RESEARCH PROJECT

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EMERGING TRENDS AND CHALLENGES IN ADOPTION OF ELECTRIC VEHICLES IN INDIA

"People don't buy for logical reasons. They buy for emotional reasons." - Zig Ziglar (1926), Motivational Speaker and Author

INTRODUCTION

India is one of the fastest growing economies in the world. The growth in India's urbanization and per capita income, particularly, has an impact on the mobility of its people and the number of vehicles on the road. India is the fifth ranked in terms of world car market. Soon we can see India amongst the top three countries with about 40 crore customers in need of transport means by 2030. To meet India's Net Zero Emission by 2070, India needs better cars, public transport, and railways. The future of electric vehicles (hereafter EVs) in India seems to be very promising. The benefits of EVs in saving the planet have led to some of the greatest path breaking technologies worldwide. Use of EVs would reduce our dependency on fossil fuels, and they are very cost-effective too in the long run. Keeping in mind the increasing fuel prices we can expect a tectonic shift towards electric vehicles. Faster adoption of EVs would enable India to reach Net Zero emissions announced by the Honorable Prime Minister at Conference of Parties (COP) 26 in Glasgow in November 2021.

The government of India has taken crucial steps to make this shift happen. On one hand there are tax subsidies for buying EVs, and on other hand there are stringent regulations which are influencing the decision of consumers in the favor of EVs. Besides, banks are offering easier car loans to consumers for purchasing EVs (Tata Capital, 2022). EVs have low running costs and they are also highly environment friendly as they do not run-on fossil fuels. Most of the EVs nowadays use lithium-ion batteries as they have a longer lifespan and are better at conserving energy. At the end we witness a contended customer who purchases an EV with tax benefits and find the running cost of the vehicle significantly cheaper. On top of that the maintenance cost is very low compared to other vehicles. Keeping in view all these advantages, EVs are the future of India and there is no second thought about that.

Inception of Electric Vehicles in India

In India, the focus of shifting to electric mobility was recognized due to the problems created by burning fossil fuels. The problem of depleting fossil fuels, rising energy costs, impact of pollution on the environment, and concerns over climate change. EVs were assembled and

sold in the country in the mid-1990s, but their numbers were low due to demand and supply-related issues. These include lack of domestic manufacturing units, limited EV options, high vehicle costs and inadequate battery charging infrastructure. In the beginning the government was undertaking short-term and isolated initiatives to promote EVs whereas the need was holistic development for successful launch of EVs.

In response to escalating environmental problems, the Indian government launched the National Mission for Electric Mobility (NMEM) in 2012. Its aim was to promote domestic manufacturing and widespread adoption of electric vehicles. The National Electric Mobility Mission Plan (NEMMP) 2020 offered the following proposals to meet the goals (Aijaz, 2022):

- EVs should be made mandatory in government fleet and public transportation and offer reduced price and tax exemptions to buyers.
- Mobilize EV manufacturing in the country by offering tax exemptions to domestic manufacturers.
- Enhance EV Research and Development (R&D), include international collaboration for designing cost-effective vehicles.
- Improve existing infrastructure for EV charging at charging stations at public places, workplaces, bus depots, and homes.
- Raise public awareness about benefits of EVs.

To take the NEMMP forward, a scheme named ‘Faster Adoption and Manufacturing of Electric and Hybrid Vehicles in India’ (FAME India) was formulated and implemented by the Department of Heavy Industry in 2015 to be implemented in two phases FAME I and FAME II. The goals were to address the issue of vehicle emissions by encouraging use of electric vehicles. This is being achieved by technology development, demand creation, and provision of charging infrastructure.

Features of FAME I and FAME II

Category	FAME I 2015-2019	FAME II 2019-2024
Aim	Reduce dependency on fossil fuel and address issues of vehicular emissions	Encourage faster adoption of electric and hybrid vehicles
Emphasis	Provide affordable and environment-friendly public and private transportation for masses	Electrify public transportation, including shared transport
Focus Areas	Technology development, demand creation through incentives, pilot projects, charging infrastructure	Upfront incentive on EV purchase, charging infrastructure in selected cities and along major highways

Source: Ministry of Heavy Industries (2022).

Electric Vehicle Market in India

The Ministry of Heavy Industry and Public Enterprises had launched FAME (Faster Adoption and Manufacture of Hybrid and EVs) in 2015 as mentioned earlier, which gave impetus to the growth of EVs. The market for EVs in India was at US$ 5.47 billion in 2020, and we are expecting it to reach US$ 17.01 billion by 2026. EVs growth in India is backed by the policies of the government to promote manufacturing and adoption of these vehicles. The government has given a call for only EVs on Indian roads by 2030. The steps taken by the government are:

- The Government is providing subsidies on the manufacture of electric vehicles.
- Consumers can avail tax benefits on the purchase of electric vehicles.
- As per the Ministry of Power guidelines no license is required to open EV charging station.
- According to the Ministry of Road Transport statement battery-operated vehicles do not require any permit.

India is committed to containing pollution and reducing carbon footprints. The country is getting ready to shift to EVs by 2030. The government wants to enhance EV production to reduce the oil bill by US$ 60 billion and cut emissions by 37 percent thus reducing the

dependence on import of fuels and reducing vulnerability against fuel price.

According to Tata Capital (2022), the number of EVs sold in India was at 1.19 lakhs in 2020, in 2022 this figure has already crossed 4.19 lakhs. The worldwide figures suggest sales of 39.21 million vehicles by the end of 2021, and overall EVs market is growing at a staggering CAGR of 21.7%.

According IBEF (2022), the EV market in India will open business opportunities in the areas of EV franchising, EV OEM market, battery charging infrastructure and battery swapping technology. The complete transition to EVs requires a total investment of Rs.19.7 lakh crore in EVs, battery infrastructure and charging infrastructure as per NITI Ayog. According to the Ministry of Skill Development and Entrepreneurship (MSDE), we can expect the EV industry to add 10 million jobs by 2030. Several automobile companies have EV related plans 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: IBEF (2022).

LITERATURE REVIEW