

Topic: An Analysis of EV segment in India and Plausibility of a new Model

Authors

Dr. Selvi S
Associate Professor,
Finance Area, Faculty of Management Studies,
CMS B School, Jain (Deemed to be) University
Bangalore
Email: dr.selvi@cms.ac.in
Mobile: 9880018158

S .Jaisurya

Student, I BBA,
St. Joseph's University,
Bangalore
Email: sjaisurya2104@gmail.com
Mobile: 96327 37656

Abstract

The future for electric vehicles (EVs) in India is expected to be bright. The Indian government has set a target to achieve 30% electrification of the country's total vehicle fleet by 2030. This goal is being supported by various policy measures, such as financial incentives, infrastructure development, and preferential treatment for EVs in tenders and procurement. Additionally, many domestic and international automakers are launching or planning to launch EVs in India. The increasing demand for clean energy and concerns about air pollution are also expected to drive the adoption of EVs in India in the future.

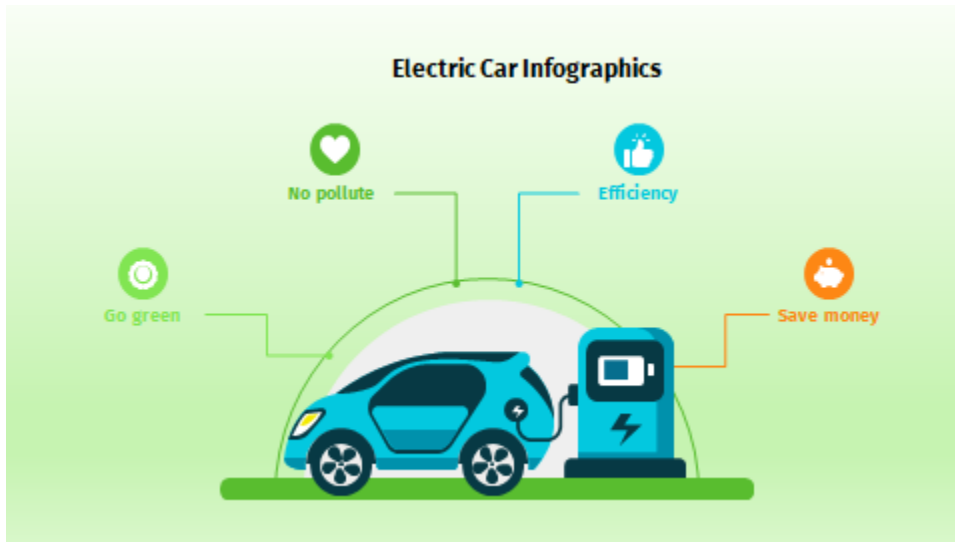
The present paper is to understand the Electric Vehicles segment in India and suggest an influencing strategy to change consumer perception about Electric vehicles and offer solutions to electric charge stations by introducing a new model.

Keywords: Electric Vehicles, Model, clean energy, Strategy, Perception

Introduction

The market for electric vehicles (EVs) is expanding quickly on a global scale. According to EV volumes, the total number of electric vehicles (including battery electric vehicles [BEVs] and Plug-in hybrid electric vehicles [PHEVs]) on the road increased from 4.2% in 2020 to 8.3% in 2021, with 6.75 million vehicles. As of 2020, this represents an increase of 108%. As they contribute to lowering emissions and the depletion of natural resources, EVs are gaining popularity around the world. Since close to 0.32 million vehicles were sold in 2021, an increase of 168% YoY, the Indian EV sector is likewise developing quickly. The Paris Agreement, which aims to reduce carbon emissions, improve the quality of the air in urban areas, and decrease oil imports, is the foundation for India's ongoing adoption of electric vehicles.

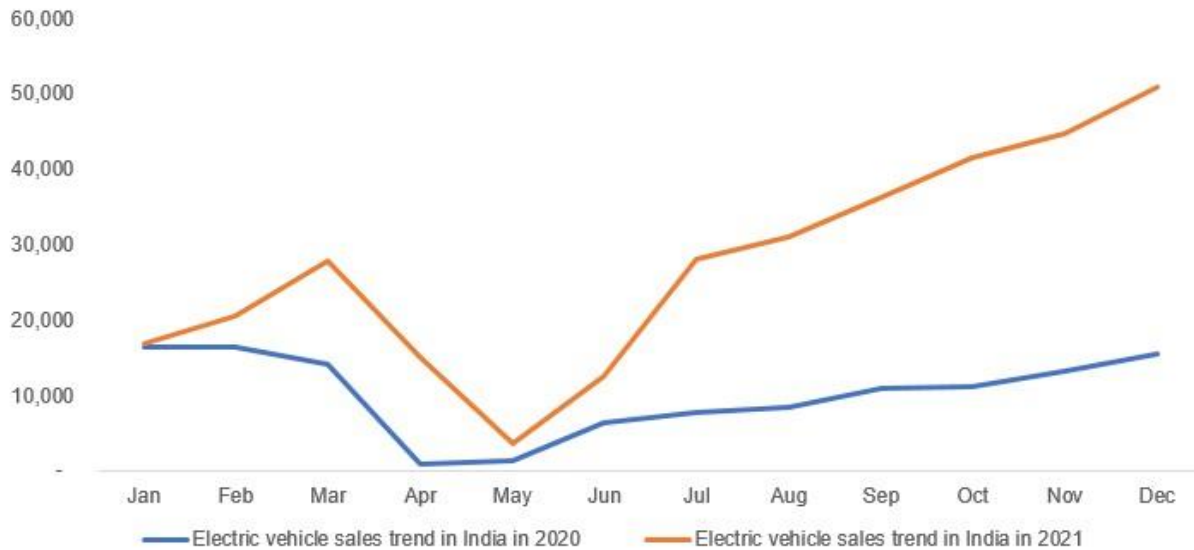
The features of Electric Vehicles are that they are very eco-friendly, there is no pollution. The use of Electric vehicles saves money and increases the efficiency of fuel.



(Source: Slides go)

Electric vehicles sales in India (2020-21)

Fig 1: Electric Vehicle Sales Trend in India (2020-21)



(Source: EV Reporter)

By 2030, the Indian automobile sector, which currently ranks fifth globally, is projected to overtake the United States as the largest. According to the India Energy Storage Alliance (IESA), the Indian EV market would grow at a CAGR of 36%. Because India imports about 80% of its crude oil needs, dependency on conventional energy sources is not a viable choice as population growth and vehicle demand increase. By 2030, NITI Aayog wants to see EV sales penetration for all commercial vehicles reach 70%, for private vehicles reach 30%, for buses reach 40%, and for two- and three-wheelers reach 80%. The objective of achieving net zero carbon emissions by 2070 is consistent with this. According to the Ministry of Heavy Industries, 0.52 million EVs have been registered in India over the last three years. EVs experienced strong growth in 2021, which was aided by the government's adoption of beneficial laws and initiatives.

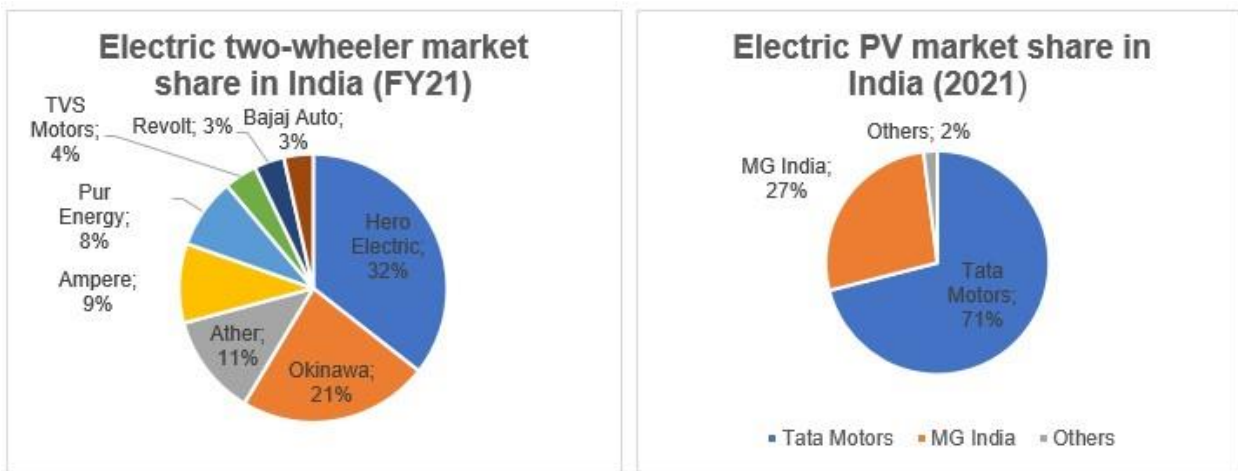
With 66,704 units sold across all categories in 2021, Uttar Pradesh led all Indian states in EV sales, followed by Karnataka with 33,302 units and Tamil Nadu with 30,036 units. While Karnataka and Maharashtra lead the two-wheeler and four-wheeler segments, respectively, Uttar Pradesh dominated the three-wheeler market.

Fig 2: States Wise EV Sales Trend



(Source: EV Reporter)

With a combined market share of 64%, Hero Electric, Okinawa, and Ather Energy dominate the electric two-wheeler industry in India. Okinawa is in second place with 21% of the market, followed by Hero Electric with 36%. With an 11.1% market share, Ather Energy is steadily increasing its market share as it expands its distribution network throughout India. Tata Motors dominates the electric vehicle industry in the passenger car segment with a 71% market share, driven by its two signature models, the Nexon and Tigor EV. The second-place finisher and provider of the longest-range EV is MG Motors India (MG EZS provides 439 KM range on a single charge). It is anticipated that additional Indian manufacturers would soon introduce their variants.



(Source- Cardekho, gaadiwaadi, e-vehicle info.,Rushlane.)

Business Opportunities in India

With a combined market share of 64%, Hero Electric, Okinawa, and Ather Energy dominate the electric two-wheeler industry in India. Here, Numerous economic opportunities are made available by India's EV drive in the mobility, infrastructure, and energy sectors. These prospects include, among others, those in the battery infrastructure, solar vehicle charging, EV OEM market, EV franchising, and battery swapping technologies. NITI Aayog estimates that a total investment of US\$ 267 billion (Rs. 19.7 lakh crore) in EVs, battery infrastructure, and charging infrastructure is needed to make the full transition to EVs.

The Ministry of Skill Development and Entrepreneurship (MSDE) estimates that by 2030, the EV sector might add 10 million direct jobs, resulting in 50 million indirect jobs. This clearly indicates that many manufacturing hubs are getting established in the near future. To back up the EV industry, governments at the center and state have been introducing many initiatives through schemes launched from time to time to encourage the EV segment. Some of the government schemes and initiatives are explained below.

Government Schemes and Initiatives

- **FAME India Scheme:** Faster Adoption & Manufacturing of (Hybrid &) Electric Vehicles (FAME) India was launched in 2015 for promoting growth and early adoption of hybrid and electric vehicles in the country. FAME-II scheme was launched in India with a budget outlay of US\$ 1.3 billion (Rs. 10,000 crore) to support 1 million e-two-wheelers, 0.5 million e-three-wheelers, 55,000 e-passenger vehicles and 7,000 e-buses. The government extended the scheme until 2024, as announced in Union Budget 2022-23.
- **PLI Scheme:** The government introduced Production Linked Incentive for Advanced Chemistry Cell Battery Storage (PLI-ACC) scheme. The scheme is expected to boost India's battery infrastructure. As per the Union Budget, the total outlay for the scheme is US\$ 2.45 billion (Rs 18,100 crore), which would be disbursed to beneficiaries over five years once the manufacturing facility is set up.
- **Battery Swapping Policy:** A wide-spread charging infrastructure is essential for EV adoption. In this regard, on April 22, 2022, NITI Aayog released a draft battery swapping policy which will be valid until March 31, 2025. The policy will be implemented over a period of 1-2 years from the date of launch of the policy and will cover all metropolitan cities with a population greater than four million. The second phase will be implemented over 2-3 years from date of launch of the policy and will cover all UT's and major cities with a population greater than 5,00,000.

Other Initiatives

- Tax exemption of up to Rs.1,50,000 (US\$ 1,960) under section 80 EEB of income tax while purchasing an EV (2W or 4W) on loan.
- Reduction of customs duty on nickel ore (key component of lithium-ion battery) from 5% to 0%.
- State- wise reduction of road tax and other incentives.

The electric two-wheeler is controlled by Okinawa, Hero Electric, and Ather Energy. Numerous economic opportunities are made available by India's EV drive in the mobility, infrastructure, and energy sectors. These prospects include, among others, those in the battery infrastructure, solar vehicle charging, EV OEM market, EV franchising, and battery swapping technologies. NITI Aayog estimates that a total investment of US\$ 267 billion (Rs. 19.7 lakh crore) in EVs, battery infrastructure, and charging infrastructure is needed to make the full transition to EVs.

Several automobile companies have plans to participate in the EV industry as listed in the table below:

Company	EV related plans
Kia	Kia plans to manufacture small SUV EVs in India for global markets in 2025.
Maruti Suzuki	Maruti Suzuki plans to launch its first EV model in India by 2025.
Tata Motors	Tata Motors bags an order worth US\$ 678 million (Rs 5,000 crore) order from the government for electric buses; it plans to launch 10 more EVs in India.
Hyundai	Hyundai plans to launch IONIQ 5 EV in India by the second half of 2022.
Hopcharge	Hopcharge, a Gurgaon- based start-up has created the world's first on-demand doorstep fast charge service.

MG Motors	MG Motors India has partnered with Bharath petroleum for expanding the EV charging infrastructure.
Mahindra & Mahindra	Mahindra and Mahindra targets to launch 16 EV models across its SUV and LCV categories by 2027.

(Source:India Brand Equity Foundation)

People are looking for alternate sources to save their monthly expenses, and the Indian EV industry is gradually gaining steam, thanks to government initiatives and the rise in crude oil costs. However, a widespread switch from internal combustion engine (ICE) vehicles to electric vehicles (EVs) necessitates the expansion of infrastructure facilities, such as charging stations, and automobiles that have a greater range (KM range with a single charge). To reach the goal of 100% EV use by 2030, the government has launched a number of measures to boost EV manufacturing and adoption across the nation. However, to help people adapt to EV charging problems should be resolved.

The electric vehicle (EV) market in India is still in its nascent stages, but it is growing rapidly. The Indian government has set a goal to achieve 30% of electric mobility by 2030, and as a result, various manufacturers have started investing in the production of EVs in India. In terms of sales, the electric passenger vehicle segment, which includes cars and SUVs, has seen a significant increase in recent years. According to the Society of Manufacturers of Electric Vehicles (SMEV), the sale of electric passenger vehicles in India increased from 3,000 units in FY2015 to over 22,000 units in FY2020. In the two-wheeler segment, electric scooters have been the most popular electric vehicles, accounting for the majority of electric two-wheeler sales in the country. In the commercial vehicle segment, electric buses and electric three-wheelers have seen significant growth in recent years. Some of the major players in the Indian EV market include Tata Motors, Mahindra & Mahindra, Hero Electric, and Okinawa Autotech. However, the market is highly competitive and new players are entering the market regularly.

In terms of charging infrastructure, the Indian government has set a goal to have 10,000 charging stations across the country by 2030. Currently, there are over 1,000 charging stations in India, with several private players investing in building charging infrastructure across the country. A Survey conducted found that purchases of EV's are primarily by Gen X & Millennials who are of age 23-54 years. It would be best to target the age Group 35-45 Years Optimistically as the purchasing power of this class is higher. The 2-wheeler Industry is expected to have a projected growth of 355.23 Million USD, and the assumed CAGR is 27.6%. The target location is North East India .

The reason North East India is chosen is because it has very conducive climatic conditions and favorable Government Policies. For example, as EV are heat averse, north east India provides a suitable climate. To accommodate the SDG of the UN, very good government policies are introduced to promote green & clean energy. North East India along with States with the Highest EV Sales, (Uttar Pradesh, Delhi, Karnataka, Tamil Nadu) their capital cities could be targeted specifically as exhibited in Fig 2.

To offer the solution to the problem of charging the EV batteries, the charging Time Problem could be solved by installing stronger and more powerful batteries with 900W in it. This in turn would reduce the time limit of charging from many hours to just 30-45 minutes.

The Top Competitors in this sector Heroelectric, Okinawa Motors, Ola, Ather 450x

All these competitors have the following attributes :

Riding Range- 90-120 km

Price - 86000 - 138000

Top Speed - 48-90 km/h

Charging Time :- 2.5 hours - 5 hours

To offer a Sustainability Plan & Solution to resolve EV chargers in India, batteries could be recycled. The Lithium & Graphite in the Batteries could be used to make new Batteries at a lower cost. Considering the fact that batteries are the most expensive part of an EV, reducing their cost will be a big plus. For the General Public to buy EVs especially in India, where "Cheap is Best".

Opportunities

Now to determine the opportunities existing, Range Anxiety can be solved with this regard as these are only 2-wheelers & an assumption could be made that these vehicles are bought only for Intracity travels. A Mobile charging service could be provided for a 50 km range; in case anyone has a breakdown due to low battery, they could be given emergency charging service.

A Guesstimate made concluded that petrol Vehicles are 104.5% more expensive than Electric Vehicles. If the cost of the vehicles are included then Petrol Vehicles are still more expensive than (42%) EV Vehicles. Charging Stations could be strategically placed within a 3km radius. Near Office Places. The number of 2-wheelers sold in India are 621852 registered according to India.

Conclusion

The future growth of electric scooters in India is expected to be significant in the coming years, driven by the government's push toward electric mobility and increasing consumer interest in sustainable transportation options. The Indian government has introduced various incentives for the manufacturing and purchase of electric scooters, including subsidies and tax exemptions, to promote their adoption. In addition, the government has set a goal to have 10,000 charging stations across the country by 2030, which will improve the charging infrastructure for electric scooters. Several major players in the Indian two-wheeler market, including Hero Electric and

Okinawa Autotech, have already started manufacturing and selling electric scooters in India, and new players are entering the market regularly. The competition in the market is expected to increase, which will drive innovation and improve the quality of electric scooters available in the market. In terms of consumer demand, the electric scooter market in India is expected to grow as consumers become more aware of the benefits of electric scooters, such as lower operating costs and reduced environmental impact.

References

Online sources

www.statista.com

www.Zigwheels.com

www.timesofindia.com

www.cars.com

www.evduniya.com

Journals

- Electric vehicles. (2017). *Modern Electric, Hybrid Electric, and Fuel Cell Vehicles*, 1-20. <https://doi.org/10.1201/9781420054002-4>
- Goswami, R. (2022). Factors influencing the adoption of electric vehicles in India: An empirical analysis. *International Journal of Electric and Hybrid Vehicles*, 14(4), 354. <https://doi.org/10.1504/ijehv.2022.127050>
- Mohanty, P., & Kotak, Y. (2017). Electric vehicles: Status and roadmap for India. *Electric Vehicles: Prospects and Challenges*, 387-414. <https://doi.org/10.1016/b978-0-12-803021-9.00011-2>
- Panwar, U., Kumar, A., & Chakrabarti, D. (2019). Barriers in implementation of electric vehicles in India. *International Journal of Electric and Hybrid Vehicles*, 11(3), 195. <https://doi.org/10.1504/ijehv.2019.101273>
- Shukla, V. (2021). Electric vehicles in India: Current trends and future forecasts. *International Journal of Electric and Hybrid Vehicles*, 13(2), 117. <https://doi.org/10.1504/ijehv.2021.117836>

Questions

1. Electric Vehicles charging problems should be resolved. Discuss.
2. Government intends to push electric mobility and increase the sustainable transportation options. Discuss.

3. The future growth of electric two wheeler and four wheelers is expected to grow, discuss the government's initiatives and the EV market in the coming years.