

# INDIA'S EV MARKET : TRENDS, CHALLENGES & OPPORTUNITIES (FEB 2025)

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## SUMMARY

**Target audience :** Engineering & IT professionals, EV startup owners

The Indian Electric Vehicle (EV) market is witnessing rapid growth, driven by advancements in battery technology, improved government incentives, and increasing consumer interest. However, key challenges such as charging infrastructure, software reliability, cybersecurity risks, and resale value concerns continue to shape customer sentiment. This report provides a comprehensive analysis of EV customer perceptions, segment-specific insights, cybersecurity risks, and future expectations for the industry.

## EV MARKET SENTIMENTS & CUSTOMER PERCEPTIONS

### Positive trends in EV adoption

- Increasing affordability of EVs with competitive pricing across various segments.
- Improved battery technology, with models offering higher ranges and longer warranties.
- Growth in charging infrastructure in urban areas.
- Rising environmental awareness influencing EV adoption.
- Increasing corporate adoption of EV fleets to reduce carbon footprints.
- Government incentives making EVs more financially viable.
- Entry of global EV manufacturers into the Indian market, increasing competition and innovation.
- Development of vehicle-to-grid (V2G) technology, enabling EVs to contribute to the power grid.

### Key consumer concerns

- **Battery performance issues:** Reports of sudden battery charge drops and degradation concerns.
- **Resale value worries:** EVs are depreciating faster than traditional ICE vehicles.
- **Charging infrastructure gaps:** High charging costs at public stations and slow home charging.
- **Frequent software updates:** Some updates reportedly reduce vehicle performance over time.
- **Long-term battery health:** Uncertainty regarding replacement costs and warranty coverage.
- **Lack of skilled technicians:** Shortage of trained EV service professionals.
- **Safety concerns:** Reports of battery fires and overheating incidents.

## NEW ENTRANTS IN THE EV MARKET

- **Tesla** is set to launch its vehicles in India, focusing on premium EVs.
  - Likely to introduce Model 3 and Model Y, with localised production for cost reduction.
  - Charging infrastructure expansion expected to support Tesla's Supercharger network.

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- **Fisker:** Announced plans to bring the Ocean EV SUV.
- **Rivian:** Exploring the Indian market, targeting premium SUV and truck segments.
- **Ola Electric:** Expanding into four-wheeler EVs, with plans to launch an electric sedan.
- **BYD:** Increasing focus on India with EV offerings in the commercial and passenger segments.
- **Hyundai and Kia:** Expanding their EV portfolios with localised production.
- **VinFast** (Vietnamese automaker): Plans to enter India with premium EVs.

## EV BATTERY AND CYBERSECURITY CHALLENGES & OPPORTUNITIES

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### Battery technology challenges

- Battery degradation over time, leading to range reduction.
- High replacement costs, affecting resale value.
- Temperature sensitivity, impacting efficiency in extreme climates.
- Limited battery recycling infrastructure, causing sustainability concerns.
- Dependence on imported raw materials such as lithium and cobalt.

### Cybersecurity challenges in EVs

- Public charging station vulnerabilities, exposing EVs to hacking risks.
- OTA software update risks, where malicious code can compromise vehicle performance.
- Cloud-based security weaknesses, leading to unauthorised access and data leaks.
- Smart vehicle tracking concerns, raising privacy issues for consumers.
- Potential for remote vehicle control hacks, posing safety risks.

### Opportunities in EV battery & cybersecurity

- Advancements in solid-state batteries to improve lifespan and safety.
- AI-driven cybersecurity measures for detecting threats in connected EVs.
- Blockchain-based charging security for secure transactions.
- Battery second-life solutions, utilising used EV batteries for energy storage.
- Development of quantum encryption to enhance EV cybersecurity.

## PREDICTED EV MARKET GROWTH IN 2025-2030

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- EV market expected to grow at a CAGR of 30% by 2030.
- Increase in localised battery production, reducing dependence on imports.
- More affordable EV models emerging in the sub-₹10 lakh category.

- Expansion of fast-charging networks to eliminate range anxiety.
- Government initiatives accelerating fleet electrification for commercial transport.
- Advancements in hydrogen fuel cell technology, providing an alternative to battery-powered EVs.

## JOB OPPORTUNITIES IN THE EV INDUSTRY

Contact for EV Jobs: [info@iTelematics.com](mailto:info@iTelematics.com)

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### Engineering & Technical Roles

- **Battery management system (BMS) engineers:** Require expertise in lithium-ion battery chemistry, thermal management, and safety protocols.
- **EV software developers** (firmware, OTA updates): Skills in embedded systems programming, IoT security, and AI-driven diagnostics.
- **Power electronics engineers:** Must have strong knowledge of DC-DC converters, inverters, and energy storage systems.
- **Cybersecurity experts** for connected vehicles: Need expertise in vehicle-to-everything (V2X) security, encryption protocols, and intrusion detection systems.
- **Charging infrastructure engineers:** Should have experience with grid integration, fast-charging protocols (CCS, CHAdeMO), and renewable energy solutions.

### Software development roles

- **Embedded software engineers:** Focus on real-time vehicle monitoring and diagnostics.
- **AI & machine learning specialists:** Work on predictive maintenance and autonomous driving features.
- **Blockchain developers:** Enhance EV charging security and transaction authenticity.
- **Cloud computing experts:** Manage EV telematics and data analytics for fleet operations.

### Job opportunities for freshers

- **EV engineers:** Entry-level roles in EV research, battery testing, and design.
- **Software testing & QA analysts:** Focus on ensuring EV firmware quality and security.
- **Data analysts** for EV market trends: Utilize big data to assess EV adoption patterns.
- **EV technician** apprenticeships: Training programs for hands-on experience in vehicle diagnostics and servicing.

## CONCLUSION

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The Indian EV market is at a crucial stage, with rising adoption but ongoing challenges in battery reliability, cybersecurity, and resale value. As competition increases, manufacturers must prioritise transparency, software security, and customer trust to ensure long-term success.