AN EMPIRICAL STUDY TO ANALYSE CUSTOMER BEHAVIOUR FOR BUYING ELECTRIC VEHICLES

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Abstract
The production and distribution of electric cars are gaining momentum as a direct result of contemporary environmental concerns. The year 2018 has fundamentally altered the way in which Indian manufacturers think about electric vehicles as superior replacements for gasoline-powered automobiles. The purpose of this thesis is to explore the variables impacting the commercial success of electric vehicles in India as well as the intention of consumers to acquire such vehicles. There are several aspects of the scenario, such as the regulatory environment, as well as personal and current psychological elements, such as attitude and perception, as well as societal acceptability and consideration levels, which all play a role in the choice of prospective automobile purchasers. The present body of literature on the subject of electric automobiles in the Indian setting will be the focus of this study, and its primary objective will be to provide new information in the area. This study will employ mixed methods to understand the customer buying intention towards electric vehicles. We will conduct the quantitative method first followed by the quantitative study. The quantitative study will help uncover the insights which we could have missed in the quantitative work. The data will be collected via the use of surveys that will be carried out with the aid of Google Forms, and then it will be analysed using an appropriate statistical test. The results of the study will enable us to comprehend the current scenario of customer buying intentions towards EVs in India and draw a conclusion based on it.
Keywords: Electric Vehicle, Survey, Questionnaire, Consumer buying behaviour

1 Introduction

Production and sales of electric vehicles (EVs) have been on the rise for some time. We expect this trend to go on. This is the direct consequence of the now-widespread awareness of contemporary environmental problems. In 2018, new technology has made electric automobiles more affordable and more attractive than their internal combustion engine counterparts, particularly diesel and gasoline vehicles, to manufacturers in India. A number of factors have contributed to this paradigm change. As a result of this shift in perspective, electric vehicles are increasingly seen as preferable to traditional gas-powered automobiles. When did this start, and what is it causing? I'm confused as to the reason for this research suggests that. Nissan Motors, for one, is working on twenty new models of electric vehicles (EV), and a bevvy of Indian firms are doing their best to capitalise on the industry's rapid growth (Selva & Arunmozhi's, 2020). For instance, Nissan Motors is expanding its presence in the American market by creating ten new models of electric vehicles (EVs). As an added bonus, Nissan Motors is now in the process of developing twenty new hybrid electric car models (HEVs). This completely novel business is rapidly expanding, and it has facilitated the formation of several strategic partnerships (Krishna, 2021). Given India's talented and semi-skilled innovation core, platform with a massive number of customers, and relatively inexpensive manufacturing and labour prices, it's no surprise that nearly every EV manufacturer and components

vendor in the world is considering establishing a presence in the country. India also has a sizable market and well-developed facilities. Studying consumer decision-making processes in relation to EV purchases is central to our investigation.

Importance of the Study

Customers' increasing interest in electric cars is a major boon to any business hoping to get into the market. This means that understanding what drives consumer choice is critical to the success of any business and, by extension, any economy. The findings of this research are crucial for businesses as they get ready for the coming of electric vehicles

1.1 Background

The car has been one of the most important forms of transportation for almost as long as the contemporary motor industry itself, during the last 150 years. During this time, automobiles have been widely used as a convenient mode of transportation. Since then, the vehicle has become an indispensable tool for transporting people, products, and services. One cannot exaggerate the importance of this sector of the economy to the development and betterment of the modern world (Selva and Arunmozhi, 2020). Help might be in the form of anything from transporting individuals to relocating whole structures. A total of 1.25 billion automobiles are expected to be on the roads and highways of the world in 2015. This is due to the fact that a sizable percentage of people throughout the world rely on this means of transportation.

Rapid growth in the electric car market and production may be attributed to rising environmental consciousness. The country's success has been greatly aided by its participation in the Paris Climate Accord. In 2018, the Indian car industry saw a rapid transition toward battery-powered vehicles. Electric car manufacturers and component suppliers from across the globe are flocking to India due to the country's large consumer market, low production costs, and a large pool of trained workers (Secinaro et al., 2022). Before enacting regulations governing the sale of electric automobiles, it is necessary to conduct an in-depth analysis of the factors that influence a customer's interest in using an electric vehicle (electric vehicle). The amount to which consumers actually acquire these automobiles is subject to several variables. The buyer's attitude and frame of reference, the buyer's financial status, the social acceptability of the automobile, and the credibility of the vendor are just a few of the many intangibles that influence the buyer's choice to purchase. There has been a lot of research into hybrid vehicles, but not nearly as much into fully electric ones (Asadi et al., 2021). Introducing electric vehicles may be seen as a solution to combating global warming, increasing CO2 emissions, and depleting the world's finite supply of fossil resources. There is truth to all of these statements, but the arrival of electric automobiles might be the answer.

2 Literature Reviews

In their research highlight many pressing ecological concerns that are driving interest in and adoption of EVs. Research on the elements that affect consumer acceptability of electric cars is necessary to evaluate the potential of electric vehicles becoming a mainstream mode of transportation in India and the intentions of customers to acquire such vehicles. The social acceptability of vehicles, environmental concerns, costs, levels of trust, technological advancement, and infrastructural development are only a few of the factors that may influence a consumer's choice to purchase an automobile. Prospective automobile purchasers are influenced by several factors, including their own attitudes and beliefs on many topics (He, Zhan and Hu, 2018).

Research suggests that increasing the prevalence of EVs is a viable strategy for reducing emissions caused by the transportation sector. Electric vehicles (EVs) were created as a practical solution to the environmental damage caused by traditional autos. The successful incorporation of electric cars (EVs) into the current transportation system depends on a thorough understanding of the factors that

influence consumers' willingness to purchase EVs. This is crucial for the successful introduction of EVs into the current transportation system (Shetty et al, 2020).

We want to enhance our goods and services based on what we learn from this research on how our target demographic feels about the aforementioned challenges. In September of this year (2019), surveys were carried out in the major cities of South Korea in order to gather information from prospective customers.

In order to analyse data from over 1,500 legitimate survey replies, the researchers used binary logistic regression and regression trees. Analysis and interpretation of the data followed. The likelihood that a consumer would buy an electric automobile is most strongly associated with their estimation of the financial and environmental advantages of doing so. This result holds true despite the fact that various variables, including people's views and assumptions regarding EVs, had a role in bringing it. It was discovered that consumer concerns about the state of technology had a detrimental impact on consumers' propensity to buy electric automobiles. The results of this research might help individuals with a vested interest in the electric car industry better enforce the current regulations limiting the broad usage of electric cars (Adnan et al., 2017).

Research suggests that, as a large energy user, India is under substantial pressure to lower its energy consumption and its emissions of greenhouse gases. That's because India is a major contributor to global warming pollution. In addition to lowering the country's dependency on foreign oil, electric vehicles (EVs) have the potential to lessen the country's total carbon footprint (Dutta, Hwang's, 2021).

In this research, the authors employ an improved TPB model to predict 326 customers' interest in buying electric automobiles. In all, the 57 dealerships that made up the sample offered five distinct makes of cars. These car lots were part of the sample. The study's empirical research demonstrated that consumers' adoption intentions are interwoven with their views, subjective standards, viewpoints on behavioural control and morality, and environmental concern.

Traffic congestion and air pollution are on the rise in many of India's major cities, according to research by As a result, we may see legislation that requires the use of environmentally friendly vehicles, such as electric automobiles (Yein, Ikram ,2022).

2.1 Research Gap
There is a gap in research on the specific factors that influence customer behavior when buying electric vehicles. Despite the increasing popularity of electric vehicles, there is limited empirical research that examines the factors that influence consumer purchasing decisions, such as range anxiety, charging infrastructure, and government incentives. Additionally, there is a lack of research that examines the differences in consumer behavior between different segments of the population, such as age, income, and gender. Conducting an empirical study to analyze customer behavior for buying electric vehicles could provide valuable insights into the factors that drive consumer purchasing decisions and help to inform the development of effective marketing and policy strategies to promote the adoption of electric vehicles.

2.3 Literature gap

	Electric vehicles consumer behaviours: Mapping the field and providing a research agenda Silvana Secinaro, Davide Calandra, Federico Lanzalonga and Alberto	They used the embryonic discussion to push the debate towards resolving low battery performance by identifying three determining factors in the purchasing decisions of future	The study aims to provide a bibliometric and thematic analysis of the literature to overcome the existing fragmentation and feed the academic debate, providing

2022	Ferraris	consumers: range, performance, and cost (Schwartz, 1983).	theoretical and practical implications.
2017	Consumer purchase intentions for electric vehicles: Is green more important than price and range? Kenan Degirmenci , Michael and H. Breitner.	This paper investigated the role of environmental performance compared to price value and range confidence regarding consumer purchase intentions for EVs.	Their study covers the environmental perspective but rather generic than EV-specific in a way that "it is important to drive a car that harms the environment as little as possible" (Plötz et al., 2014, p. 106). Hence, the environmental performance of EVs is not measured in their study and there is no comparison of environmental performance to price and range.
2020	Moving towards sustainable purchase behavior: examining the determinants of consumers' intentions to adopt electric vehicles Guowei Xu, Shanyong Wang, Jun Li & Dingtao Zhao	Consumers' EV driving experience directly affects their perceptions and cognitions and increases their understanding of EVs, which further affects their attitudes and intentions to adopt EVs. Thus, the EV driving experience is seen as an external stimulus variable in the SOR framework.	In this research, adoption intention refers to the possibility of consumers adopting EVs. Specifically, it refers to the possibility of consumers choosing EVs for travel, gives priority to consumers buying EVs and recommending them to relatives and friends. There are many factors influencing the adoption intentions of EVs.
2022	A STUDY ON FACTORS INFLUENCING THE PURCHASE OF ELECTRIC VEHICLES IN INDIAN AUTO MOBILE MARKET Prof. Rajesh1, Dr. Rajasulochana, Dr. M. Kethan.	According to findings in comparison to older customers, younger customers are more likely to adopt electric vehicles. Customers with a higher level of education are more aware of the benefits of electric vehicles rapid adoption of electric vehicles is greater among educated customers than among less educated customers.	The study's findings demonstrate that pricing has a substantial impact on the adoption of electric vehicle.
2021	Factors impacting consumers' intention toward adoption of electric vehicles in Malaysia. Asadi, S., Nilashi, M., Samad, S., Abdullah, R., Mahmoud, M., Alkinani, M.H. and Yadegaridehkordi.	The present study aimed at developing a research model and investigating the factors affecting consumers' intention to adopt EVs. Accordingly, the model development was performed through the integration of TPB and NAM, while extra factors were obtained from the previous research.	The efficiency of the model and it's potential to predict the consumers' intention to adopt EVs were improved by integration of NAM as pro-social incentives with TPB that primarily rely on rational selection.
2017	Consumer preferences for electric vehicles: a literature review. Liao, F., Molin, E. and van Wee, B.	In most cases, the correlation between all these variables has not been controlled for to avoid self-selection bias.	Psychological variables are the exception and have a proven stable effect, shown by several studies. For socio-economic and demographic variables, the impact is unclear and sensitive to small changes in model specification.

2021	Consumers Purchase Intentions of Green Electric Vehicles: The Influence of Consumers Technological and Environmental Considerations. Dutta, B. and Hwang	SEM analysis validated that the model provided significant insights for perception, interpretation, and anticipation and offered adequate explanatory power to predict consumers' intentions to buy EV and provide a new direction for researchers to consider in subsequent research. Results show both peer pressure and mass media influence have a positive relationship with consumers' subjective norm.	The current study examines critical factors influencing consumers' intention to buy EV through an integrated model derived from classical theory TPB with attitudinal–norm–behavioural factors, maintenance and battery replacement cost, availability of charging facility, purchasing EV price, mass media influence, peer pressure, and government incentive.
2020	Consumer preference on electric vehicles and its business in the global market. Selva, J. and Arunmozhi, R.	The best method for promoting companies' products, creating brand awareness through integrated marketing strategies. Entry into network and marketing has low entry barriers, and consequently, any company can do it.	Electric cars are an effective strategy, an essential tool for all business concerns, which can integrate social networking and marketing strategies according to changing and developing consumer behaviour expectations to achieve organizational goals. Consumers will share their opinions on electric cars with or without company interaction.
2022	Analysis of Consumers' Electric Vehicle Purchase Intentions: An Expansion of the Theory of Planned Behaviour. Yeğin, T. and Ikram, M.	The findings of this research obtained the effect of GT on consumers' EVPI. The GT–EVPI relationship with the lowest path coefficient is still an important factor to consider in the adoption of EVs. This effect was proven in another green behavioural intention study.	As a method of choosing green products, they can offer effective advertisements where they can establish the most one-to-one communication with individuals at all levels, because of the eco- friendly characteristics of EVs.

2.4 Research Question

R1. What are the behaviours of consumers about buying electric vehicles?
The likelihood that a consumer would buy an electric automobile is most strongly associated with their estimation of the financial and environmental advantages.

R2. Why do consumers prefer or do not prefer to buy an electric vehicle?
Research suggests that increasing the prevalence of EVs is a viable strategy for reducing emissions caused by the transportation sector. Electric vehicles (EVs) were created as a practical solution to the environmental damage caused by traditional autos (Shetty et al., 2020).

R3. What are the factors influencing the behaviours of consumers about buying electric vehicles?
Research suggests that, as a large energy user, India is under substantial pressure to lower its energy consumption and its emissions of greenhouse gases. That's because India is a major contributor to global warming pollution. In addition to lowering the country's dependency on foreign oil, electric vehicles (EVs) have the potential to lessen the country's total carbon footprint (Dutta, Hwang's, 2021).

R3a. How do consumers perceive the cost-benefit trade-off of buying electric vehicles compared to traditional gasoline-powered cars?

This study identifies three elements that positively influence consumers intention to acquire electric cars (EVs) are attitude, subjective norm, and perceived behavioural control. According to the study, mass media and peer pressure both contribute positively to consumers subjective norms. Consumers perception of their ability to manage their behaviour is positively influenced by government incentives and car performance, while their attitude is negatively impacted by vehicle performance. Consumer attitude and perceived behavioural control are both positively influenced by the availability of charging stations, but both of these variables are affected negatively by expenses associated with battery replacement, maintenance, and purchase. Ultimately, the study discovered that consumer attitudes, subjective norms, perceived behavioural control, and intention to embrace EVs are all directly influenced by environmental concern.

R3b. To what extent does access to charging infrastructure influence consumer decisions to purchase electric vehicles?

The elements that affect consumer acceptability of electric cars is necessary to evaluate the potential of electric vehicles becoming a mainstream mode of transportation in India and the intentions of customers to acquire such vehicles. The social acceptability of vehicles, environmental concerns, costs, levels of trust, technological advancement, and infrastructural development are only a few of the factors that may influence a consumer's choice to purchase an automobile. Prospective automobile purchasers are influenced by several factors, including their own attitudes and beliefs on many topics (He, Zhan and Hu, 2018).

2.5 Research Objectives

1. To analyze the consumers behaviour about buying electric vehicles. The likelihood that a consumer would buy an electric automobile is most strongly associated with their estimation of the financial and environmental advantages
2. To find out the reason why consumers prefer or do not prefer to buy electric vehicles. India is under substantial pressure to lower its energy consumption and its emissions of greenhouse gases. That's because India is a major contributor to global warming pollution. In addition to lowering the country's dependency on foreign oil, electric vehicles (EVs) have the potential to lessen the country's total carbon footprint
3. To find out the factors influencing the behaviours of consumers about buying electric vehicles. India is under substantial pressure to lower its energy consumption and its emissions of greenhouse gases. That's because India is a major contributor to global warming pollution. In addition to lowering the country's dependency on foreign oil, electric vehicles (EVs) have the potential to lessen the country's total carbon footprint.

3. Research Methodology

This section will provide an overview of the approach used in assessing user attitudes and perceptions with regard to EVs and will go further into the analysis of data gathered from the assessment tool. Conducting research requires not only the development of novel approaches and strategies, but also the use of specialised methodologies and techniques, as well as the use of appropriate software for data collection, analysis, and presentation. While the majority of this study is descriptive in nature, it does include some quantitative aspects as a consequence of the wide range of online and offline resources used to compile the data. Surveys will be sent to the staff via Google Forms, other social media, and professional networking sites like LinkedIn.

3.1 Research Method & Design

This study's foundational data came from a survey sent to customers who had utilised vehicle services. A simple random sample method is utilised to accomplish this data collection objective. To better understand how buyers of electric vehicles think about and make choices about their purchases in connection to different demographic variables, this study takes a descriptive and exploratory research technique, using a survey as its major data-gathering instrument. That's why we're investigating the potential of the electric vehicle market.

3.2 Sample

Participants in this research are from many different countries and regions. The article's principal methodology is consisting of periodic surveys, from which data are collected using a random sample technique. About 180 responses were gathered and used to complete the analysis for this research. These data were collected after 200 research participants responded to an online survey. Only 180 people out of a possible 200 responded to the poll. Overall, this is a tremendous result, equivalent to a response rate of 90% of the population. According to Babbie (2002), the analysis may proceed with a probability of 50% or higher for each given response; hence, the best threshold is deemed to be 90%.

3.3 Collection of Primary Data

The basic data is collected using non-probabilistic convenience sampling, and then the descriptive analysis is conducted. Due to the potential for bias, we were careful to exclusively employ closed-ended questions in our research. The poll was open to consumers from all across the globe. Professionals on LinkedIn cast the bulk of votes, but the poll link was also shared on other social media sites.

3.4 Collection of Secondary Data

The primary goal of gathering secondary information is to learn more about the central theme of the situation at hand. The content for the project will come from a variety of sources, including books, websites, article databases, and articles from archive periodicals. Emerald, ScienceDirect, IEEE, Frontiers, and Wiley Online Library were used, among others, as sources for these results.

3.5 Analysis of Primary and Secondary Data

Since this study will focus on quantitative characteristics, the researchers will use a descriptive approach to collect and analyse their data.

If it is feasible for the research case studies, non-probabilistic convenience sampling might be employed to produce the required databases. To determine what factors contribute to successful business risk management, we conducted a quantitative study. To analyse and get insight from your data, you utilised Excel's "Data add-in." Statistics are analysed using Microsoft Excel. Ratings will be assigned using the Likert scale, which will also serve as the backbone of the survey's questions. This will give us a sense of how seriously people take little particulars.

4. Analysis of the Study

In this part, we will review the results of our survey. In all, around 180 answers were collected and analysed for this study. These comments illustrate the breadth of factors at play for EV buyers. The demographic information provided by respondents is shown in the table below. Throughout the survey, participants were given a series of questions designed to elicit certain replies. The findings from this phase are included in the development of a working research hypothesis and the strategy for deducing answers to the study's research questions. You can discover specifics about the poll's questions and respondents in the tables that follow.

4.1. Please determine your gender.
Ans. Out of 180 respondents 111 are male and remaining 69 females.

4.2 What is your age?
Ans. Out of 180 respondents 18 respondents are below 25 age, 102 respondents are 25-35 age, 27 respondents are 35-45 age, 18 respondents are 45-55 age, 15 respondents are above 55 age.

4.3 Please state your educational level.
Ans. Out of 180 respondents, 174 respondents are graduate and above, and 6 respondents are undergraduates.

4.4 Please state your Occupation.
Ans. Out of 180 respondents, 21 respondents are business, 102 respondents are salaried, 18 respondents are professionals, 39 respondents are other.

4.5 On a daily basis, how would you state the travelling distance of your vehicle?
Ans. On this survey the most respondents are equally choose short distance, medium distance, 3 respondents are chosen long distance.

4.6 Are you aware of the price of an EV?
Ans. Out of 180 respondents 135 respondents said yes that they are aware of EV, 45 respondents are not aware.

4.7 Are you aware of the travelling distance of an EV?
Ans. Out of 180 respondents 30 respondents are strongly agreed, 27 respondents are agreed, 57 respondents are neutral, 24 respondents are disagreed, 36 respondents are strongly agreed.

4.8 Is the cost of an EV, a barrier to buying an EV?
Ans. Out of 180 respondents 36 respondents are strongly agreed, 60 respondents are agreed, 36 respondents are neutral, 15 respondents are disagreed, 30 respondents are strongly disagreed.

4.9 Do you think brands impact the purchasing habit of a buyer?
Ans. Out of 180 respondents 51 respondents are strongly agreed, 60 respondents are agreed, 27 respondents are neutral, 12 respondents are disagreed, 27 respondents are strongly disagreed.

4.10 Would you buy an EV from a new entrant if adequate customer support is provided?
Ans. Out of 180 respondents 21 respondents are strongly agreed, 36 respondents are agreed, 63 respondents are neutral, 27 respondents are disagreed, 30 respondents are strongly disagreed.

4.11 Are you aware of the perks and facilities the government is providing for EVs and their owners?
Ans. Out of 180 respondents 36 respondents are strongly agreed, 33 respondents are agreed, 45 respondents are neutral, 18 respondents are disagreed, 45 respondents are strongly disagreed.

4.12 Is the unavailability of infrastructures a barrier to EV purchase in India?
Ans. Out of 180 respondents 87 respondents are strongly agreed, 42 respondents are agreed, 24 respondents are neutral, 3 respondents are disagreed, 21 respondents are strongly disagreed.

4.13 Do you think the running cost of an EV is cheaper than that of available petrol/CNG/diesel variants?
Ans. Out of 180 respondents 63 respondents are strongly agreed, 21 respondents are agreed, 45 respondents are neutral, 15 respondents are disagreed, 33 respondents are strongly disagreed.

4.14 Do you think it is your responsibility to reduce your personal environmental impact?
Ans. Out of 180 respondents 75 respondents are strongly agreed, 36 respondents are agreed, 36 respondents are neutral, 9 respondents are disagreed, 18 respondents are strongly disagreed.

4.15 Do you think buying an EV could help you achieve your goal of reducing environmental impact?
Ans. Out of 180 respondents 45 respondents are strongly agreed, 63 respondents are agreed, 33 respondents are neutral, 6 respondents are disagreed, 30 respondents are strongly disagreed.

4.16 Do you think you will buy an EV in the next few years
Ans. The table talks about out of 180 respondents, 36 respondents are strongly agreed, 45 respondents are agreed, 54 respondents are neutral, 21 respondents are disagreed, 21 respondents are strongly disagreed

Table-1

	No of respondents	Per centage
Strongly Agree	36	20
Agree	45	25
Neutral	54	31
Disagree	21	12
Strongly Disagree	21	12

4.17 Is it a wise idea to buy an electric vehicle?
The table talks about out of 180 respondents, 36 respondents are strongly agreed, 51 respondents are agreed, 42 respondents are neutral, 18 respondents are disagreed, 30 respondents are strongly disagreed

Table-2

	No of respondents	Per centage
Strongly Agree	36	20
Agree	51	29
Neutral	42	24
Disagree	18	10
Strongly Disagree	30	17

5. Results
In an attempt to evaluate the hypotheses, the SPSS software was used to perform One-Way ANOVA tests. The results of the analyses are provided below. One-Way ANOVA tests were done in an attempt to determine the statistically significant value (Sig.) for this hypothesis.

Research Hypothesis: H1: The majority of consumers have favourable attitudes and sentiments towards the purchase and use of electric automobiles.

Null Hypothesis: Ha: The majority of consumers do not have favourable attitudes and sentiments towards the purchase and use of electric automobiles.
**Table-3**

Analysis of Variance Results

F-statistic value = 7.25284

P-value = 0.00742

Data Summary				
Groups	N	Mean	Std. Dev.	Std. Error
Group 1	177	3.0508	1.2306	0.0925
Group 2	177	2.6949	1.2557	0.0944

ANOVA Summary					
Source	Degrees of Freedom DF	Sum of Squares SS	Mean Square MS	F-Stat	P-Value
Between Groups	1	11.2098	11.2098	7.2528	0.0074
Within Groups	352	544.044	1.5456		
Total:	353	555.2538			

One-Way ANOVA [Average ± Standard Deviation]
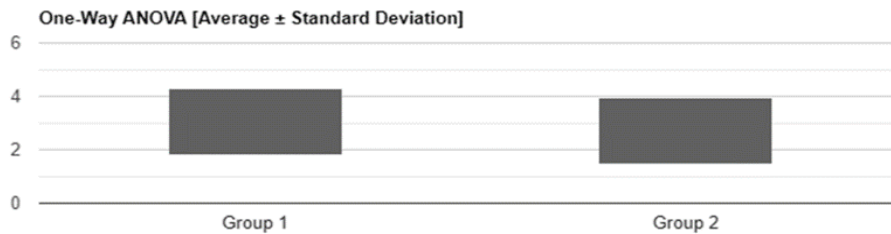
'Would you buy an EV from a new entrant, if adequate customer support is provided?' As a representation of the sentiments and attitudes of customers in India about electric cars was chosen as Group 1 for this study and 'Do you think you will buy an EV in the next few years.' This indicates usage and purchase intents on the part of the customer were considered to be Group 2.

It was discovered that the value of Sig. or p was 0.00742. As 0.00742 < 0.05, following the One-Way ANOVA tests, it was discovered that the Sig. value is significantly lower than 0.05, which is the usual value to consider for the likelihood of the Research hypothesis being true.

Hence, the research hypothesis (H1) is confirmed, as a result, i.e., The majority of consumers in India have favourable attitudes and sentiments towards the purchase and use of electric automobiles.

Research Hypothesis: H2: There is a strong correlation between the public's opinion of electric vehicles and their willingness to purchase them.

Null Hypothesis: Ha: There is no correlation between the public's opinion of electric vehicles and their willingness to purchase them.

A Paired t-test was carried out with the help of the SPSS programme in an effort to determine the validity of this hypothesis. The results of the analyses are presented in the next sections. A paired t-test was carried out in an effort to evaluate the level of statistical significance (Sig.) associated with this hypothesis.

Table-4

Paired *t* test results

P value and statistical significance:
The two-tailed P value equals 0.5679
By conventional criteria, this difference is considered to be not statistically significant.

Confidence interval:
The mean of Group One minus Group Two equals -0.07
95% confidence interval of this difference: From -0.30 to 0.17

Intermediate values used in calculations:
t = 0.5723
df = 176
standard error of difference = 0.118

Review your data:

Group	Group One	Group Two
Mean	2.68	2.75
SD	1.35	1.35
SEM	0.10	0.10
N	177	177

'Is the cost of an EV, a barrier to buying an EV? Which demonstrates the association between how the general population in India feels about electric vehicles was considered as Group 1 and 'Is it a wise idea to buy an electric vehicle?' This demonstrates a link between the public's willingness to purchase electric vehicles was chosen as Group 2 for this study.

It was discovered that the value of Sig. or p was 0.5679. As 0.5679 > 0.05, following the Paired t-test, it was discovered that the Sig. value is significantly higher than 0.05, which is the usual value to consider for the likelihood of the Null hypothesis being true.

Hence, the Null hypothesis (Ha) is confirmed, as a result, i.e., There is no correlation between the public's opinion of electric vehicles and their willingness to purchase them.

Regression analysis Results:
In this submission regarding the data results, we have mentioned the data regression analysis results in screenshots as we have used **Smart PLS 4** for analysis and for conceptual diagram for importing data, the software asked for a professional license, so we used screenshots.
Please consider our request.

Graphical Output:

Figure-1
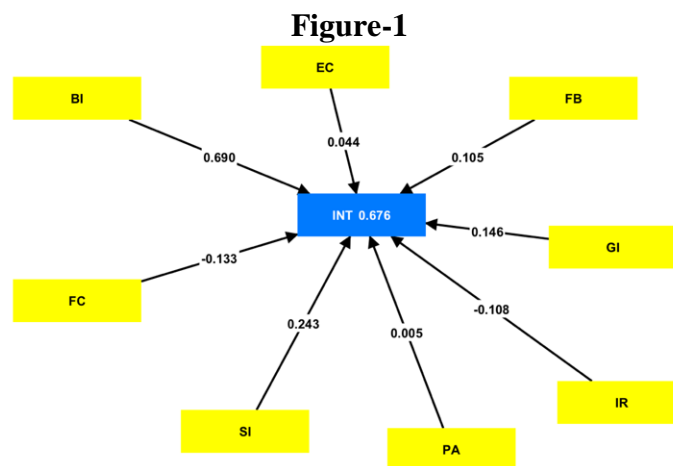
FI – Financial Concern
SI - Social Influence
PA – Performance Attributes
IR – Infrastructure Readiness

GI- Government Incentives
FB- Financial Benefit
EC- Environmental Concern
BI- Buying Intention
INT – Usage Intention.

Summary Coefficients:

Table-5

	Unstandardized coefficients	Standardized coefficients	SE	T value	P value	2.5 %	97.5 %
PA	0.006	0.005	0.067	0.092	0.927	-0.127	0.139
SI	0.235	0.243	0.090	2.597	0.011	0.055	0.414
EC	0.044	0.044	0.093	0.469	0.640	-0.141	0.229
IR	-0.106	-0.108	0.079	1.344	0.182	-0.263	0.051
FB	0.091	0.105	0.071	1.287	0.202	-0.050	0.232
GI	0.133	0.146	0.051	2.600	0.011	0.031	0.234
BI	0.755	0.690	0.084	8.941	0.000	0.587	0.923
FC	-0.134	-0.133	0.077	1.724	0.088	-0.287	0.020

Summary Anova:

Table-6

	Sum square	df	Mean square	F	P value
Total	152.986	97	0.000	0.000	0.000
Error	49.534	89	0.557	0.000	0.000
Regression	103.452	8	12.931	23.235	0.000

Residuals

Figure-2

Residual histogram

Figure-3

Residual autocorrelation plot
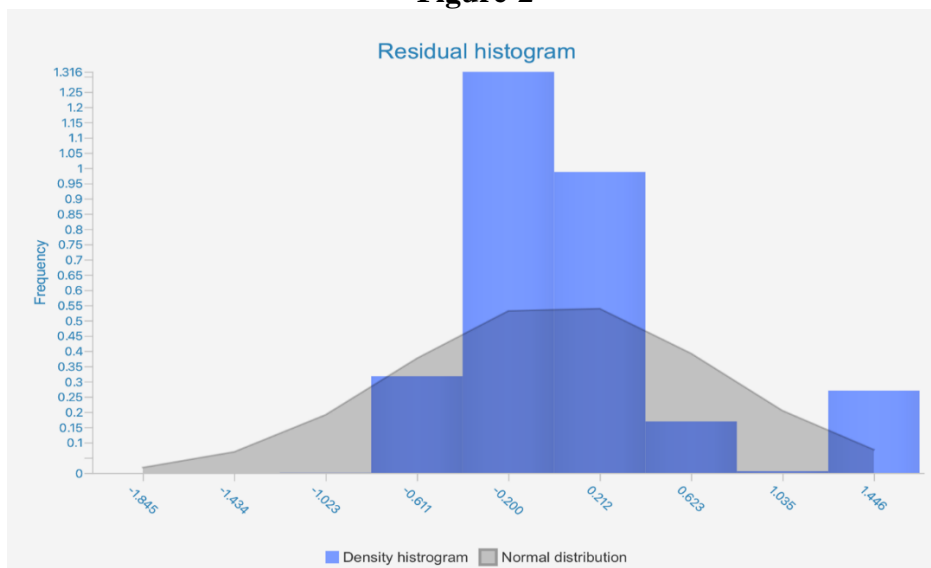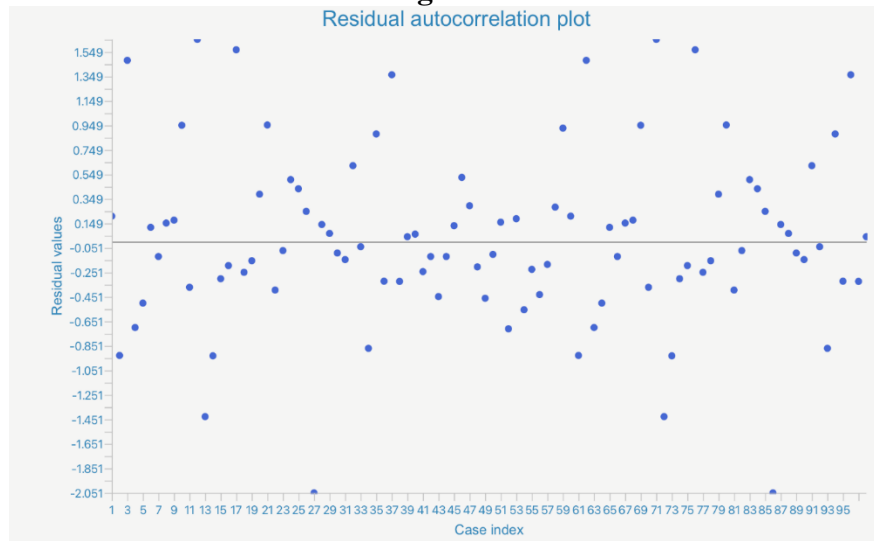
Covariances:
Table-7

	PA	SI	EC	IR	FB	GI	INT	BI	FC
PA	1.233	0.409	0.232	0.291	0.007	-0.070	0.067	0.198	0.604
SI	0.409	1.673	1.121	0.644	0.779	0.233	0.964	0.846	0.686
EC	0.232	1.121	1.571	0.873	0.737	0.410	0.747	0.686	0.617
IR	0.291	0.644	0.873	1.630	0.934	0.575	0.424	0.485	0.578
FB	0.007	0.779	0.737	0.934	2.081	0.318	0.864	0.883	0.663
GI	-0.070	0.233	0.410	0.575	0.318	1.888	0.167	0.006	0.403
INT	0.067	0.964	0.747	0.424	0.864	0.167	1.561	1.123	0.286
BI	0.198	0.846	0.686	0.485	0.883	0.006	1.123	1.305	0.421
FC	0.604	0.686	0.617	0.578	0.663	0.403	0.286	0.421	1.560

Correlations:

Table-8

	PA	SI	EC	IR	FB	GI	INT	BI	FC
PA	1.000	0.285	0.167	0.205	0.004	-0.046	0.048	0.156	0.436
SI	0.285	1.000	0.691	0.390	0.417	0.131	0.596	0.572	0.425
EC	0.167	0.691	1.000	0.545	0.407	0.238	0.477	0.479	0.394
IR	0.205	0.390	0.545	1.000	0.507	0.328	0.266	0.332	0.362
FB	0.004	0.417	0.407	0.507	1.000	0.161	0.479	0.536	0.368
GI	-0.046	0.131	0.238	0.328	0.161	1.000	0.098	0.004	0.235
INT	0.048	0.596	0.477	0.266	0.479	0.098	1.000	0.787	0.183
BI	0.156	0.572	0.479	0.332	0.536	0.004	0.787	1.000	0.295
FC	0.436	0.425	0.394	0.362	0.368	0.235	0.183	0.295	1.000

Findings

i) Factors influencing EV purchasing decisions, such as range anxiety, charging infrastructure, and cost.

ii) The role of government incentives, such as tax credits and rebates, in increasing EV adoption.

iii) The level of awareness and knowledge about EVs among consumers and how it affects their purchasing decisions.

iv) The impact of brand reputation and marketing on consumer perceptions of EVs.

v) The demographic characteristics of consumers who are most likely to purchase EVs, such as age, income, and education level.

vi) Comparison of consumer behavior of buying Electric Vehicle with traditional vehicles.

vii) Comparison of consumer behavior across different countries or regions in terms of buying Electric Vehicles.

6. Conclusion

Based on the results of the research, electric car producers and the government of India should put more effort into supporting the wider use of the technology. A greater emphasis on technology, the creation of high-capacity batteries, and the introduction of supplementary infrastructure might accomplish this. The results provide hopeful evidence that people are aware of the beneficial impacts they make on the environment. Over 90% fewer carbon emissions may be produced by electric cars than by traditional autos, making them a fantastic instrument for achieving environmental sustainability. This is one of the most critical problems we face right now. Consequently, preserving the natural world for the benefit of future generations should be a top priority. Manufacturers aren't the only ones responsible for piquing consumers' interest in EVs, however; policymakers may play a part, too. There is a low degree of information about the government incentives available for the purchase of electric autos, regardless of the demographics of the potential purchasers. People are persuaded to feel that both the upfront cost and the ongoing maintenance expenditures are high. Those who are willing to purchase electric vehicles recognise that they are expensive, but they do so in the hopes that their actions will help decrease the effect of electric cars on the environment and win greater societal acceptability. Since this is the case, they choose to use electric vehicles. It's like how people tend to place a high value on their time while charging but place a low value on the infrastructure around charging stations and the range of their vehicles. More than half of those surveyed were considering making an EV purchase in the next year, and this is despite the fact that electric vehicles (EVs) still face challenges in certain parts of India.

7 Future Research Directions

Future research is encouraged to apply a broad range of methods from this study to analyse and assess EVs in order to hasten their wider adoption. Future studies on electric vehicles may want to try out other methods and compare them to the ones employed here. Given the specific nature of the question, we will focus only on issues related to EVs. Future studies may wish to investigate whether or not the demand for a certain kind of energy vehicle is affected in the same way by the availability of cars that use various underlying principles. Vehicles that fall within this category include hybrids, electric vehicles, and fuel-cell electric vehicles. More so than investigating electric car technology, this study's primary focus is on satisfying consumer demand. Thus, it is recommended that future studies target coordinating the consumer market and the automotive industry. The development and production of electric vehicles inspired this idea. The investigation could only collect data from people living in China's coastal areas due to time and resource restrictions. Still, people from different parts of Mainland China may see the problems at hand differently owing to regional differences. Research in the future may also look at the situation in

different regions to compile a list of recommendations for the government and electric vehicle producers to utilise in their push to increase sales of electric vehicles.

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