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## Factors Influencing People To Prefer Electric Vehicles In This Contemporary Era

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### ABSTRACT

The rapid transformation of the global transportation sector has positioned electric vehicles (EVs) as a sustainable alternative to conventional internal combustion engine vehicles. This paper critically examines the key factors influencing consumer preference for electric vehicles in the contemporary era. Drawing upon an extensive review of scholarly literature, policy reports, and secondary statistical data, the study identifies environmental concern, economic viability, technological advancement, infrastructure availability, government intervention, and social influence as major determinants of EV adoption. The findings of this study provide valuable insights for policymakers, manufacturers, and researchers aiming to promote sustainable mobility.

### Keywords:

Electric Vehicles (EVs), Consumer Preference, Sustainable Mobility, Environmental Awareness, Government Incentives, Charging Infrastructure, FAME Scheme, India.

### 1. INTRODUCTION

The transportation sector plays a significant role in global energy consumption and environmental degradation. According to international energy assessments, road transport contributes a substantial share of greenhouse gas emissions, prompting governments worldwide to seek cleaner mobility solutions. In this context, electric vehicles (EVs) have emerged as a promising alternative due to their lower environmental impact and improved energy efficiency. Over the past decade, technological innovation, declining battery costs, and policy-driven incentives have enhanced the feasibility and attractiveness of EVs.

Consumer preference plays a pivotal role in determining the success of electric mobility initiatives. While early adoption of EVs was limited to environmentally conscious consumers, recent trends indicate a broader acceptance across diverse socio-economic groups. Understanding the factors that influence consumer preference is therefore essential for accelerating EV adoption and achieving sustainable transportation goals. This paper aims to analyze these influencing factors comprehensively, supported by historical insights, statistical evidence, and an in-depth review of existing literature.

## 2. HISTORY AND EVOLUTION OF ELECTRIC VEHICLES

The concept of electric mobility is not a recent phenomenon. Electric vehicles were developed as early as the 19th century, with inventors in Europe and the United States experimenting with battery-powered transportation. By the early 1900s, electric cars were popular in urban areas due to their quiet operation and ease of use. However, limitations related to driving range, battery storage, and high production costs restricted their widespread adoption.

The dominance of internal combustion engine vehicles during the mid-20th century led to a decline in EV development. Nevertheless, rising fuel prices, environmental pollution, and energy security concerns in the late 20th century revived interest in electric mobility. The introduction of lithium-ion batteries, advancements in power electronics, and digital integration in the 21st century marked a turning point in EV evolution. Today, electric vehicles are recognized as a central component of sustainable transportation strategies across both developed and developing economies.

## 3. Global Growth and Market Expansion of Electric Vehicles

Table 1: Global Electric Vehicle Sales (2018–2024)

Year	Global EV Sales (Million Units)	Growth Rate (%)
2018	2.1	–
2019	2.3	9.5
2020	3.1	34.8
2021	6.6	112.9
2022	10.5	59.1
2023	14.0	33.3
2024*	17.0	21.4

\*Estimated figures based on international energy outlook reports.

The data clearly indicate a strong upward trajectory in global EV adoption, particularly after 2020. This growth can be attributed to stricter emission regulations, increased government incentives, and heightened public awareness of environmental issues.

## 4. FACTORS INFLUENCING PREFERENCE FOR ELECTRIC VEHICLES

### 4.1 Environmental Considerations

Environmental concern is widely acknowledged as one of the most influential factors driving EV preference. Increasing awareness of climate change, urban air pollution, and fossil fuel depletion has encouraged consumers to consider environmentally friendly transportation alternatives. Electric vehicles produce zero tailpipe emissions, thereby contributing to improved air quality and reduced carbon footprints.

### 4.2 Economic Factors

Economic considerations significantly shape consumer decision-making regarding EV adoption. Although electric vehicles often involve higher initial purchase costs compared to conventional vehicles, they offer lower operating and maintenance expenses over time.

Table 2: Comparative Cost Structure of ICE Vehicles and Electric Vehicles

Cost Aspect	ICE Vehicles	Electric Vehicles
Initial Purchase Cost	Moderate	Relatively High
Fuel / Energy Cost	High	Low
Maintenance Cost	High	Low
Government Incentives	Limited	Substantial
Long-term Ownership Cost	High	Moderate

This comparison highlights the long-term economic advantages of EVs, which increasingly influence consumer preference.

### 4.3 Charging Infrastructure Availability

The availability and accessibility of charging infrastructure play a crucial role in shaping EV preference. Inadequate charging facilities often lead to range anxiety, discouraging potential buyers. Conversely, expansion of public and private charging networks significantly enhances consumer confidence and willingness to adopt EVs.

### 4.4 Technological Attributes

Technological performance is a decisive factor influencing EV preference. Consumers evaluate aspects such as driving range, battery durability, charging speed, safety features, and smart connectivity.

Table 3: Technological Attributes Affecting Consumer Preference

Attribute	Level of Importance
Driving Range	Very High
Charging Time	High
Battery Life	Very High
Safety Features	High
Smart Technology Integration	Moderate

Continuous technological advancements have substantially improved the overall appeal of electric vehicles.

### 4.5 Government Policies and Incentives

Government intervention through subsidies, tax exemptions, and policy mandates has a significant impact on EV adoption. Supportive regulatory frameworks reduce financial barriers and encourage consumers to shift toward electric mobility.

### 4.6 Social and Psychological Factors

Social influence, peer behavior, and individual attitudes toward innovation also affect EV preference. Studies suggest that consumers are more likely to adopt EVs when they observe positive experiences within their social networks.

## 5. INDIAN ELECTRIC VEHICLE POLICY FRAMEWORK: FAME-II AND FAME-III

India's electric vehicle adoption has been significantly shaped by targeted government policies, particularly under the Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme. These policies aim to reduce dependence on fossil fuels, lower emissions, and promote domestic manufacturing.

### 5.1 FAME-II Policy Overview

The FAME-II scheme was launched in 2019 with a budgetary outlay of Rs.10,000 crore and remained effective until March 2024. The policy primarily focused on demand incentives, charging infrastructure development, and support for electric public transportation.

Key objectives of FAME-II include: - Encouraging adoption of electric two-wheelers, three-wheelers, passenger cars, and buses - Reducing the upfront cost of EVs through direct subsidies - Promoting localization of EV components and batteries - Expanding public charging infrastructure across urban and semi-urban areas

Under FAME-II, incentives were linked to battery capacity (Rs.15,000 per kWh for two-wheelers), significantly lowering acquisition costs and improving affordability for middle-income consumers. This policy intervention played a critical role in increasing EV registrations, particularly in the two-wheeler and public transport segments.

## 5.2 Transition Towards FAME-III

Building on the outcomes of FAME-II, the Government of India has proposed the FAME-III policy to further accelerate electric mobility. While still evolving, FAME-III is expected to emphasize long-term sustainability, domestic manufacturing, and technological innovation.

Proposed focus areas under FAME-III include: - Greater emphasis on electric public transport and fleet electrification - Incentives for advanced battery technologies and recycling - Stronger alignment with India's net-zero emission targets - Enhanced support for indigenous EV manufacturing under the Make in India initiative

FAME-III is anticipated to move beyond short-term subsidies and focus on ecosystem development, including supply chains, research and development, and skill enhancement. Such a policy shift is likely to strengthen consumer confidence and reinforce EV preference in the Indian market.

## 6. REVIEW OF LITERATURE

Table 4: Summary of Selected Studies on Electric Vehicle Adoption

Author(s)	Year	Study Area	Key Findings
Bansal et al.	2021	India	Consumers value driving range and long-term cost savings
Chawla et al.	2023	India	Awareness, affordability, and charging time influence adoption
Singh et al.	2023	Multicounty	Cultural and social norms significantly affect EV intention
Joshi & Gupta	2024	India	Infrastructure and policy incentives are critical drivers

The reviewed studies collectively indicate that EV adoption is influenced by a combination of economic, environmental, technological, and behavioral factors. While environmental concern emerges as a universal motivator, its impact varies across regions depending on income levels and infrastructure development.

## 6. CONCLUSION

The study concludes that consumer preference for electric vehicles in the contemporary era is shaped by multiple interrelated factors. Environmental awareness and government support act as primary motivators, while economic viability, technological reliability, and infrastructure availability determine practical adoption decisions. The sustained growth in global EV sales demonstrates increasing consumer acceptance and market readiness. To accelerate EV adoption further, policymakers should prioritize infrastructure development, manufacturers should focus on technological enhancement and cost reduction, and educational initiatives should be strengthened to improve public awareness.

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