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A Study of Digital Marketing on Electric Vehicle Adoption Among Young Consumers

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Abstract:

The rapid growth of the electric vehicle (EV) industry, coupled with the increasing influence of digital marketing, has transformed consumer awareness and purchasing behavior. This study examines the impact of digital marketing on electric vehicle adoption among young consumers and analyzes the factors influencing their purchase decisions. The research focuses on the role of social media, online advertisements, digital content, influencer marketing, and online reviews in creating awareness and encouraging EV adoption. Additionally, the study evaluates the influence of cost-related factors such as purchase price, maintenance costs, and fuel savings, while also identifying key barriers including charging infrastructure, range anxiety, and lack of information. The effectiveness of government incentives and subsidies in promoting EV adoption is also accessed.

Keywords: Electric Vehicles (EVs), Digital Marketing, Consumer Behaviour, EV Adoption Young Consumers, Social Media Marketing, Online Advertising, Purchase Intention.

1.Introduction

Electric vehicles (EVs) have emerged as a sustainable alternative to conventional fuel-powered vehicles due to increasing environmental concerns, rising fuel prices, and government support for clean transportation. At the same time, digital marketing has become an effective tool for influencing consumer awareness and purchase decisions through social media, online advertisements, influencer marketing, and digital content. Young consumers, being active users of digital platforms, are more exposed to such marketing efforts. This study examines the impact of digital marketing on electric vehicle adoption among young consumers and

identifies the factors influencing their purchase decisions, including cost, charging infrastructure, range anxiety, and government incentives.

Objectives:

1. To study the influence of cost-related factors (price, maintenance, fuel savings) on EV adoption.
2. To identify key barriers (charging infrastructure, range anxiety, lack of information) affecting EV acceptance
3. To analyze the role of digital marketing and social media in increasing awareness and influencing EV purchase behavior.
4. To evaluate the effectiveness of government incentives and subsidies in promoting electric vehicle adoption.

Significance of the study(importance): This study is significant because it helps in understanding the influence of digital marketing on electric vehicle adoption among young consumers. It provides valuable insights into consumer awareness, attitudes, and purchasing behavior regarding electric vehicles. The study assists EV manufacturers and marketers in developing effective promotional strategies, while also helping policymakers evaluate the effectiveness of government incentives and infrastructure initiatives. Furthermore, the research contributes to the growth of the electric vehicle industry by promoting sustainable transportation and encouraging environmentally friendly mobility solutions.

Scope: This study focuses on examining the impact of digital marketing on electric vehicle adoption among young consumers. It analyzes the influence of social media, online advertisements, and digital marketing activities on consumer awareness and purchase intentions. The study also explores factors such as cost, charging infrastructure, range anxiety, and government incentives affecting EV adoption among individuals aged 18–35 years. The research is limited to selected respondents and reflects their perceptions during the study period.

2. Literature Review:

1. 2024 Dcosta, Graul, and Hasnat

Dcosta et al. (2024) carried out an interdisciplinary review of electric vehicle adoption studies. The study identified vehicle cost, charging infrastructure, government policies, technological developments, and consumer awareness as major drivers of EV adoption. The researchers highlighted the importance of consumer education and effective communication strategies in promoting EV acceptance.

2. 2023 – Bryła, Chatterjee, and Ciabiada-Bryła

Bryła et al. (2023) conducted a systematic literature review on consumer adoption of electric vehicles. The study found that environmental benefits, financial incentives, technological advancements, and consumer awareness are among the most influential factors affecting EV adoption. The authors also emphasized the growing role of information sources and digital communication in shaping consumer decisions.

3. 2022 – Natarajan and colleagues

A study on factors influencing EV adoption in India found that purchase price, charging infrastructure, battery performance, and government incentives are the most important determinants of consumer purchase intention. The research suggested that affordability and infrastructure development are essential for increasing EV adoption.

4. 2022 – Ali and Naushad

Ali and Naushad (2022) investigated factors that encourage consumers to adopt electric vehicles. The study concluded that environmental awareness, perceived usefulness, social influence, and government support positively affect EV adoption. However, high vehicle cost and limited charging facilities remain major barriers.

Research Methodology:

3.1 Research design:

Mixed method (quantitative and qualitative), using descriptive and analytical approaches.

3.2 Population and sample:

Population: 120

Sample: 100

Sampling techniques:

This study will employ convenience sampling to gather data from urban Indian consumers. The study adopted a non-probability convenience sampling technique to select respondents. Data was collected from 100 young consumers who were easily accessible and willing to participate in the survey. This method was chosen because it is simple, cost-effective, and suitable for collecting opinions on digital marketing and electric vehicle adoption within a limited time period.

3.3 Data collection methods:

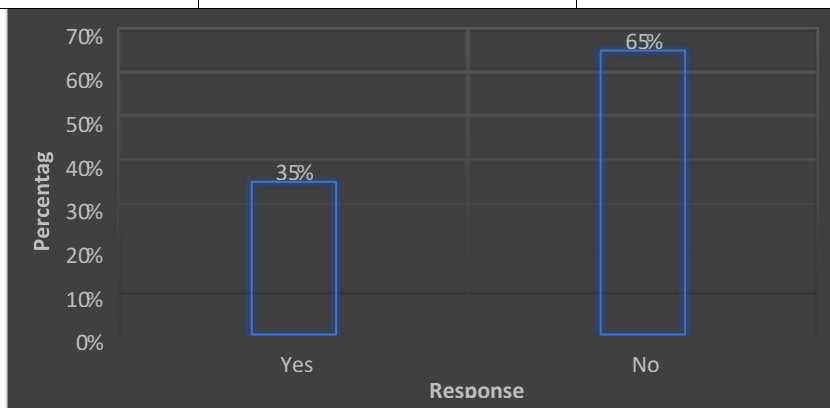
Primary: primary data collected through a structured questionnaire survey administered online using Google Forms.

Secondary: Collected from company reports, marketing databases, social media analytics, and previous research studies.

DATA ANALYSIS:

1. Have you ever used or driven an EVs?

Response	Number of Responses	Percentage (%)
Yes	35	35%
No	65	65%
Total	100	100%

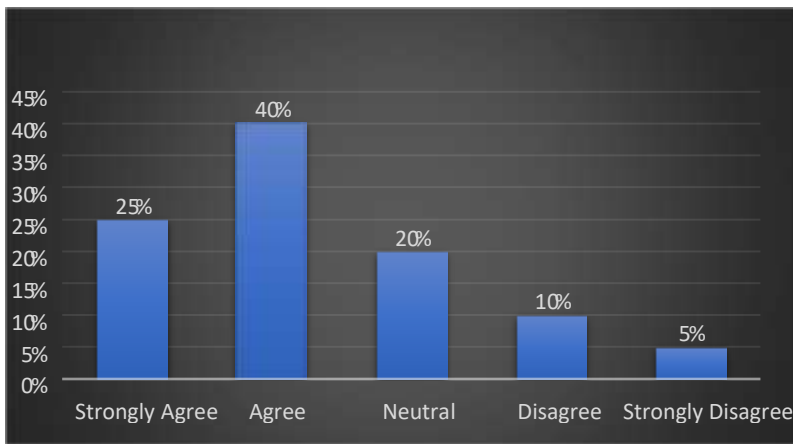


Interpretation:

Despite widespread knowledge, only 35% of individuals have actually used electric vehicles. This discrepancy between awareness and usage suggests barriers such as accessibility, cost, or infrastructure.

2. EVs are Expensive compared to traditional vehicles

Opinion	Frequency	Percentage (%)
Strongly Agree	25	25%
Agree	40	40%
Neutral	20	20%
Disagree	10	10%
Strongly Disagree	5	5%
Total	100	100%

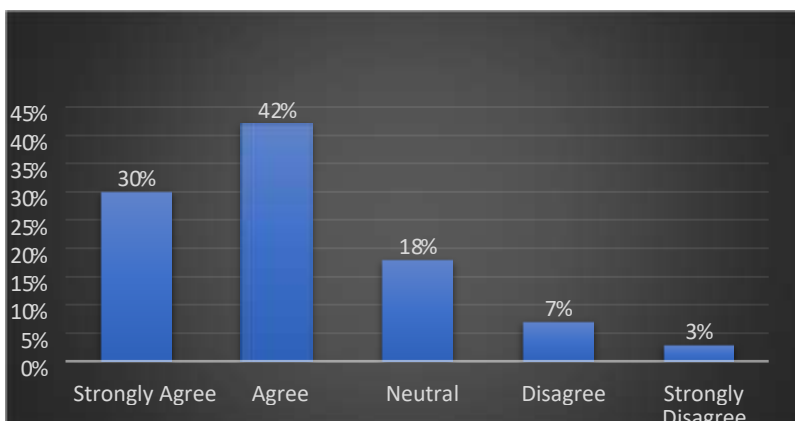


Interpretation:

The majority (65%) concur that EVs are costly, suggesting that cost is still a significant obstacle. This implies that subsidies and cost-cutting measures are essential for market expansion.

3. Maintenance Cost of EVs lower than fuel vehicles?

Opinion	Frequency	Percentage (%)
Strongly Agree	30	30%
Agree	42	42%
Neutral	18	18%
Disagree	7	7%
Strongly Disagree	3	3%
Total	100	100%

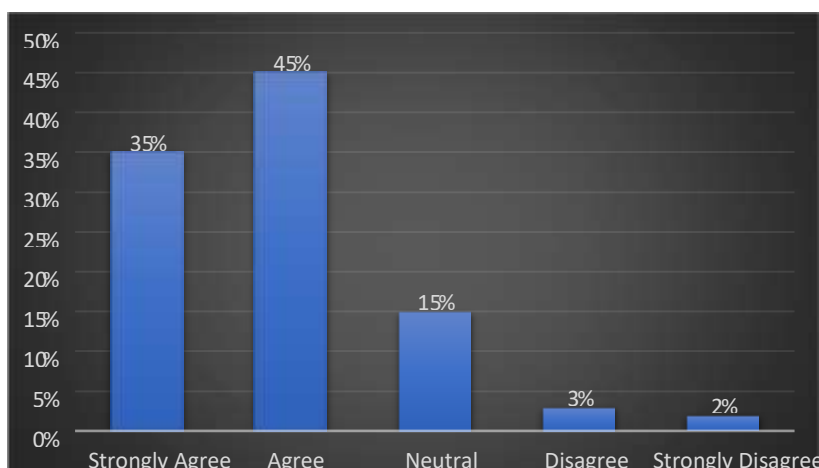


Interpretation:

The vast majority (72%) think EVs require less upkeep. Marketing campaigns can benefit from this favorable reputation.

4.EVs help save money on fuel in the long run?

Opinion	Frequency	Percentage (%)
Strongly Agree	35	35%
Agree	45	45%
Neutral	15	15%
Disagree	3	3%
Strongly Disagree	2	2%



Interpretation:

80% of respondents concur that EVs save fuel expenses, demonstrating their long-term financial attractiveness.

Hypothesis Testing:

Impact of Digital Marketing	Respondents	Percentage
Very Influential	65	65%
Somewhat Influential	32	32%
Neutral	3	3%
Not Very Influential	0	0%
Not at All Influential	0	0%
Total	100	100%

Chi-Square Calculation

Impact	O	E	(O-E) ²	(O-E) ² /E
Very Influential	65	20	2025	101.25
Somewhat Influential	32	20	144	7.20
Neutral	3	20	289	14.45
Not Very Influential	0	20	400	20.00
Not at All Influential	0	20	400	20.00
Total χ^2				162.90

χ^2 table value	χ^2 calculated value
9.488	162.90
H ₀ Rejected	H ₁ accepted
As table value is less than calculated value. We reject H ₀ (null) and accept H ₁ (alternative).	

As table value is less than calculated value. We reject H₀ (null) and accept H₁ (alternative).

Note: -

χ^2 = Chi Square

O = Observed Value

E = Expected Value

Formula: - $(O-E)^2/E$

Degree of Freedom: 4

Significance: 0.05

H₀ (Null Hypothesis): Digital marketing does not have a significant impact on electric vehicle adoption among young consumers.

H₁ (Alternative Hypothesis): Digital marketing has a significant impact on electric vehicle adoption among young consumers.

Chi-Square Calculated Value (χ^2): 162.90

Chi-Square Table Value at df = 4, α = 0.05: 9.488

Decision Rule: If χ^2 calculated > χ^2 table $\rightarrow$ **Reject H₀**

Interpretation

At a 5% level of significance and 4 degrees of freedom, the computed Chi-Square value ($\chi^2 = 162.90$) is significantly greater than the table value ($\chi^2 = 9.488$).

This suggests that young consumers' adoption of electric vehicles is significantly impacted by digital marketing. The majority of respondents concurred that digital marketing affects their knowledge of and choices to buy electric cars.

4. Results / Findings:

The study found that young consumers have high awareness of electric vehicles, and many are interested in purchasing them in the future. Digital marketing significantly influences EV awareness and purchase decisions. While respondents recognize the benefits of EVs, such as lower maintenance costs and environmental friendliness, factors like high initial cost, charging infrastructure, and range anxiety continue to affect adoption. Overall, digital marketing plays an important role in promoting EV adoption among young consumers.

5. Suggestions:

The study suggests that EV manufacturers should strengthen their digital marketing efforts through social media, online advertising, and influencer marketing to increase consumer awareness. Companies should focus on educating consumers about the long-term cost savings and environmental benefits of electric vehicles. The government should expand charging infrastructure and continue providing subsidies and incentives to encourage adoption. EV manufacturers should also work on reducing vehicle costs, improving battery performance, and increasing the availability of service centers. These measures can help overcome consumer concerns and accelerate electric vehicle adoption among young consumers.

6. Conclusion:

The study concludes that digital marketing significantly influences electric vehicle adoption among young consumers. While awareness and interest in EVs are high, factors such as cost, charging infrastructure, and range anxiety affect purchase decisions. Effective digital marketing, along with government support and improved infrastructure, can help increase EV adoption in the future.

7. Bibliography:

1. Rezvani, Z., Jansson, J., & Bodin, J. (2020). Consumer Adoption of Electric Vehicles.
2. Hardman, S., et al. (2021). Electric Vehicle Adoption and Consumer Preferences.
3. Ali, M., & Naushad, M. (2022). Factors Influencing EV Adoption.
4. Sahoo, D., et al. (2022). EV Adoption Among Indian Youth.

Questionnaire:**1. Have you ever used or driven an EVs?**

- a) Yes
- b) No

2. EVs are Expensive compared to traditional vehicles

- a) Strongly Agree
- b) Agree
- c) Neutral
- d) Disagree
- e) Strongly Disagree

3. Maintenance Cost of EVs lower than fuel vehicles?

- a) Strongly Agree
- b) Agree
- c) Neutral
- d) Disagree
- e) Strongly Disagree

4. EVs help save money on fuel in the long run?

- a) Strongly Agree
- b) Agree
- c) Neutral
- d) Disagree
- e) Strongly Disagree