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A MIXED METHOD APPROACH TOWARDS ANALYZING SOCIAL MEDIA AS A MARKETING TOOL FOR ELECTRIC VEHICLES

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Abstract

Electric vehicles (EVs) have grown to be an increasingly popular choice due to the rising global need for environmentally friendly transportation. Digital marketing has become a vital instrument for promoting and selling EVs due to its capacity to reach a big and varied audience.

Objective : The purpose of this study is to look into how Digital marketing affects the sales of electric vehicles.

Methodology: A mixed-methods strategy is used in this study to analyze both quantitative and qualitative data. Data from questionnaires from customers who are in the market for EV, are collected for quantitative data analysis. Interviews with important stakeholders, such as marketing managers, electric vehicle dealerships, and customers who have purchased electric cars, are conducted as part of the qualitative data analysis.

Findings: According to the study's findings, digital marketing significantly affects the sales of electric vehicles. The visibility and understanding of electric automobiles have expanded because of the usage of digital channels including social media, search engines, and smartphone applications. Also, it has helped businesses access a larger and more varied audience, which has increased sales.

Implications: The survey also emphasizes the significance of developing a good digital marketing strategy that incorporates audience targeting, using the relevant digital channels, and offering potential buyers' useful information. The report stresses the need of dealerships and electric car manufacturers working together to execute efficient digital marketing tactics.

Overall, this study offers insightful information about how digital marketing affects the sales of electric vehicles, emphasizing the significance of including digital marketing in an all-encompassing marketing plan to improve the uptake of electric vehicles.

Keywords : *Mixed method, electric vehicle, social media, digital marketing.*

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1. Introduction -

An increasingly crucial instrument for advertising and selling electric automobiles is digital marketing. Utilizing digital platforms like social media, search engines, and email marketing has become a crucial component of automotive firms' marketing strategies in recent years. These digital platforms provide electric vehicle manufacturers with a number of advantages, such as better brand recognition, targeted advertising, and expanded audience reach. Targeting specific consumer segments is one of the main impacts of digital marketing on the sales of electric automobiles. Companies can target their marketing messaging to potential clients who are likely to be interested in electric vehicles by using data analytics to identify these people. This may result in greater rates of conversion.

In conclusion, there is a considerable effect of digital marketing on the sales of electric automobiles. By using targeted marketing, building brand awareness, and providing a positive customer experience, businesses can increase the likelihood that prospective customers will make a purchase. However, there are some challenges associated with digital marketing, such as the necessity to stand out in a crowded market and the ongoing requirement to adapt to new technical advancements. Businesses that are successful in overcoming these challenges will definitely see significant benefits from digital marketing in the form of increased sales and more customers who are involved.

1.1 Objectives -

Primary Objective

The primary objective of the study is to analyze social media as a marketing tool for electric vehicles

Secondary Objective

- Identifying the sentiment through

articles from automotive journals to understand the sentiments of people regarding EV.

- Examine how each stage of the consumer journey—from awareness and consideration to purchase and interaction after the sale—has been impacted by digital marketing.

1.2 Literature review -

Maas and Pardo (2019) conducted a study on the impact of social media marketing on EV sales in Germany. The study found that social media marketing had a significant positive impact on EV sales, particularly for younger consumers and those who were more environmentally conscious. The study also suggested that social media could be an effective channel for promoting the environmental benefits of EVs and building brand awareness.

Cheema, Rizwan, and Rashid (2020) analyzed the impact of online advertising on EV sales in Pakistan. The study found that online advertising had a significant positive impact on EV sales, particularly for consumers who were more familiar with EVs and had more positive attitudes towards them. The study also suggested that online advertising could be an effective tool for educating consumers about the benefits of EVs and addressing common misconceptions.

Paukštė and Gargasas (2019) conducted a study on the impact of digital marketing on consumer adoption of EVs in Lithuania. The study found that social media and online advertising had a significant positive impact on consumer adoption of EVs, particularly for younger and more educated consumers.

Baumeister and Leimbach (2018) analyzed the impact of social media marketing on EV sales in Germany. The study found that social media marketing had a significant positive impact on EV sales, particularly for consumers who were more

environmentally conscious and had more positive attitudes towards EVs.

Filimonau and Gherbin (2019) conducted a study on the impact of digital marketing on sustainable tourism and EV rental in Italy. The study found that digital marketing had a significant positive impact on sustainable tourism and EV rental, particularly for consumers who were more environmentally conscious and had more positive attitudes towards sustainable tourism and EVs.

Basu and Goswami (2020) conducted a study on the impact of digital marketing on consumer adoption of EVs in India. The study found that digital marketing had a significant positive impact on consumer adoption of EVs, particularly for consumers who were more educated and had more positive attitudes towards EVs.

Briz and Jiménez (2020) analyzed the impact of digital marketing on EV sales in Spain. The study found that digital marketing had a significant positive impact on EV sales, particularly for consumers who were more environmentally conscious and had more positive attitudes towards EVs.

Lee, Lee, and Oh (2020) analyzed the impact of digital marketing on EV sales in Korea. The study found that digital marketing had a significant positive impact on EV sales, particularly for consumers who were more environmentally conscious and had more positive attitudes towards EVs.

Li, Lin, and Li (2021) conducted a study on the impact of social media marketing on consumer adoption of EVs in China. The study found that social media marketing had a significant positive impact on consumer adoption of EVs, particularly for younger and more educated consumers.

Manchanda, Dutta, and Bhowal (2021) analyzed the impact of digital marketing on EV sales in India. The study found that digital marketing had a significant positive impact on EV sales, particularly for consumers who were more educated and

had more positive attitudes towards EVs. The study also suggested that digital marketing could be an effective tool for addressing concerns about range anxiety and charging infrastructure.

2. Methods

2.1 Data and sample -

The decision to employ a Mixed technique is suitable because the extensive literature review previously provided makes it clear that there are no prior measurements or conclusions in the preceding research. When both quantitative and qualitative analyses are employed for the study, this is known as mixed methodology.

Primary Data for the quantitative research: The Primary data was collected from the respondents by administering a structured questionnaire for the Quantitative part of the research. The data was collected for a course of 30 days from (08/03/2023 - 09/04/2023) via a questionnaire that was circulated among the customers of Electric vehicles. The respondents were required to answer the questions based on their interpretation and understanding of the same.

Primary Data for the qualitative research : The Primary data was collected from the customers by conducting a focus group for the Qualitative part of the research.

Based on customer convenience, a survey was used to create the research. Therefore, convenience sampling is the sample type for quantitative research. The sample size for this method was 53

For the qualitative research a focus group was conducted to the customers who visited the Electric vehicle showroom. The sample size for this research method was 6.

2.2 Measures -

Customers who agreed to participate in the study were given a list of questions via a questionnaire that included a variety of

queries in order to evaluate their responses in light of the goals outlined at the start of the research article.

The study's clients' queries provided insight into the degree to which digital marketing aids in EV marketing and awareness-building.

2.3 Data Analysis -

The research method utilized in this study is

Simple Percentage Analysis

For the quantitative analysis of data using the research method, percentage analysis is a technique used to analyze data and represent it as a percentage of a total or base value.

Observational Analysis

An observational study focuses entirely on the researcher's observations to respond to a research topic. The research subjects are not hampered or mistreated. Additionally, a review of papers from automotive journals about how internet marketing affects the sales of electric automobiles was done.

Word cloud & Sentimental analysis

A word cloud is an image that visually displays word data. In other words, it is a group, or cluster, of words that are shown in various sizes. The more often and how important a word is mentioned in a document, the bigger and bolder it appears.

Sentiment analysis is a method for determining the text's emotional tone. It entails examining the text's words and phrases to determine whether a positive, negative, or neutral mood is being conveyed. Natural language processing (NLP) methods, such as machine learning algorithms, can be used for this.

3. Results Analysis and interpretation -

After distributing the survey to customers who intended to buy electric vehicles, it was decided to investigate the impact of

social media as a digital marketing strategy. The following was revealed by the content analysis

Quantitative analysis using Survey research -

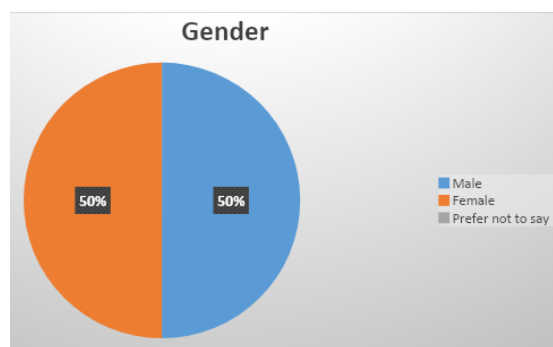


Table No. 4.1 Gender of surveyed respondents

Category	No of respondents	Percentage
Male	26	50%
Female	26	50%
Prefer not to say	0	0%
Total	52	100

Table No. 4.2 Age group of respondents

Response	No of respondents	Percentage
18-25	20	37.7%
26-30	4	7.5%
31-40	3	5.7%
40-50	25	49.1%
Total	52	100

Age
53 responses

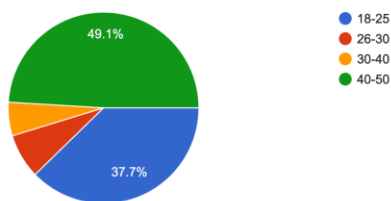


Table No. 4.3 Have the respondents considered purchasing an EV?

Response	No of respondents	Percentage
Yes	22	41.5%
No	7	13.2%
Maybe	24	45.3%
Total	53	100

1. Have you ever purchased or considered purchasing an electric vehicle?
53 responses

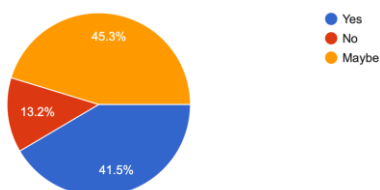


Table No. 4.4 - How the respondents heard about EV

Response	No of respondents	Percentage
Social Media	27	50.9%
Word of mouth	8	15.1%
Print Media	5	24.5%
TV/ADS	13	9.4%
Total	53	100

2. How did you first hear about electric vehicles?
53 responses

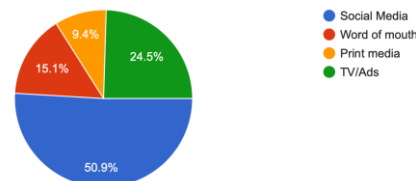


Table No. 4.5 - What type of marketing material did the respondent interact with

Response	No of respondents	Percentage
Display AD	8	15.1%
Video AD	29	54.7%
Print AD	6	11.3%
TV AD	10	18.9%
Total	53	100

3. If yes, what type of ad was it?
53 responses

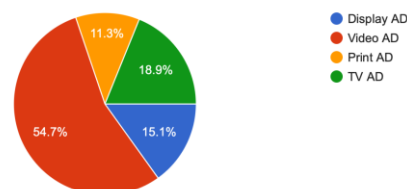
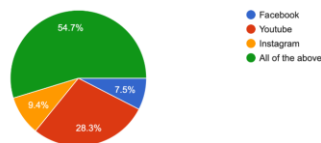


Table No. 4.6 - Which of the following social media platforms do the respondents think is the most effective for promoting electric vehicles?

Response	No of respondents	Percentage
Facebook	4	7%
Youtube	15	28%
Instagram	5	9%
All of the above	29	54%
Total	53	100



The following questions were given to customers who walked into the showroom of an electric vehicle dealership as part of the focus group process of the research using observational analysis.

1. How did you first hear about the EVs that you purchased? Was it through digital marketing efforts such as online ads or Physical ads
2. Did you engage with any online content related to EVs before making a purchase? For example, did you watch videos or read articles about EVs?
3. How did digital marketing efforts influence your decision-making process when it came to purchasing an EV? Did online reviews or advertisements have an impact on your decision to buy an EV?
4. What do you look for in an EV while purchasing it?
5. Do you think the digital marketing efforts of the EV manufacturers or dealerships influenced your perception of the product? Did they make the product seem more desirable or valuable in any way?



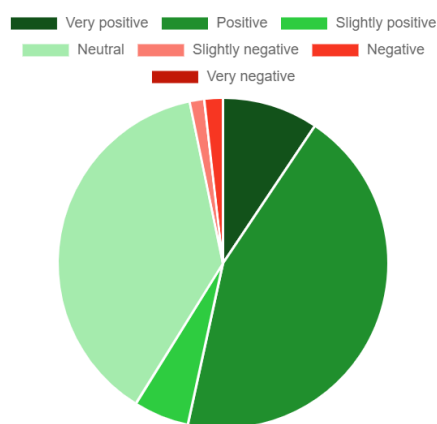
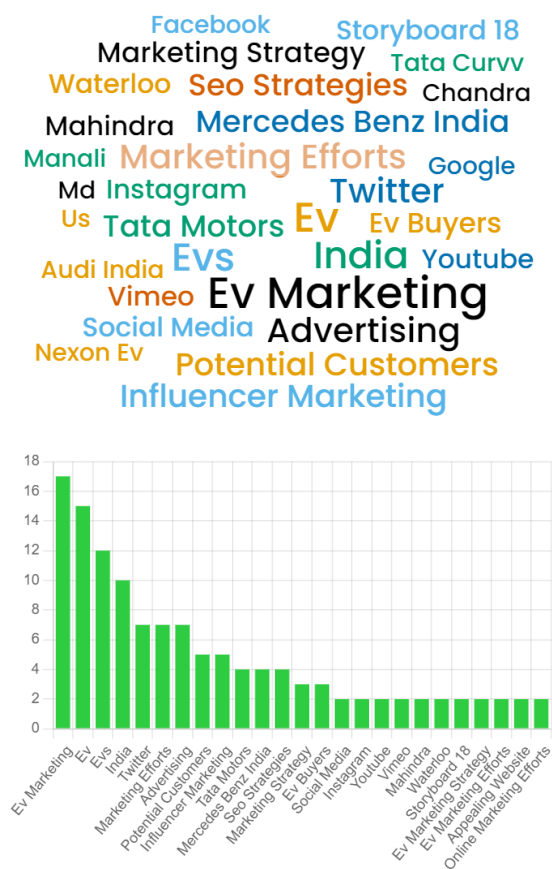
Interpretation - From the word cloud above we can understand the most prominent and frequent words used are *Electric, digital, online, marketing, ads and purchase*. This shows that most of the respondents believe that digital marketing plays a major role in their purchase decision of an EV.

In this method we will generate a word cloud from various articles sourced from various automotive journals on the topic of digital marketing of electric vehicles.

Interpretation of the word cloud - From the word cloud we understand the words *Digital, Marketing, EV & charging*. Showing that these are what play an important role in the sale of an EV.



SENTIMENT AND KEYWORD ANALYSIS -



Interpretation - From the above word cloud and the graphical representation of the number of times a word repeats we can see that the word EV, EV Marketing, marketing, and a few social media sites are repeated the most. This shows us the roles that social media plays in the marketing of an EV. From the pie chart of sentimental analysis we have obtained it is seen that the

majority of people have a positive sentiment towards EV's while the rest are neutral. Very few of them have a very negative sentiment towards EV's.

4. Conclusion -

Effective digital marketing can greatly increase EV sales, according to study on the analysis of digital marketing as a marketing strategy for electric vehicles (EVs). Studies show that using digital marketing strategies including social media advertising, search engine optimization, and internet marketing can increase consumer awareness of electric cars (EVs), interest in them, and purchase intent. Additionally, it has been shown that digital marketing is particularly effective for companies like Tata, which have significantly relied on it to increase their sales.

The vast majority of the research that is currently available points to digital marketing as being a significant tool for EV promotion and sales in the rapidly developing EV sector. More research is needed to identify the most effective digital marketing strategies for different EV types and markets, as well as to better comprehend the processes through which digital marketing affects EV sales.

5. Suggestions -

- It is advisable to the company to maintain a major part of its marketing as digital as compared to physical marketing
- It would benefit the customer a lot if the electric vehicle manufacturer can use the Digital platforms of marketing to spread more information pertaining to the price and range of the EV.
- Customers give huge importance to the price, range and eco friendliness of the EV .
- Monitor online reviews by users efficiently as articles of the review are

- being used by customers during the purchase decision process.
- v. Invest more in developing and producing Digital marketing content.

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