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IMPACT OF ELECTRIC VEHICLES ON CONSUMER BUYING BEHAVIOUR

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Abstract

Electric Vehicles (EVs) are transforming the automobile industry and influencing consumer buying behaviour. This theoretical study examines the major factors affecting consumers' purchase decisions towards EVs. The study is based entirely on secondary data collected from research articles, academic publications, reports and other relevant sources. The findings indicate that environmental awareness, lower operating costs, technological development and government support positively influence consumer buying behaviour. However, high initial cost, inadequate charging infrastructure, limited driving range and battery-related concerns remain major barriers to EV adoption. The study concludes that improving affordability, charging infrastructure, battery technology, consumer awareness and after-sales services can enhance consumer acceptance and adoption of electric vehicles.

Keywords:

Electric Vehicles, Consumer Buying Behaviour, Consumer Perception, Purchase Decision, EV Adoption, Consumer Awareness, Sustainable Transportation

1. INTRODUCTION

The automobile industry is undergoing significant changes with the increasing adoption of Electric Vehicles (EVs). Rising fuel prices, environmental concerns, technological advancements and government support have encouraged consumers to consider EVs as an alternative to conventional vehicles.

The growth of EVs is influencing consumer buying behaviour. Apart from price, brand, design and performance, consumers now consider factors such as battery life, driving range, charging infrastructure, maintenance cost and environmental benefits.

Therefore, understanding these factors is important for automobile manufacturers, marketers and policymakers. The present study examines the impact of Electric Vehicles on consumer buying behaviour and identifies the major factors influencing consumers' purchase decisions.

2. OBJECTIVES OF THE STUDY

The study has the following four objectives:

- To examine the concept and importance of Electric Vehicles.
- To analyse the impact of Electric Vehicles on consumer buying behaviour.
- To identify the major factors influencing consumers' buying decisions towards Electric Vehicles.
- To suggest suitable measures for improving consumer acceptance and adoption of Electric Vehicles.

3. RESEARCH METHODOLOGY

3.1 Research Design

The study adopts a descriptive and analytical research design to examine the concept of electric vehicles and their impact on consumer buying behaviour.

3.2 Nature of the Study

The study is theoretical and qualitative in nature and is based entirely on secondary data. No primary data has been collected through questionnaires or interviews.

3.3 Sources of Data

Secondary data has been collected from research journals, books, government reports, automobile industry reports, conference papers, newspapers, business publications and relevant online sources.

3.4 Method of Analysis

The collected literature is analysed qualitatively under major themes such as economic, environmental, technological and infrastructure-related factors influencing consumer buying behaviour and EV adoption.

3.5 Scope of the Study

The study focuses on consumer awareness, preferences, purchase decisions, perceived benefits and barriers relating to electric vehicles, with particular relevance to the Indian automobile market.

3.6 Limitations of the Study

The study is based only on secondary data and does not involve primary data collection or statistical testing. Consumer perceptions may vary according to demographic and geographical factors, and rapid technological developments may change consumer attitudes towards EVs over time.

4. CONCEPT AND IMPORTANCE OF ELECTRIC VEHICLES

4.1 Meaning of Electric Vehicles

An Electric Vehicle (EV) is a vehicle that uses an electric motor for propulsion and obtains energy mainly from rechargeable batteries. Unlike conventional petrol and diesel vehicles, EVs use electrical energy and represent an important development towards cleaner and more sustainable transportation.

4.2 Types of Electric Vehicles

Electric vehicles can be broadly classified into Battery Electric Vehicles (BEVs), Hybrid Electric Vehicles (HEVs) and Plug-in Hybrid Electric Vehicles (PHEVs). BEVs operate entirely on electricity stored in batteries, while HEVs combine an internal combustion engine with an electric motor. PHEVs also use both technologies but can be charged through an external electricity source.

4.3 Importance of Electric Vehicles

Electric vehicles are important because they can contribute to sustainable transportation, reduce dependence on fossil fuels, improve energy efficiency and reduce local vehicle emissions. They also encourage technological development and support the transition towards cleaner mobility.

From the consumer perspective, EVs may provide lower running and maintenance costs, reduced dependence on petrol and diesel, advanced technological features and potential long-term economic benefits. These advantages can influence consumers when comparing EVs with conventional vehicles.

5. CONCEPT OF CONSUMER BUYING BEHAVIOUR

Consumer buying behaviour refers to the process through which consumers identify their needs, search for information, evaluate alternatives and make purchasing decisions. In automobile purchases, factors such as price, brand, mileage, design, comfort, performance, safety, maintenance and resale value traditionally influence consumer decisions.

The emergence of EVs has introduced additional factors such as battery performance, charging time, driving range, charging infrastructure, electricity cost, environmental benefits, government incentives and technological features. Therefore, the decision to purchase an EV involves both traditional automobile attributes and EV-specific considerations.

6. IMPACT OF ELECTRIC VEHICLES ON CONSUMER BUYING BEHAVIOUR

6.1 POSITIVE IMPACT OF ELECTRIC VEHICLES ON CONSUMER BUYING BEHAVIOUR

- **Increased Environmental Awareness** – EVs encourage consumers to consider environmental protection and lower emissions.
- **Preference for Sustainable Products** – Consumers may prefer EVs because they support sustainable transportation.
- **Lower Operating Cost** – Lower fuel and maintenance expenses can attract consumers towards EVs.
- **Greater Interest in Technology** – Advanced technological features can increase consumer interest in EVs.
- **Energy Efficiency** – Better energy utilisation may encourage consumers to choose electric vehicles.
- **Lower Total Cost of Ownership** – Consumers may consider long-term savings in energy and maintenance costs.
- **Government Incentives** – Subsidies and other government benefits can encourage EV purchases.
- **Improved Charging Facilities** – Better charging infrastructure can increase consumer confidence in EVs.
- **Innovative Features** – Modern features and new technologies can make EVs more attractive to consumers.
- **Positive Word-of-Mouth** – Satisfied EV users can encourage others to consider purchasing electric vehicles.

6.2 NEGATIVE IMPACT OF ELECTRIC VEHICLES ON CONSUMER BUYING BEHAVIOUR

- **High Initial Cost** – The higher purchase price may discourage price-sensitive consumers.
- **Limited Charging Infrastructure** – Fewer charging stations may reduce consumers' confidence in buying EVs.
- **Battery Concerns** – Concerns about battery life and replacement cost may affect purchase decisions.

- **Range Anxiety** – Fear of insufficient driving range may discourage consumers from choosing EVs.
- **Longer Charging Time** – Longer charging time compared with conventional refuelling may reduce consumer interest.
- **Limited Service Facilities** – Fewer specialised service centres may create concerns about after-sales support.
- **Uncertainty About Resale Value** – Uncertainty about future resale prices may influence consumers against purchasing EVs.
- **Limited Model Choices** – Fewer choices in some vehicle segments may restrict consumer purchasing options.
- **Lack of Consumer Awareness** – Limited knowledge about EV technology and benefits may create hesitation among consumers.
- **Battery Replacement Cost** – The potential high cost of battery replacement may create financial concerns for consumers.

7. FACTORS INFLUENCING CONSUMER BUYING DECISIONS

- **Purchase Price** – The initial cost of an EV strongly influences consumers' purchase decisions.
- **Running Cost** – Lower electricity and operating costs may encourage consumers to choose EVs.
- **Maintenance Cost** – Lower routine maintenance requirements can make EVs more attractive.
- **Battery Life** – Consumers consider battery durability and performance before purchasing an EV.
- **Driving Range** – The distance an EV can travel on a single charge affects consumer confidence.
- **Charging Infrastructure** – Availability of convenient charging stations influences purchase decisions.
- **Charging Time** – Shorter charging time can increase consumer preference for EVs.
- **Government Incentives** – Subsidies and tax benefits can encourage consumers to purchase EVs.
- **Environmental Benefits** – Concern for pollution and environmental protection can increase EV preference.
- **Brand Reputation** – A trusted automobile brand can positively influence consumers' EV choices.
- **Technology and Features** – Modern technology and smart features can attract consumers.
- **Safety** – Vehicle safety features and battery safety are important considerations for buyers.
- **Resale Value** – Expected future resale value can influence consumers' purchase decisions.
- **After-Sales Service** – Availability of service centres and technical support affects consumer confidence.
- **Consumer Awareness** – Knowledge about EV benefits, technology and usage can influence adoption decisions.

8. BUYING BEHAVIOUR PROCESS

The consumer buying behaviour process generally consists of the following **five stages**:

- **Need Recognition** – The consumer identifies a need or problem, such as the need for a new vehicle.
- **Information Search** – The consumer collects information about available EV models, prices, features, range and charging facilities.
- **Evaluation of Alternatives** – The consumer compares different EVs and conventional vehicles based on price, performance, technology, safety and operating cost.
- **Purchase Decision** – After evaluating the alternatives, the consumer selects and purchases the vehicle that best meets their needs.
- **Post-Purchase Behaviour** – After purchase, the consumer evaluates satisfaction based on performance, charging convenience, maintenance cost and overall experience.

9. FINDINGS OF THE STUDY

9.1 Positive Findings

- **Environmental Awareness** – EVs increase consumer awareness of environmental protection and pollution reduction.
- **Lower Operating Cost** – Lower running and maintenance costs can positively influence purchase decisions.
- **Technological Interest** – Advanced features and technology increase consumer interest in EVs.
- **Sustainable Choice** – Consumers increasingly consider EVs as an environmentally friendly transportation option.
- **Government Support** – Subsidies and incentives can encourage consumers to purchase EVs.
- **Energy Efficiency** – Awareness of energy efficiency can improve consumer preference for EVs.
- **Long-Term Benefits** – Consumers may consider the potential long-term savings from EV ownership.

9.2 Negative Findings

- **High Initial Price** – The higher purchase cost can discourage price-sensitive consumers.
- **Charging Infrastructure** – Limited charging facilities remain a major barrier to EV adoption.
- **Battery Concerns** – Concerns about battery life, performance and replacement cost affect buying decisions.
- **Range Anxiety** – Fear of limited driving range may discourage potential buyers.
- **Charging Time** – Longer charging time compared with conventional refuelling can reduce consumer interest.
- **Resale Value** – Uncertainty about future resale value may affect purchase decisions.
- **Service Availability** – Limited specialised service centres and technicians can reduce consumer confidence.

10. SUGGESTIONS

- **Reduce Initial Cost** – Manufacturers should offer affordable EV models to attract more consumers.

- **Expand Charging Infrastructure** – More charging stations should be established in cities, highways and residential areas.
- **Improve Battery Technology** – Manufacturers should develop batteries with longer life and better performance.
- **Reduce Charging Time** – Faster charging technology should be developed to improve consumer convenience.
- **Increase Driving Range** – EV manufacturers should focus on improving the distance travelled on a single charge.
- **Strengthen Government Support** – Government incentives and subsidies should continue to encourage EV adoption.
- **Create Consumer Awareness** – Awareness programmes should educate consumers about EV benefits, costs and technology.
- **Improve After-Sales Service** – More specialised EV service centres and trained technicians should be made available.
- **Provide Better Battery Warranty** – Manufacturers should offer reliable and longer battery warranties to increase consumer confidence.
- **Improve Resale Value** – Manufacturers and policymakers should develop measures that improve confidence in the resale market for EVs.
- **Offer Flexible Financing** – Banks and financial institutions should provide affordable loan and financing options for EV buyers.
- **Promote Renewable Energy** – Charging infrastructure should increasingly use renewable energy sources such as solar power.
- **Increase Model Variety** – Manufacturers should provide EVs in different price ranges, sizes and vehicle categories.
- **Improve Safety Standards** – Battery and vehicle safety standards should be strengthened to increase consumer confidence.
- **Encourage Positive User Experience** – Manufacturers should focus on customer satisfaction, reliable performance and effective after-sales support to promote positive word-of-mouth.

11. CONCLUSION

Electric Vehicles (EVs) are playing an increasingly important role in transforming the automobile industry and influencing consumer buying behaviour. The study finds that environmental awareness, lower operating costs, technological advancement, energy efficiency and government support positively influence consumers' interest in EVs. At the same time, high initial cost, inadequate charging infrastructure, battery concerns, range anxiety, charging time and limited service facilities remain major barriers to EV adoption.

The study concludes that consumer acceptance of EVs can be improved through affordable pricing, better charging infrastructure, advanced battery technology, consumer awareness and efficient after-sales services. Manufacturers and policymakers should focus on addressing these barriers while promoting the economic and environmental benefits of electric vehicles. Overall, creating greater consumer confidence and convenience can contribute significantly to the wider adoption of EVs and the development of sustainable transportation in India.

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