mile delivery electrification).
- Delhi NCR is positioned to be a pioneer in sustainable urban transportation, providing a road map for upcoming policy and investment choices with sustained effort from stakeholders, including manufacturers, consumers, investors, and policymakers.

References

There is a "Citations" section in the document. Key government policies and reports are cited in the paper, though the extracted content does not include a complete list of citations.

These include:

- The Ministry of Heavy Industries' FAME I and II program documents; * The Delhi Electric Vehicle Policy 2020
- NITI Aayog's reports; * The International Council for Clean Transportation (ICCT)
- TERI (The Energy and Resources Institute)
- CEEW (Council on Energy, Environment, and Water)
- Market intelligence from sources such as SMEV (The Association of Electric Manufacturers Vehicles) and Autocar Pro
- The study compiles data from several sources to offer a thorough examination of the Delhi NCR EV industry.