

## TREND SETTER A.I BASED E- VEHICLE MARKET IN INDIA

### Dr. SREENIVASA MURTHY V

Associate Professor, Department of Computer Science & Engineering, Rajarajeswari College of Engineering, Bangalore, India. Email: ankamamidi@gmail.com

### Dr. PARMANAND PRABHAT

Assistant Professor, Department of School of Computer Science and Engineering, Sandip University, Neelam Vidya Vihar, Sijoul, Mailam, Madhubani (Bihar). Email: parmanad12@gmail.com

### VINAY YANDRAPALLI

MDM Developer in World Wide Technology U.S.A. Email: vyandrapalli@gmail.com

### Dr. SYED UMAR

Professor, Department of Computer Science, College of Engineering & Technology Wollega University, Nekemte, Ethiopia. Email: umar332@gmail.com

### TADELE DEBISA DERESSA

Lecturer, Department of Computer Science, College of Engineering & Technology, Wollega University, Nekemte, Ethiopia. Email: lamistga@gmail.com

### Dr. MAGE USHA U

Associate Professor, Department of Master of Computer Applications, Rajarajeswari College of Engineering, Bangalore, India. Email: mageusha@gmail.com

### Abstract

Purpose - This paper concentrates on the Artificial Intelligence based e-vehicle market in INDIA. Every day we discuss the importance of E-Vehicles as trend setter in present Indian Market and what way the government support towards enacting laws to encourage the use of electric vehicles will lessen reliance on fossil fuels like crude oil or compressed natural gas, cut pollution, eliminate greenhouse gas emissions, enhance air quality, and safeguard the environment. Because metropolitan areas are a major source of pollution, it is crucial that residents there realize the risks associated with their consumption of pollutants and gasses that could be fatal and take steps to minimize it. The primary goal of this article is to document the opinions, feelings, difficulties, and perceptions of market participants, including manufacturers, distributors, and end users, regarding their awareness of and preparedness to select electric vehicles in order to save the environment. **Findings:** Based on the results of this study, we are able to conclude that the chi-square test fails to reject the null hypothesis. It implies that the null hypothesis must be accepted. The null hypothesis states that considerable people favor electric vehicles. It indicates that consumers favor electric vehicles more. All things considered, we can state that consumers prefer electric vehicles.

**Keywords:** Various States of India, Trend Analysis, Stock Holders Perception / Views, E-Vehicle.

### INTRODUCTION

The Indian electric vehicle (EV) market is rapidly gaining momentum in Indian market. According to EV volumes, the people are changing their mind set for choosing their perception from Oil based vehicles to Electric vehicles and people got awareness about the environment safety. The Indian EV market is booming, India's ongoing adoption of electric vehicles is predicated on the Paris Agreement, which aims to lower carbon emissions, enhance urban air quality, and as much as possible oil imports / dependency.

The automobile industry mainly focussed on Artificial Intelligence in E- vehicles, i.e. automakers are expected to incorporate advanced technologies like artificial intelligence (AI) to make electric vehicles even more innovative / creative and efficient.

## **OBJECTIVES**

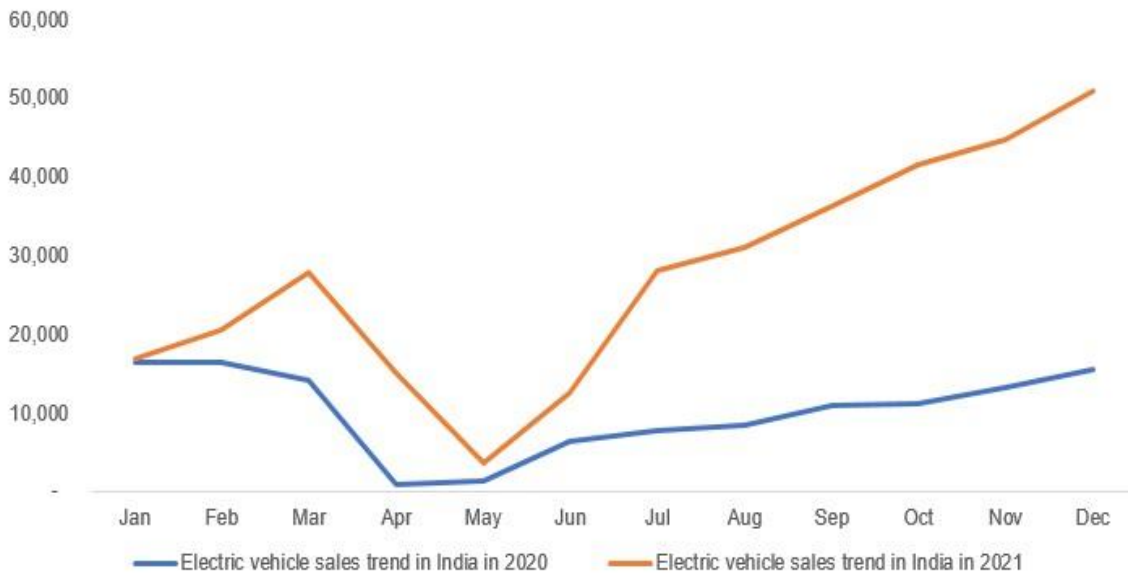
- Verify the awareness of the people around India towards the E-Vehicles and its benefits / opportunities over the traditional oil based vehicles and its impact to the environment.
- Creating the awareness in the public how the Electric Vehicles are grabbing the Indian Market and benefits out of them to the environment and opportunities for start-ups in this area.
- The main components / important factors which are driving mainly for choosing people choosing the electric vehicles in Indian Market.
- Government policies / initiatives on E-vehicle market in INDIA.

## **LITERATURE REVIEW**

With a clear desire for cleaner and greener vehicles, the automobile industry is undergoing a drastic transformation. Electric vehicles (EVs) are quickly emerging as the best option for the Indian market, and the government is supporting this trend with policies like "FAME I and FAME II (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles)". Experts project that by 2026, India's sales of electric vehicles will increase at a compound annual growth rate of 35%. Experts believe that electric cars are better for the environment and can lessen reliance on oil exports. The Indian Constitution and its "Nationally Determined Contribution Targets" are examples of international commitments that reflect the country's commitment to environmental conservation, preservation, and sustainable resource use. Every citizen is required by "Constitution's Part IVA (Article 51A- Fundamental Duties)" to protect and enhance the environment and to show compassion for all living things. In addition, the state is required to work toward "improving and protecting the environment and safeguarding forests and wildlife of the country" according to Article 48A, "Directive Principles of State Policies," which is found in Part IV of the Constitution. We'll be examining the effects of electric vehicles and how well they comply with significant environmental laws in India; Indian government also has taken initiatives to support E- Vehicle auto industry in the market and at the same time the safety of Indian citizens in the country by making Acts towards their benefit such as

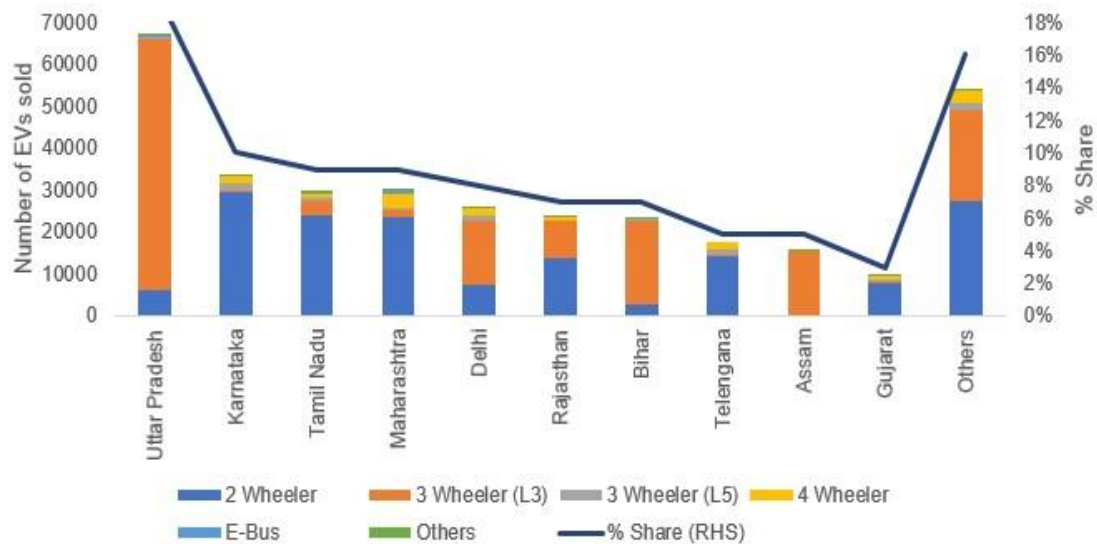
- Environmental protection against the greenhouse effect is essentially provided by the air (Prevention and control of pollution) Act of 1981.
- The 1986 Environment (Protection) Act focused on the selection of electric battery usage in electric vehicles for the benefit of the environment.
- The primary topics covered by the E-Waste (Management and Handling) Rules from 2011 to 2016 and the Amendment Rules from 2018 are the materials used in E-Vehicles and their effects on the environment.

### India's Sales Trend for Electric Vehicles (2020–21)



Reporter EV as a source

### State -Wise-EV Sales Trend in 2021



Reporter EV as a source

## RESEARCH METHODOLOGY

### Design (Research)

The researcher used Secondary Research and Primary research, the research is mainly based on research methodology for descriptive surveys.

### Data Sources (Research)

Secondary data sources, including Google Scholar, websites, government and corporate portals, periodicals, textbooks, newspapers, and magazines.

Primary survey via digital online platform via Google Form, or via offline survey by contacting different market players.

### Data Collection:

Primary Data through Survey method.

Concentratd on the market stock holders age group between 18 – 55.

### Data Sampling Method:

Sampling methods like Random Sampling, Convenience sampling, quota sampling used.

### Collection of Data: A Summary

Gender	Responded
Men	67
Women	23
Others	10
<b>Total</b>	<b>100</b>

Range Age	Responded
<30	56
<40	22
<50	12
> 50	10
Grand Total	100

### Analysis of Data

The following are the opinions of different stack holders regarding significant research questions related to e-vehicles:

**Do you have clear cut awearness on e- Vehicles (Two wheeler / Three Wheeler / four wheeler, how it is different from traditional Oil /CNG based vehicles?**

Type of Vehicle	Preferance
Electric Bike/Elect Ric Scooty	27
Auto (Three Wheelr)	12
Electric Car	61

**If you want to choose E- Vehicle, which company do you choose? (TWO wheeler)**

Company	Preferance
Ola	48
Ather	41
Others	11

### If you want to choose E- Vehicle, which company do you choose? (FOUR wheeler)

Company	Preference
Hyunda	21
Maruti Suzuk	26
Mg	30
Tata	21
Others	02

### What are the main accilarators (Factors) to choose E- Vehicles?

While research, the researcher has given following options for choosing, they are

Factors	Preference
Low Noise Level	05
New Trends	18
Enviornmental Friendly	14
Price Comarision	42
Maintenance	21

### What do you think, E- Vehicles will protect globe from Global warming?

Factors	Preference
Strongly Agree	15
I Dont Know	09
Agree	45
Dis Agree	31

### In the upcoming two years, are you planning to purchase an electric car?

Factors	Preference
Yes	72
No	20
May Be	08

### Are you aware of the government's policies, subsidies, and acts pertaining to the purchase of electric vehicles?

Response	No. of Response
No	45
Yes	55

### Testing-Hypothesis

The researcher used the Chi-square test for the investigation.

### Chi-square Analysis

The purpose of the Chi-square test is to confirm the likelihood that an observed distribution is the result of chance.

Because it gauges how well the observed data distribution matches the expected distribution under the assumption that the variables are independent, it is also referred to as the "goodness of fit" statistic. The level of significance determines the chi-square statistic.

**H0: Significant are more favored as electric cars.**

**H1: Significant aren't preferred over electric vehicles.**

**Observed Data (f0)- Computation**

**Computation of Observed data (f0)**

Observed Data ( F0)	Maruthi Suzuki / Tata	Mg / Hundai	Ola	Ather	Others	Total
Electric Car	15	23	02	03	08	51
Electric Bike	06	04	12	18	09	49
<b>TOTAL</b>	<b>21</b>	<b>27</b>	<b>14</b>	<b>21</b>	<b>17</b>	<b>100</b>

**Calculation of Expected data (f0)**

\*)

<u>Observed Data ( F0)</u>	<u>Maruthi Suzuki / TATA</u>	<u>MG / HUNDAI</u>	<u>OLA</u>	<u>ATHER</u>	<u>Others</u>	<u>TOTAL</u>
Electric Car	7.58	09.84	14.48	9.9	12.2	66
Electric Bike	5.42	10.16	14.52	6.1	7.8	34
<b>TOTAL</b>	<b>13</b>	<b>20</b>	<b>32</b>	<b>15</b>	<b>20</b>	<b>100</b>

**Calculation of Observed and Expected data (f0)**

<u>Observed Data ( F0)</u>	<u>Maruthi Suzuki / TATA</u>	<u>MG / HUNDAI</u>	<u>OLA</u>	<u>ATHER</u>	<u>Others</u>	<u>TOTAL</u>
Electric Car	0.675804196	0.001616162	0.44363636	0.0010101	0.003030303	1.125097125
Electric Bike	1.605972851	0.004137255	0.86705882	0.0019608	0.005882353	2.184012066
<b>TOTAL</b>						3.309109191

**Calculation of Df / CV/ P-Value**

<u>Df</u> = (r-1)(c-1)	CV	8.986573451
<u>Df</u> = 4	P- Value	0.473456783

## Findings

- 63 men, 27 women, and 10 other people make up the total of 100 individuals. This indicates that only working women are knowledgeable about electric vehicles, while men are more knowledgeable about them.
- The majority of those surveyed are employee & business man.
- As per computed analysis, the majority of people prefer electric vehicles;
- people are aware of how cars affect global warming;
- And respondents are aware of artificial intelligence's advantages in electric vehicles.

## CONCLUSION

In this case, Chi-Square value < Critical Value. Hence, we fail to reject H<sub>0</sub>. OR p value is 0.473456783 & alpha is 0.05. Since p value > 0.05. Hence, we fail to reject H<sub>0</sub>. So, the conclusion is that Significant are more prefer as an E-vehicle.

## Bibliography

- 1) Patale, Jayshri Prakash, A. B. Jagadale, A. O. Mulani, and Anjali Pise. "A Systematic survey on Estimation of Electrical Vehicle." *Journal of Electronics, Computer Networking and Applied Mathematics*, no. 31 (December 5, 2022): 1–6. <http://dx.doi.org/10.55529/jecnam.31.1.6>.
- 2) El-fedany, Ibrahim, Driss Kiouach, and Rachid Alaoui. "System architecture to select the charging station by optimizing the travel time considering the destination of electric vehicle drivers in smart cities." *Bulletin of Electrical Engineering and Informatics* 9, no. 1 (February 1, 2020): 273–83. <http://dx.doi.org/10.11591/eei.v9i1.1564>.
- 3) Wang, Cheng, Tongtong Ji, Feng Mao, Zhenpo Wang, and Zhiheng Li. "Prognostics and Health Management System for Electric Vehicles with a Hierarchy Fusion Framework: Concepts, Architectures, and Methods." *Advances in Civil Engineering* 2021 (January 15, 2021): 1–11. <http://dx.doi.org/10.1155/2021/6685900>.
- 4) umar, Nitesh, Yashpal Rathod, Shubham Kumar, and S. Vidyasagar. "Wireless Power charging system with Self-Adjusting Charge nodes for Electric Vehicles." *Journal of Physics: Conference Series* 2335, no. 1 (September 1, 2022): 012051. <http://dx.doi.org/10.1088/1742-6596/2335/1/012051>.
- 5) Shrivastav, Sneha, and Surabhi Patel. "Energy Enhancement of Electric Vehicles through Regenerative Braking System." *International Journal of Engineering Applied Sciences and Technology* 7, no. 2 (June 1, 2022): 258–62. <http://dx.doi.org/10.33564/ijeast.2022.v07i02.040>.