

Millennials Perception Towards Electric Vehicles in India

Chandana R Y ¹

Research Scholar, Institute of Management Studies,
Davanagere University, Shivagangothri, Davanagere

Dr J K Raju ²

Senior Professor, Institute of Management Studies,
Davanagere University, Shivagangothri, Davanagere

ABSTRACT

As India being one of the world's largest automobile markets, the demand for electric vehicles (EV) is growing rapidly than ever before. This growth is driven by advancements in technology, changing in consumer preferences and priorities, central and state government initiatives, environmental awareness etc. Central government's New Electric Vehicle Policy is an initiative to position our country as a prominent manufacturing location for electric vehicles. It includes cutting the customs duty rate up to 15% and promoting local manufacturing which aligns with our government's Make in India campaign. As the result, the shift from conventional vehicles to EV is gaining momentum. Despite of all the benefits, there are multiple challenges for the EV market in India. It includes limited availability of charging infrastructure, especially in rural areas, which makes it increasingly difficult for relying on EV for longer distance journeys. EV vehicles also demand extra time for charging, making it as an additional routine task for its users. Whereas conventional vehicles can be filled with fuel tank in very minimal time. In addition to that, EV are more expensive than that of conventional vehicles because of higher production cost for battery technology. Transitioning from conventional vehicles to EV will help our nation in several aspects which includes reduction in carbon dioxide emission, minimising the air pollution, reducing the dependency on oil imports etc.

Millennials, also known as Generation Y, constituting to 34% of India's population, holds a key part in consumer market of our country. They possess optimistic approach towards the adaption of new technologies including electric vehicles, and hence analysing these young consumers perception towards EV is essential for India's future automotive industry. This study focuses on various factors such as charging infrastructure, after sales service, maintenance cost, pricing range, running capacity on single charge etc which will influence millennials perception towards electric vehicles.

INTRODUCTION

BACKGROUND AND IMPORTANCE OF THE TOPIC

As India being one of the leading economy and urbanizing countries, the focus towards improving our environment has taken a key role. As the result of this, electric vehicles started blooming in order to tackle various issues in our country such as air pollution, dependency on importing oils, etc. Be it a plug-in hybrid or full hybrid model, the demand for electric vehicles are rapidly increasing. In order to cope up with the surge in demand, the government is investing in battery technology, introducing several schemes such as Electric Mobility Promotion Scheme, National Electric Mobility Mission Plan, Phased Manufacturing Programme etc. Hence this study focuses on understanding the perception of young consumers i.e., millennials about shifting to electric vehicles segment particularly in our country.

LITERATURE REVIEW

1) Akshay Lalwani, 2020

The perception and buying behaviour of Indians towards Electric Cars

The purpose of this study was to determine how potential buyers of electric cars make their purchasing decisions, looking at factors such as price, battery usage, safety equipment, performance of the vehicle, charging duration, running capacity, appearance, reputation of brand, infrastructure with respect to charging,

celebrity endorsements, influence from families, government incentives, and availability. Majorly the study focuses on understanding buying behaviour of Indian youths.

2) Janjanam Chandra Rao, Gopisaran, Jagana Saikumar, Kosika Pravalika, 2023

A study on consumer perception of EV vehicles

The paper primarily focuses on investigating how Bangalore city consumers feel about opting electric vehicles instead of going for conventional options. The study focuses on how the Governments all over the world are promoting the usage of e-vehicles to reduce our dependency on oil, greenhouse gases emission, and improve air quality. The findings suggest that particularly metropolitan cities are major contributors to air pollution, making it essential to shift for EVs. The purpose of this study is to learn more about consumer's environmental sustainability awareness, attitudes, and likelihood of purchasing e-vehicles.

3) Pranav Sharma, Pradeep Kumar Singh, Akash Verma, 2022

The Challenges faced by EV Industry in India: An Analysis of Consumer Perception

The study examines how the EV industry is going through supply difficulties such as range of the car, affordability and the availability of charging points etc. It mentions the issues on the demand side include, among other things, a lack of investment, a high initial cost of production, expensive research and development, and a lack of collaboration between the private sector and states for promotion and production. The findings suggest the demand for electric vehicles in India is significantly influenced by the availability of service and charging stations, as well as the perceived financial benefits, risks, and environmental concern.

4) A. Mahamuni1 and S. Subramanian, 2021

Analysis of perception, attitude and behaviours toward purchase of electric vehicle in Delhi NCR-India

The study focuses on utilising a partial least squares method to determine the relationship that influence buying behaviour of consumers on EV. The theory examines a variety of constructs, including consumer's perception of behaviour, perceived behavioural control, environmental concern, moral norms, and attitudes toward purchasing electric vehicles with a sample of Delhi and Gurugram residents. The findings suggest that green purchase intention is influenced by personal moral norms, while perceived behavioural control is positively influenced by subjective norms and environmental concerns.

5) Hitarth Mehta, Lakshita Rathod, Aum Bhatt, 2024

Perceptions of Electric Vehicle Adoption among Young Adults in Ahmedabad

This study focuses on the Indian young adults i.e, millennials perception regarding EV adoption. Among the most important factors examined are vehicle preference, peer influence, and the promotion of electric vehicles by the Government. The study highlights the youth's growing awareness of technology and sustainability, which has implications for targeted marketing strategies, and serving as a foundation for future research on EV across age groups and regions. In addition, the findings contribute to the global debate regarding boosting EV adoption and lowering carbon emissions in the interest of a more sustainable future.

RESEARCH DESIGN

OBJECTIVES OF THE STUDY

1. To determine the changing perspective of millennials towards adopting EV
2. To identify the parameters which influence millennials attitude towards EV
3. To analyse and suggest policies required to enhance EV adoption among Indian youth consumers

RESEARCH METHODOLOGY

Sample Design

A) Target Population – Millennials who are considering to buy an EV as a future vehicle

B) Sample Size - 100 responses were being collected for the purpose of doing this study

Method of Data Collection

A) Primary Data

All the data's which is used for this study are collected only from millennials through google forms and hard copy of the same.

B) Secondary Data

There was no secondary data considered for this project.

C) Instrument for Data Collection

The responses were collected through google forms which is directed to google spreadsheet. These responses were imported to SPSS in the form of Excel sheet to perform the tests.

D) Research type - Descriptive research method is used for this study. It mainly describes the characteristics of the particular population, which is millennials in this study.

Testing of Questionnaire

The responses of the questionnaire which were collected from the target audience through google form which was imported to the excel sheet, was tested using SPSS tool.

Data-analysis technique

In this study, Cronbach alpha test is conducted to identify the reliability of the questionnaire.

→ Reliability

Scale: ALL VARIABLES

Case Processing Summary			
		N	%
Cases	Valid	100	100.0
	Excluded ^a	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics	
Cronbach's Alpha	N of Items
.720	11

DATA ANALYSIS

MULTIVARIATE ANALYSIS

Dependent variables: Experience

Independent variables: Pricing range, Sustainability, Government Incentives, Charging infrastructure, Running capacity, Charging time, Brand reputation, After sales service, Safety features, Maintenance costs.

COEFFICIENTS TABLE

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	.427	.655		.652
	PricingRange	.274	.091	.294	.004
	Sustainability	-.231	.115	-.205	.047
	GovernmentPolicies	.077	.079	.091	.331
	ChargingInfrastructure	.300	.112	.277	.009
	RunningCapacity	-.153	.109	-.133	.167
	ChargingTime	.199	.080	.228	.015
	BrandReputatioon	.086	.101	.083	.396
	AfterSalesService	-.112	.131	-.088	.395
	Safetyfeaturesmatterwhenc onsideringtobuyanEV	.366	.140	.295	.011
	MaintenanceCosts	.108	.106	.098	.312

a. Dependent Variable: Iwillprefertobuyelectricvehiclesinthefuture

INTERPRETATION

As observed in the above table, among the 10 variables, 5 of them are significant i.e., these 5 variables positively impact the dependent variable i.e, pricing range, sustainability, charging infrastructure, charging time, and safety features.

There are multiple implications that can be taken from the findings of the study. It is evident that the perception of millennials towards EV is changing in India.

1. P(sig) of pricing range = $0.004 < 0.05$, which implies that Null hypothesis (Ho) is rejected, Alternate hypothesis (H1) is accepted.
i.e., there is a positive impact of pricing range with respect to influencing the perception of millennials towards EV.
2. P(sig) of sustainability = $0.047 < 0.05$, which implies that Null hypothesis (Ho) is rejected, Alternate hypothesis (H1) is accepted.
i.e., there is a positive impact of sustainability with respect to influencing the perception of millennials towards EV.
3. P(sig) of government policies = $0.331 > 0.05$, which implies that Null hypothesis (Ho) is accepted, Alternate hypothesis (H1) is rejected.
i.e., there is no impact of government policies with respect to influencing the perception of millennials towards telehealth as a service.
4. P(sig) of charging infrastructure = $0.009 < 0.05$, which implies that Null hypothesis (Ho) is rejected, Alternate hypothesis (H1) is accepted.
i.e., there is a positive impact of charging infrastructure with respect to influencing the perception of millennials towards EV.
5. P(sig) of running capacity = $0.167 > 0.05$, which implies that Null hypothesis (Ho) is accepted, Alternate hypothesis (H1) is rejected.
i.e., there is no impact of running capacity with respect to influencing the perception of millennials towards telehealth as a service.
6. P(sig) of charging time = $0.015 < 0.05$, which implies that Null hypothesis (Ho) is rejected, Alternate hypothesis (H1) is accepted.
i.e., there is a positive impact of charging time with respect to influencing the perception of millennials towards EV.
7. P(sig) of brand reputation = $0.396 > 0.05$, which implies that Null hypothesis (Ho) is accepted, Alternate hypothesis (H1) is rejected.
i.e., there is no impact of brand reputation with respect to influencing the perception of millennials towards telehealth as a service.
8. P(sig) of after sales service = $0.395 > 0.05$, which implies that Null hypothesis (Ho) is accepted, Alternate hypothesis (H1) is rejected.
i.e., there is no impact of after sales service with respect to influencing the perception of millennials towards telehealth as a service.
9. P(sig) of safety features = $0.011 < 0.05$, which implies that Null hypothesis (Ho) is rejected, Alternate hypothesis (H1) is accepted.
i.e., there is a positive impact of safety features with respect to influencing the perception of millennials towards telehealth as a service.
10. P(sig) of maintenance cost = $0.312 > 0.05$, which implies that Null hypothesis (Ho) is accepted, Alternate hypothesis (H1) is rejected.
i.e., there is no impact of maintenance cost with respect to influencing the perception of millennials towards telehealth as a service.

CONCLUSION

1. The findings from this study show that there are several significant factors that together influence on perception of Millennials towards EV in India.
2. The Variables that influence the perception of Millennials towards EV which are considered for this research includes the following: Pricing range of EV, Sustainability impact, Government incentives and policies, Availability of charging infrastructure, Running capacity on a single charge, Charging time, Brand reputation and trust, After sale services, Safety features, and Maintenance cost.
3. From the study, it is understood that there mainly 5 significant variables, which influence on perception of Millennials towards EV in India.
4. Pricing range, sustainability, charging infrastructure, charging time, and safety features are the significant variables which influence on perception of Millennials towards EV.

RECOMMENDATIONS

Following are the recommendations, based on the findings of this study:

1. Since most of the respondents conveyed, they are not fully aware of government incentives and policies regarding EV, it is important that government should promote policies like electric mobility promotion scheme to overcome air pollution and also to combat the dependency on importing oil.
2. As electric vehicles drastically reduce greenhouse gas emissions, sustainability plays key role, and this can be the motivating factor to push millennials perception towards adapting EV.
3. Companies and government together need to improve substantial charging infrastructure as it is playing a major deciding factor for respondents to buy an EV.
4. Along with the design and pricing range, EV manufacturers should also focus on running capacity on single charge to increase the optimal condition of batteries.
5. EV manufacturers must invest on making the batteries more efficient and robust with features such as advanced cooling systems and fire-resistant casting to improve the safety conditions for the buyers.

BIBLIOGRAPHY

1. Akshay Lalwani, 2020. "The perception and buying behavior of indians towards electric cars" Volume 11, Issue 11, pp. 1134-1148.
2. Janjanam Chandra Rao, Gopisaran R, Jagana Saikumar, Kosika Pravalika, 2023. "A study on consumer perception of ev vehicles" Volume 8, Issue 5.
3. Pranav Sharma, Pradeep Kumar Singh, Akash Verma, 2022. "The Challenges faced by EV Industry in India: An Analysis of Consumer Perception", Vol-13, Issue-3.
4. A. Mahamuni1 and S. Subramanian, 2021. "Analysis of perception, attitude and behaviors toward purchase of electric vehicle in delhi ncr-india" Vol-1, pp 192-201.
5. Hitarth Mehta, Lakshita Rathod, Fenil Shah, Aum Bhatt, Jenil Machhvara, 2024. "Perceptions of Electric Vehicle Adoption among Young Adults in Ahmedabad: Exploring Influences and Implications", Vol-1, p4.