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Research Article

The Impact of Government Policies and Subsidies on Electric Vehicle Purchase Decision in Madhya Pradesh with reference to Indore City

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Abstract

India has emerged as one of the fastest-growing markets for electric vehicles (EVs) globally, with subsidies playing a central role in this transition. The provision of EV subsidies in India has been instrumental in making electric mobility more accessible, reducing reliance on fossil fuels, and lowering carbon emissions. Backed by robust government policies, these financial incentives not only stimulate consumer adoption but also motivate manufacturers to pursue technological innovation. In the absence of such supportive measures, achieving India's ambitious objective of becoming a global leader in electric mobility would be significantly more difficult. The presented research paper has been conducted to know the awareness among people in Indore, Madhya Pradesh, about government policies and subsidies on EVs. The presented research study is based on primary and secondary data sources.

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KEYWORDS: EV. Subsidies, Government, Schemes, Battery, Hybrid FAME.

1. INTRODUCTION

The high initial cost of electric vehicles, largely driven by battery expenses, has been a significant obstacle to widespread adoption. EV subsidies in India help to bridge this cost gap by reducing the purchase price, thereby making electric vehicles more accessible to a broader segment of consumers. In a price-sensitive market such as India, these subsidies have played a transformative role. The government’s FAME (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles) scheme serves as a central component of this strategy, providing targeted financial support for two-wheelers, three-wheelers, and four-wheelers, and positioning government policy as a key driver of EV adoption.

Benefits of Government Policy on Electric Vehicle Growth

Robust government policies play a crucial role not only in stimulating demand but also in creating a supportive ecosystem for the growth of electric vehicles (EVs). These policies, alongside EV subsidies, include tax reductions, incentives for manufacturers, and investments in infrastructure development. Key advantages of this approach are:

- Lower initial vehicle costs through EV subsidies in India
- Reduced GST on electric vehicle purchases
- Incentives to promote domestic manufacturing of batteries and components
- Expansion of a nationwide charging infrastructure
- Generation of employment opportunities within the EV manufacturing sector

Initiative/Policy	Focus Area	Impact on EV Subsidies in India and Adoption
FAME I & II	Direct consumer subsidies	Makes EVs affordable and competitive
GST Reduction (from 12% to 5%)	Tax benefits on EV purchases	Encourages more buyers to shift to EVs
PLI Scheme for ACC Batteries	Battery manufacturing support	Reduces costs and boosts local supply
Charging Infrastructure Policy	Public and private charging setup	Builds consumer confidence in EV adoption
State EV Policies	Regional subsidies and incentives	Faster adoption in different states

Source: FAME

This table illustrates how EV subsidies in India, supported by strong government policies, contribute to the development of a comprehensive ecosystem for sustainable mobility.

4. Research Hypothesis

The research hypothesis is given below.

- Null Hypothesis H_{01} : There is no significant awareness found about government policies and subsidies on EV among people in Indore City.
- Alternative Hypothesis H_{11} : Null Hypothesis H_{01} : There is significant awareness found about government policies and subsidies on EV among people in Indore City.
- Null Hypothesis H_{02} : There is no significant impact of policies and subsidies on EV found for purchasing decision of EV.
- Alternative Hypothesis H_{12} : There is a significant impact of policies and subsidies on EV found for purchasing decision of EV.

2. REVIEW OF LITERATURE

Razmjoo, Ghazanfari, Jahangiri, Franklin, Denai, Marzband, Astiaso Garcia, and Maheri (2023) conducted a study examining the rapid escalation of government efforts to promote electric vehicle adoption. The research identified and analysed the most critical factors driving this expansion. Additionally, the study offered comprehensive insights into electric vehicles and their broader implications, providing valuable information for policymakers, automobile manufacturers, consumers, and society at large.

5. RESEARCH METHODOLOGY

The presented research study has been based on primary and secondary data; the primary data has been collected through a questionnaire by 150 EV users, three-wheels and four-wheels EV owners. The secondary data has been collected by research journals, books and the internet. The research hypothesis has been tested by t test and chi square test at a 5 per cent level of significance.

3. OBJECTIVE OF RESEARCH STUDY

The research objectives are given below.

- To analyse awareness of government policies and subsidies on EV among people in Indore City.
- To analyse the impact of government policies and subsidies on the EV purchasing decision.

6. Data interpretation and Hypothesis testing:

Which types of EV vehicles do you have?

Table 1: Analysis of types of EV vehicles

		Which types of EV vehicles do you have		
Options		Frequency	Percent	Cumulative Percent
Valid	Two-wheeler	50	33.3	33.3
	Three-wheeler	50	33.3	66.6
	Four-wheeler	50	33.3	100.0
	Total	150	100.0	

Table 1 shows the types of EV vehicle do you have., the “question has been asked of owners of EVs. The options had (50,50.0), (50,50.0), (50,50.0) from the study, “it is clear that both options have equal frequency and percentage because, as

been given (Two-wheeler, Three-wheeler, Four-wheeler); the frequency and percentage found for these options, respectively. presented in this research work, the data has been collected equally. Do you know about government policies and subsidies on EVs?

Table 2: Analysis of knowledge about government policies and subsidies on EV

Do you know about government policies and subsidies on EVs?				
Options		Frequency	Percent	Cumulative Percent
Valid	Yes	139	92.7	92.7
	No	11	7.3	100.0
	Total	150	100.0	

H1 tested by Table 2

Table 2 shows the analysis of what owners of EVs know about government policies and subsidies on EVs. The question asked:” From owners of EV, do you know about government policies and subsidies on EV. The options had been given (Yes, No); the frequency and percentage found for these options respectively (139,92.7), (11,7.3), from the study “It is clear that” both.

options “yes” has the highest frequency and percentage as compared with other options, which means that most EV owners are aware of government policies and subsidies on EVs in Indore City.

Did you purchase an EV due to government policies and subsidies on EVs?

Table 3: Analysis of you purchased EV by government policies and subsidies on EV

Did you purchase an EV due to government policies and subsidies on EVs?				
Options		Frequency	Percent	Cumulative Percent
Valid	yes	140	93.3	93.3
	No	10	6.7	100.0
	Total	150	100.0	

(H2 tested by table 3)

Table 3 shows the analysis of you purchased EV by government policies and subsidies on EV “Question has been asked” by owners of EV: Did you purchase EV by government policies and subsidies on EV? The options had been given (Yes, No); the frequency and percentage found for these options respectively (140,93.3), (10,6.7), from the study “It is clear that both options' yes has highest frequency and

percentage as compared with other options; it means that most of EV owners purchased EVs by being motivated by government policies and subsidies on EVs in Indore City.

Testing of Hypothesis:

H1 has been tested by t test

Null Hypothesis H₀₁: There is no significant awareness found about government policies and subsidies on EV among people in Indore City.

Table 4: One-Sample Statistics

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Do you know about government policies and subsidies on EV	150	1.0400	.19662	.01605

From the study of table 4, it is clear that the values of N, Mean, standard deviation, Std. Error means are respectively (150, 1.0400, .19662, .01605)

Table 5: One-Sample Test

One-Sample Test			
Test Value = 0			
	t	df	Sig. (2-tailed)
Do you know about government policies and subsidies on EV	64.783	149	.000

From the study of table 65, “it is clear that” t value is 64.7830 at degree of freedom 149 and Asymp. Sig. value is .000. **Decision:** from the above study, “it is clear that” significant value is less than p value .050, hence null hypothesis rejected and “alternative hypothesis” has been accepted. This means

that; There is significant awareness found about government policies and subsidies on EV among people in Indore City. **Null Hypothesis H₀₂:** There is no significant impact of policies and subsidies on EV found for purchasing decision of EV.

Table 6: Expected Frequency

Did you purchase an EV due to government policies and subsidies on EVs?			
	Observed N	Expected N	Residual
Yes	140	75.0	65.0
No	10	75.0	-65.0
Total	150		

From the study of table 7, “it is clear that” Observed N, Expected N, Residual for option no and yes are respectively (140,75,65.0)and (10,75.0, -65.0).

Table 7: Test Statistics

Test Statistics	
Chi-Square	112.667 ^a
df	1
Asymp. Sig.	.000
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 75.0.	

From the study of table 7, “it is clear that” Chi-Square value is 112.667 at degree of freedom 1 and Asymp. Sig. value is .000.

Decision: from the above study, “it is clear that” significant value is less than p value .050, hence null hypothesis rejected and “alternative hypothesis” has been accepted. This means that; There is a significant impact of policies and subsidies on EV purchasing decisions.

7. CONCLUSION

The influence of EV subsidies in India is evident, as they have substantially reduced the cost barrier and promoted broader adoption of electric vehicles. When implemented alongside effective government policies, these initiatives are laying the foundation for a sustainable mobility future in the country. With the continuation of subsidies and the expansion of supportive infrastructure, India is strategically positioned to achieve its clean energy targets, mitigate pollution, and emerge as a global leader in the electric vehicle transition. The people of Indore city are more aware of government policies and various subsidy schemes on EVs, and they are purchasing EVs as per benefit given by the central and state governments.

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