



A Study on Awareness and Utilization of E-Vehicle and Petrol/Diesel Vehicle with Special Reference to Coimbatore District

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Abstract: The rapid evolution of the automotive industry has brought electric vehicles (EVs) to the forefront of sustainable transportation, challenging the long-established dominance of internal combustion engine (ICE) vehicles powered by petrol and diesel. This study presents a comparative analysis of electric vehicles and conventional petrol/diesel vehicles with special reference to Coimbatore District, Tamil Nadu, India a region increasingly recognized as an emerging hub for manufacturing, technology, and green mobility initiatives. The primary objective of this research is to examine and compare electric vehicles and conventional fuel-based vehicles across multiple dimensions, including purchase cost, operational expenses, environmental impact, maintenance requirements, performance, consumer awareness, and government policy support. The study also seeks to understand the factors influencing consumer preferences and adoption patterns among residents of Coimbatore District. A structured survey methodology was employed, utilizing both primary and secondary data sources. Primary data was collected through questionnaires distributed among vehicle owners, prospective buyers, and daily commuters across urban and semi-urban areas of Coimbatore. Secondary data was gathered from published reports, government records, automotive industry publications, and relevant academic literature. The findings reveal that while conventional petrol and diesel vehicles continue to dominate the market due to established infrastructure and consumer familiarity, awareness and acceptance of electric vehicles is steadily growing, particularly among younger, environmentally conscious demographics. Key barriers to EV adoption identified include limited charging infrastructure, higher initial acquisition cost, and range anxiety. The study concludes with actionable recommendations for policymakers, automotive manufacturers, and local government bodies to accelerate the transition toward sustainable e-mobility in Coimbatore District, thereby contributing to India's broader national electric vehicle mission and carbon emission reduction goals.

Keywords: Electric Vehicles, Petrol Vehicles, Diesel Vehicles, Consumer Preference, EV Adoption Coimbatore District, Sustainable Transportation, Green Mobility.

I. Introduction

Nowadays, due to the aggravation of the global energy crisis, environmental pollution, and the greenhouse effect, the market offers consumers a choice of not only traditional gasoline and diesel vehicles but also new hybrids and pure electric vehicles. It is an inevitable trend for fuel cars to be replaced by other energy cars. In the future, cars will become more resource-efficient and produce fewer emissions. But emerging technologies can also have some negative effects at this stage of development. By comparing the differences between conventional vehicles, hybrid vehicles, and pure electric vehicles, this paper draws conclusions accordingly.



Electric vehicles (EVs) use electricity as their primary fuel or to improve the efficiency of conventional vehicle designs .EVs include all-electric vehicles, also referred to as battery electric vehicles (BEVs), and plug-in hybrid electric vehicles (PHEVs). In colloquial references, these vehicles are called electric cars, or simply EVs, even though some of these vehicles still use liquid fuels in conjunction with electricity.

II. Review of Literature

1. Yirga Belay Muna and Cheng-Chien Kuo [2022] This paper focuses on the feasibility and techno-economic analysis of electric vehicle charging of PV/wind/diesel/battery hybrid energy systems with different battery technology, which is the first in Ethiopia, and includes PV and Wind power sources, different technology battery storage, diesel generator and, grid connection.

2. Vibhuti Pareek, (2022) Perception towards electric vehicles in the Indian market: The researcher observed that manufacturers of EVs need to work on their research and development to improve price range, cost of product, design, style, and branding to create a positive perception about electric vehicles in the Indian market.

3. J. Bessa (2021) et al. discussed Economic and technical management of an aggregation Agent for electric vehicles in which they discussed how the anticipated rise in the usage Electric cars (EV) prompted a debate about intermediary organizations that might assist in the management of a large number of EV. A commercial intermediary between a system operator (SO) and a plug-in EV is an aggregation agent for electric cars.

4. Ajex Thomas Varghese, V.S. Abhilash, and Sini V. Pillai (2021) conducted a study on consumer perception and purchase intention of electric vehicles in India. They highlighted that government intervention is crucial for EV adoption. Infrastructure development, such as charging stations, is a key requirement.

5. Bansal (2021) and colleagues conducted research to learn about Indian consumers' attitudes on electric vehicles and their desire to buy them.

III. Statement of The Problem

As environmental issues are recorded high in India, people are starting to think about saving the environment as much as possible. It is common knowledge that petrol and diesel vehicles cause most of the environmental damage due to which people are shifting to electric vehicles. Although the EV concept is well proven nowadays, people still lack the knowledge or trust in it. They are skeptical about the safety and reliability of electric vehicles. Therefore, this research has been conducted to analyze people's perception sasper the negativesandpositivesforelectric vehicles and the technology included within.

Objective of the study

- To evaluate the fuel consumption of gasoline vehicles.
- To analyze the performance differences between EVs and petrol cars.
- To examine the perceptions of electrical vehicle usage.



V. Research Methodology Research Design

- The study uses stratified random sampling, dividing respondents into two groups: Electric Vehicle users/potential buyers and Petrol/Diesel Vehicle users/potential buyers.
- This ensures balanced representation and enables a fair comparison of consumer perceptions and purchase intentions.
- Data will be collected from both urban (EV focus) and rural/semi-urban areas (petrol/diesel focus).

Sampling Technique

The sampling method used in this study is non probability convenience sampling method where a sample size of 60 respondents was taken.

Sample Size

TOOLS USED FOR ANALYSIS

- Percentage Analysis
- Correlation
- Chi-Square

ANALYSIS AND INTERPRETATION

TABLE: 1 GENDER

The research was conducted using a total sample size of $n = 60$ vehicle users to evaluate the comparative performance and user sentiment between traditional and modern transport. The sample is strategically distributed with an 80/20 split, consisting of 48 Petrol/Diesel (ICE) users and 12 Electric Vehicle (EV) users. This distribution is statistically significant for a comparative study, as the 12 EV responses provide a sufficient "pilot" group to establish key trends, while the 48 ICE responses offer a robust baseline for traditional ownership costs. By maintaining this 80/20 ratio, the study accurately mirrors the growing but emerging nature of the EV market, ensuring that the comparative analysis is grounded in current real-world adoption rates while providing enough data points to draw meaningful conclusions from both categories.

	No. of Respondents	Percentage	Cumulative Percentage
Male	43	67	67
Female	17	33	100
Total	60	100	100

CHART:1
INTERPRETATION

Out of 60 total respondents, 43 were male (67%) and 17 were female (33%). The data shows a significant gender imbalance in the sample, with males outnumbering females by roughly 2:1. This suggests the study



population or the context being researched is male-dominated which could be relevant to interpreting the findings. For instance, if this is a workplace or field survey, it may reflect gender representation in that sector. The cumulative percentage reaching 100% at Female confirms that these two categories account for all respondents with no missing data.

TABLE: 2
AGE GROUP

	Responses	Percentage	Cumulative Percentage
Below 20	10	17	17
21-30	35	58	75
31-40	10	17	92
41-50	4	7	99
Above51	1	1	100

CHART:2
INTERPRETATION

Out of 60 respondents, the majority (58%) belong to the 21–30 age group, indicating that most participants are young adults. The cumulative percentage shows that 75% of respondents are aged 30 or below, confirming a predominantly youth-oriented sample. Older age groups (41 and above) represent only 8% of the total, showing very minimal participation from senior age groups.

TABLE: 3
TYPE OF VEHICLE CURRENTLY USED BY RESPONDENTS

	Responses	Percentage	Cumulative Percentage
E-Vehicle	12	20	20
Petrol/Diesel Vehicle	48	80	100

CHART: 6
INTERPRETATION

Petrol/Diesel vehicles are the primary choice, used by a significant majority of 80%. E-Vehicles have a much lower adoption rate, accounting for only 20% of the respondents. The cumulative percentage reaches 100% with the inclusion of traditional fuel vehicles. The data indicates that for every five people, only one has transitioned to an electric vehicle. Conventional fuel vehicles remain the dominant mode of transport within this surveyed group.



VI. Results and Discussion Findings

Traveling 100 km in a conventional vehicle costs approximately INR 435, while the same distance in an EV costs only INR 97.

Suggestions

The government and private sectors must prioritize the rollout of public charging stations to reduce "range anxiety".

VII. Conclusion

Electric vehicles have some major advantages that can create a revolution in the automotive industry, India is the fifth most polluted country in the world and fuel based vehicle play a vital role to create air pollution. EVs will change the pollution crises in India as well as noise pollution because it doesn't emit sound or smog. We know that Electric Vehicles are the future of our country but right now there are many challenges that occur in the EV sector such as high initial cost, lack of demand, lack of charging stations, limited driving time from one full charge, high battery replacement cost etc

These challenges can be conquered by the initiatives and Government policies. The agenda is to make India 100% Electric Vehicle Nation by 2030. Hence all these initiatives will improve the infrastructure and adaptation of EVs in India. With the exhaustion of petroleum derivatives and consistent climb in fuel costs, there is a need for energy progress in vehicles in India. G

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