

Consumer Buying Behaviour Towards Electric Vehicles in Bengaluru City, Karnataka, India

Mr. Tejesh. D¹, Dr. Susheela Devi B Devaru²

¹Student, Department of MBA, Dr. Ambedkar Institute of Technology, Bengaluru – 560056, Karnataka, India.

²Associate professor, Department of MBA, Dr. Ambedkar Institute of Technology, Bengaluru – 560056, Karnataka, India.

ABSTRACT:

Electric vehicles are environment friendly powered by electricity, reducing emissions & dependence on fossil fuels. They offer efficient, quiet & smooth driving, contributing to a sustainable transportation. Every day, we come across a wide range of issues and publications that highlight the crucial part that electric vehicles play in changing the face of transportation. In an effort to reduce our dependency on fossil fuels, reduce greenhouse gas emissions, and improve air quality, governments all over the world are moving quickly to implement legislation to stimulate the use of electric vehicles. The dependability & safety of electric vehicles are questioned. In order to analyse how people, perceive the advantages and disadvantages of electric vehicle and the technology they include, this work has been carried out. This paper focuses on consumer buying behaviour towards electric vehicle and the focus of the study is to know the various factors influencing consumer while purchasing elective vehicles.

Keywords: Electric vehicle, Consumer buying behaviour, Consumer Attitude, Consumer Perception, Consumer Satisfaction.

INTRODUCTION:

Electric vehicles (EVs) have gained popularity as eco-friendly alternatives to gas-powered cars. They run on electricity, can be charged externally, and offer benefits like reduced reliance on fossil fuels and lower maintenance costs. This makes them a solution to environmental issues like pollution and climate change. The surge in EVs is driven by concerns about urban air pollution, with many major Indian cities among the world's most polluted areas. Transportation emissions are a significant contributor, prompting manufacturers and governments to explore eco-friendly options. Governments worldwide are endorsing electric mobility as a way to combat pollution. For example, China promotes hybrid vehicles, while the UK incentivizes EV purchases in cities like London.

In India, electric three-wheelers are popular, but the power distribution network needs improvement. However, there's potential for EV growth, especially in electric bikes and four-wheelers, if the government invests in charging infrastructure and incentives. India aims for an all-electric vehicle fleet by 2030, with the Minister of Road Transport and Highways working with the Society of Indian Automobile Manufacturers to promote this transition. This reflects the government's commitment to sustainable transportation.

LITERATURE REVIEW:

1. Prof. Tushar Pradhan and Ajaysinh Parmar (2021), A survey on Vadodara city residents' attitudes future electric vehicles the consumers' lack of interest on electric automobiles was noted by the researchers.
2. Vibhuti Pareek, 2022, Perception towards electric vehicles in Indian market: The researcher noted that EV manufacturers need to work on their R & D to improve price range, cost of product, design, style, and branding to foster a favourable perception about EVs in Indian market.
3. Sajjan Acharya (2019), Consumer Perceptions of the Electric Car Industry: Exploring its Contribution to Environmental Sustainability, Researchers noted that focus should be eliminating greenhouse gases and replacing old conventional cars with new electric vehicles to reduce pollutant emissions to keep low.

OBJECTIVE OF THE STUDY:

- 1) To study consumers buying behaviour towards electric vehicles in Bengaluru city.
- 2) To study factors influencing consumer while purchasing elective vehicles.
- 3) To determine the affordability of pricing that consumer may pay for an electric/hybrid vehicle.
- 4) To study government initiatives taken to promote electric/hybrid vehicles & subsidies provided on electricity.

STATEMENT OF THE PROBLE:

People are beginning to think about protecting the environment as much as they can because environmental problems are prevalent in India. Fuels like gasoline and diesel are well known. People are switching to electric vehicles as a result of the majority of environmental harm coming from transportation. Despite the fact that the EV idea is currently fully established, few individuals are aware of or confident in it. The dependability and safety of electric cars are questioned by them. In order to analyse how people, perceive the advantages and disadvantages of electric vehicle and the technology they include, this work has been carried out.

RESEARCH METHODOLOGY:

Descriptive research is a type of research design is used to measure consumer experience, which leads to customer satisfaction. A systematic questionnaire with close - end questions & 5-point Likert scale was developed to examine consumer behaviour.

SOURCES OF DATA COLLECTION

→ Primary data

Primary data are collected with specific set of objectives to assess buying behaviour of the consumers. The first-hand information was collected from respondents in nagarbhavi, Bangalore city by visiting EV outlets & forwarding structured questionnaire through google forms.

→ Secondary data

Secondary data is been collected from different sources including websites, journals, articles, magazines etc...

SAMPLING METHOD

Random sampling has been used because the selection of units from the population has been done randomly by visiting around 15 - 20 EV outlets in nagarbhavi and convenience sampling was done based on availability and accessibility by forwarding structured questionnaire through google forms at our convenient level.

POPULATION & SAMPLING UNIT

Research & survey activities had been done for the population of Bangalore city in order to know buying behaviour towards Electric vehicle and services in Bangalore.

Sampling Units - Research has been done for both male and female respondents using electric vehicles.

SAMPLE SIZE

The sample size for the study is set at 200 people. Due to time constraints, only 200 people will be surveyed.

HYPOTHESIS OF THE STUDY

H0 : There is no significant, relationship b/w mileage of electric vehicle & electric vehicle company preferred.

H1 : There is significant relationship b/w mileage of EV & electric vehicle company preferred.

STATISTICAL DESIGN

The collected data is tabulated and analysed using statistical procedures. such as percentage analysis. To determine the association between two variables, SPSS software is utilized. The data is displayed using percentage and bar chart analysis, which aids in judging the level of customer behavior by accurately showing factors.

→ Table No. 1

Table showing age of respondents.

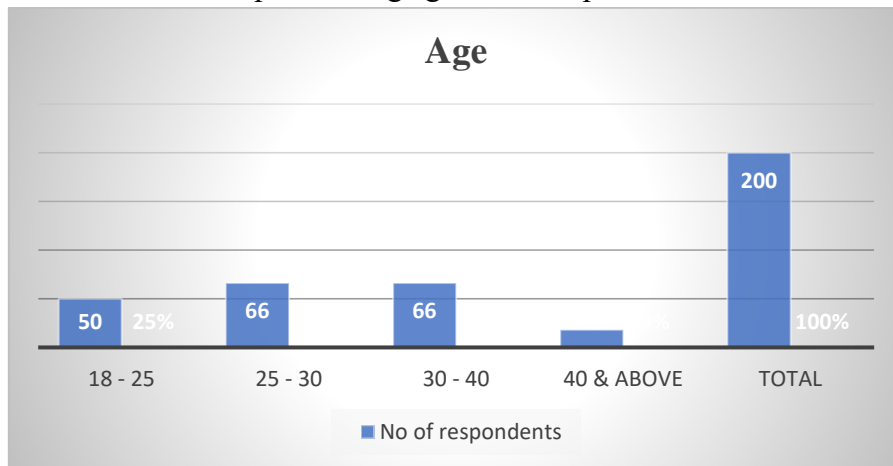
Age	No of respondents	Percentage of respondent
18 - 25	50	25 %
25 - 30	66	33 %
30 - 40	66	33 %
40 & Above	18	9 %
Total	200	100 %

Analysis:

It can be analysed that out of 200 respondents, 25% of respondents are 18 - 25 years, 33% of respondents are between 25 - 30 years, 33% of respondents are between 30 - 40 years and 9 % of respondents are 40 years and above.

→ Graph No. 1

Graph showing age of the respondents.



Inference:

From the above graph, it can be construed that respondents who belongs to 25-30 age group & 30-40 age group are the major customers towards EV, the reason behind this is the young working professionals who fall under this age group tends to prefer Luxury lifestyle. Hence consumers of this age group prefers electric vehicles.

→ Table No. 2

Table showing Profession of the respondent.

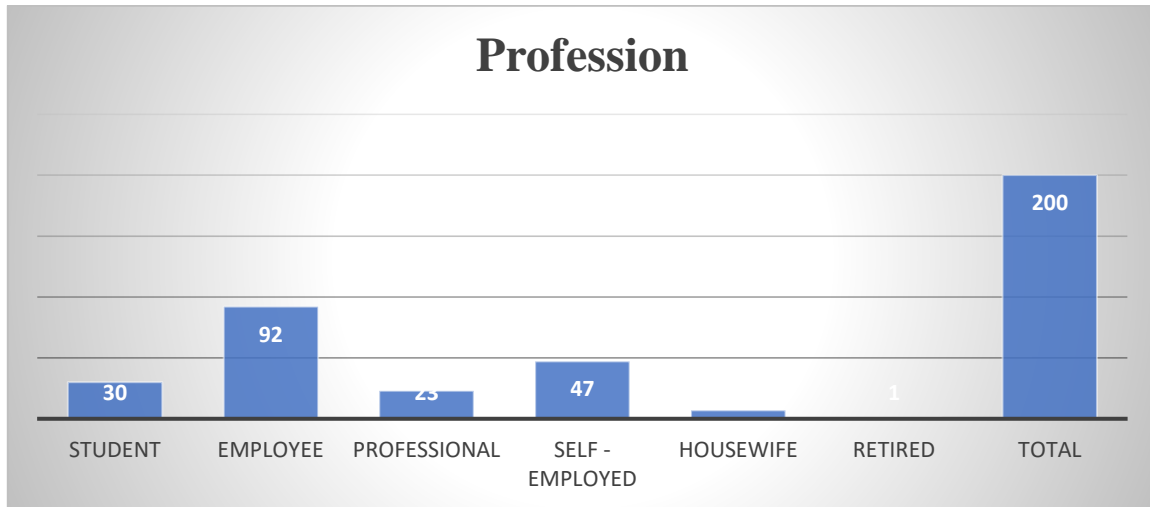
Profession	No of respondents	Percentage of respondent
Student	30	15%
Employee	92	46%
Professional	23	11.5%
Self - Employed	47	23.5%
Housewife	7	3.5%
Retired	1	0.5%
Total	200	100 %

Analysis:

It can be analysed that out of 200 respondents, majority 46 % of respondents are Employed, 23.5 % of respondents are Self – Employed. Hence, they are preferring the Electric vehicles.

→ **Graph No. 2**

Graph showing Profession of the respondent.



Inference:

From the above graph, it can be construed that employees are the major customers, the reason behind this is, nowadays people are more towards Travelling & new technologies. Though EV outlets are located everywhere in Bangalore which make consumer more convenient to visit the outlet. So, they do visit more to the EV outlets.

→ **Table No. 3**

Table showing mileage preferred by respondents in One complete charge.

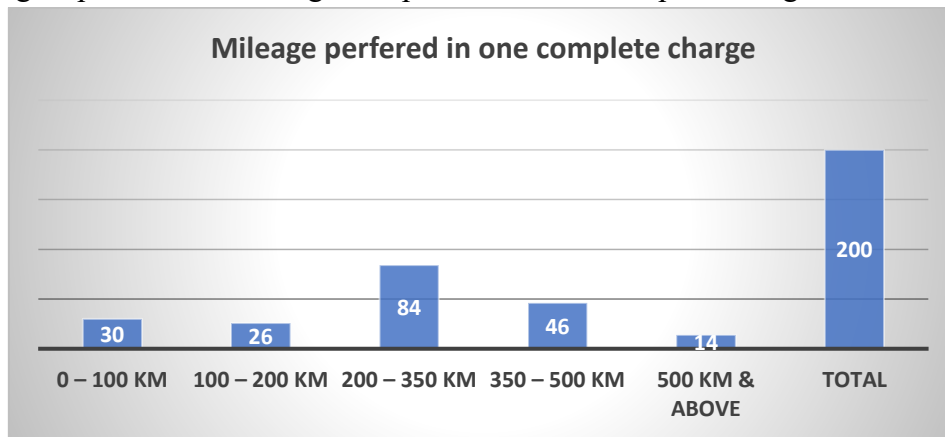
Mileage preferred in One complete charge	No of respondents	Percentage of respondent
0 – 100 km	30	15%
100 – 200 km	26	13%
200 – 350 km	84	42%
350 – 500 km	46	23%
500 km & above	14	7%
Total	200	100%

Analysis:

It can be analysed that majority 42% respondents are preferring travelling range of 200 – 350 km, 23% respondents are preferring travelling range of 350 – 500 km etc.

→ **Graph No. 3**

Graph showing respondents travelling km's perfered in One complete charge.



Inference:

From the above graph, it can be construed that majority of respondents prefer vehicles with a range between 200 and 350 km on one complete charge. However, there is also a significant interest in vehicles with ranges of 0 – 100 km and 350 – 500 km.

→ **Table No. 4**

Table showing most preferred Electric Vehicles company by the respondents.

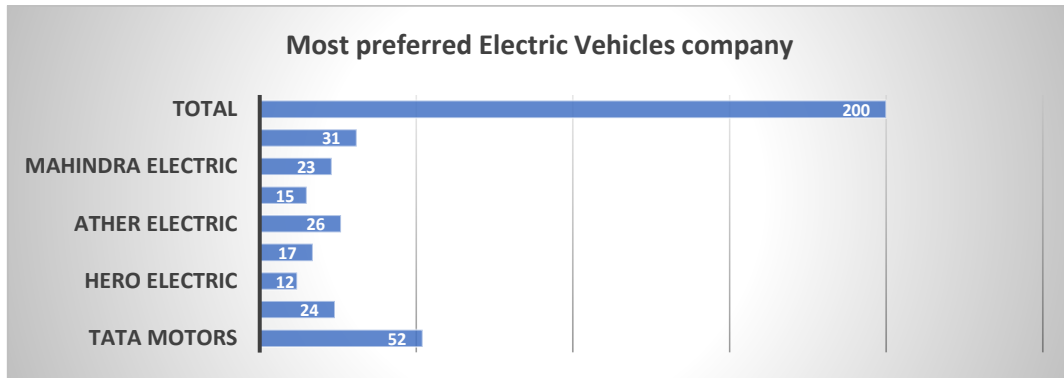
Most preferred Electric Vehicles company	No of respondents	Percentage of respondent
Tata motors	52	26%
Hyundai	24	12%
Hero electric	12	6%
TVS	17	8.5%
Ather electric	26	13%
Ola electric	15	7.5%
Mahindra electric	23	11.5%
Others	31	15.5%
Total	200	100%

Analysis:

It can be analysed that majority 26% of them prefer tata motors,15.5% of respondents prefer other companies which is not mentioned in the list,13% of respondents choose Ather electric bikes,12% select Hyundai company,11.5% prefers Mahindra electric vehicle,8.5% of consumers prefer TVS,7.5% prefers ola & 6% of them choose Hero electric vehicle.

→ Graph No. 4

Graph showing most preferred Electric Vehicles company by the respondents.



Inference:

From the above graph, it can be construed that Tata Motors emerged as the most preferred EV company among the respondents, based on the highest number of respondents selecting it as their preferred choice in the survey. followed by Hyundai, indicating their popularity and market appeal in the electric vehicle segment.

HYPOTHESIS TESTING (CORREALATION)

H0 : There is no significant, relationship b/w mileage of electric vehicle & electric vehicle company preferred.

H1 : There is significant relationship b/w mileage of EV & electric vehicle company preferred

		How much Mileage do you prefer in one complete charge?	Which Electric Vehicles company would you prefer the most?
How much mileage do you prefer in one complete chagre?	Pearson Correlation	1	.020
	Sig. (2-tailed)		.782
	N	200	200
Which Electric Vehicles company would you prefer the most?	Pearson Correlation	.020	1
	Sig. (2-tailed)	.782	
	N	200	200

INTERPRETATION

P value = 0.020

Level of significance = 0.05

(P value 0.020 < LOS = 0.05)

- ✓ Pearson product correlation relationship was found moderately positive and statistically significant.
- ✓ Therefore, mileage is having significant relationship with Electric' Vehicle company preferred.
- ✓ Hence, there is significant relationship b/w mileage of electric vehicle & electric vehicle company preferred.

❖ FINDINGS:

1. It can be analysed that out of 200 respondents, 25% of respondents are 18 - 25 years, 33% of respondents are between 25 - 30 years, 33% of respondents are between 30 - 40 years and 9 % of respondents are 40 years and above.
2. It can be analysed that out of 200 respondents, majority 46 % of respondents are Employed, 23.5 % of respondents are Self – Employed. Hence, they are preferring the Electric vehicles.
3. It can be analysed that majority 46% of respondents know about EV from social media, 27% of respondents knew from television, 15.5% of respondents knew from Local observation & 11.5% from friend/relatives.
4. It can be analysed that majority 33.5% of respondents are willing to switch to protect environment, 33% of respondents are switching due to increased price of petrol & diesel vehicle & 20.5% of respondents are all of the above & 13% of respondents are switching because of better driving experience.
5. It can be analysed that majority 39.5% of respondents are willing to spend between 10 – 25 Lakhs, 27.5% are spending below 5 Lakhs, 25% of respondents are willing to spend between 5 – 10 Lakhs, 7% of respondents are willing to spend between 25 – 50 Lakhs, 1% of respondents are spending above 50 Lakhs.
6. It can be analysed that majority 44% of respondents are preferring car, 28.5% are preferring Bike, 14% of them are preferring scooter & 13.5% of respondents are preferring other alternatives.
7. It can be analysed that majority 42% respondents are preferring travelling range of 200 – 350 km, 23% respondents are preferring travelling range of 350 – 500 km etc.
8. It can be analysed that majority 26% of them prefer tata motors, 15.5% of respondents prefer other companies which is not mentioned in the list, 13% of respondents choose Ather electric bikes, 12% select Hyundai company, 11.5% prefers Mahindra electric vehicle, 8.5% of consumers prefer TVS, 7.5% prefers ola & 6% of them choose Hero electric vehicle.

❖ CONCLUSION:

The analysis, of the survey data' provides valuable insights into attitudes and preferences of potential electric vehicle (EV) consumers. The study reveals a gender disparity in EV interest, emphasizing need for targeted marketing strategies, to engage more female consumers. Age groups, particularly 25-30 and 30-40, exhibit a strong inclination towards EVs, driven by young professionals seeking a luxury lifestyle. Income level does not significantly influence EV preference, with the 25k-40k income range showing notable interest. Graduation and post-graduation holders are well-informed about branded EV outlets and exhibit brand differentiation.

Environmental concerns, government initiatives, and rising fuel prices play vital roles in motivating EV adoption. Addressing barriers like range anxiety, charging time, and limited choice is pivotal. Cars are the favored EV type, Tata Motors and Hyundai lead in preference, emphasizing the need for enhanced brand appeal. Respondents prioritize EVs with ranges of 200-350 km, indicating a positive market outlook. Government policies and incentives receive favorable feedback, highlighting effective support. Incentives, perceived savings, and environmental benefits influence purchasing decisions. To promote EV adoption, targeting different demographics, addressing concerns, and creating affordable, high-quality EVs are key. Public education can dispel misconceptions. In sum, this analysis underscores the importance of targeted marketing, addressing barriers, and continued government support for a thriving EV market.

❖ SUGGESTIONS

The number of charging stations need to be expanded, as more people are interested in buying EVs. Electric vehicles should be prioritized in order to reduce pollution and greenhouse gas emissions. Companies should concentrate on informing the public about new electric vehicle modes. Petrol prices are steadily rising. Electric vehicles have the potential to help solve the problem of rising gasoline prices. Electric car promotion by the government will benefit the country's future growth. To encourage the adoption of electric vehicles, the government should provide incentives and subsidies. Reduced tax rates can tempt some buyers to choose electric vehicles. By lowering the initial cost of electric vehicles, the industry will grow in near future.

However, to accelerate the EV revolution, a multi-faceted approach is essential. This includes investing in a robust charging infrastructure network that caters to both urban and rural areas, fostering collaborations between public and private sectors, and raising awareness among consumers about the economic and environmental advantages of EVs. Moreover, supporting research and development for advanced battery technologies and localized production will be crucial in making EVs more affordable and accessible to a wider segment of the population.

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