consumer purchase

by . ..

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ABSTRACT

The manufacturing and sales of the electric automobiles are being thrusted by the concurrent environmental concerns. The combination that has captivated almost all the sharks in global electric vehicle manufacturing, like Bosch, AVL and Cummins, is that of the Indian skilled and semi-skilled technological base, a platform for large consumer base and relatively cheaper production and labor cost. To study commercial success and purchase intention of electrical vehicles by Indians, there is a need to study the factors influencing the consumer acceptance of these vehicles. There are various factors that impact the purchase decision of electric automobiles like: individual perception on dimensions like environmental issues, performance, infrastructure and price sensitivity. Environmental concerns and Infrastructure are the forerunners for the consumer perception about electric automobiles and the factors that give adoption blowback are cost and performance. Therefore to encourage and promote the sale of electric vehicles, the government has to interject as it plays a significant role by creating policies for the environment, providing Infrastructure and subsidizing the cost of vehicles or lowering the interest rates in banks.

As we all know, the automobile industry is one of the main environmental offenders due to the amount of CO2 and other poisonous gas emissions that have a major pact on climate change and pollution scenarios of this planet. Hence it is essential to motivate consumers towards procuring electric vehicles. This study considered four major components that affect the purchase intention of electric cars- price sensitivity, environmental awareness, infrastructure and performance. Quantitative survey was filled by 215 respondents in India. The data was subjected to statistical analysis with SPSS. Linear regression was used to analyse the influence of the four factors on the intention to purchase an electric car. DU results show that infrastructure and environment awareness have a significant impact on electric car purchasing intentions.

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1.1 Introduction to the automobile industry in India.

Indian auto industry is one of the most prominent industries in India. This represents around 26% of the industry's GDP and 7.1% of the overall GDP. It is growing rapidly and its contribution to GDP is also increasing, from 2.1% in 1992 to 26% in FY 2018.

The auto industry of the country India is the fourth largest on the planet with annual sales of \$ 100 billion and employs 32 million people. The bicycle(mechanical) industry of India is the largest on the planet. India is also the world's largest producer of tractors and the eighth largest commercial vehicle manufacturer.

The sales of the Passenger vehicles in India exceeded 3.37 million units in FY 2019 and will probably reach 10 million units by fiscal 20. Exports of cars, motorcycles and buses are expected to reach around 690,000 units in 2019-2020.

Overall, 6.71% of CAGR sold in FY19 between 13-18 and 26 million vehicles in domestic auto transactions. The automobile industry received US \$ 23.89 billion in foreign direct investment (FDI) between year 2000 and 2019's last month. Five percent of all our FDI inflows into India went to the automotive sector.

Manufacturing of local cars at 6.96% CAGR between 13-19 and 30.92 million vehicles manufactured in the country in the financial year 19-19.

In fiscal 19,commercial vehicles shows the highest growth in terms of sales which was around 18% and it was followed by three wheelers, which was 10.3 percent.

1.2 Introduction to electric vehicle industry in India.

Government of India is trying to develop India into a worldwide manufacturing sector as well as a research and development (R&D) hub. Government established the NATRIP which acts as the connector between the government and the industry after the year 2005, five research ad testing labs have been built. Now, it has also proposed grant testing infra after the year structure in the performance certification of the electric vehicle industry." (EV) by NATRIP Implementation Society "as part of the FAME program. Approved was given by the Project Implementation and Approval Committee (PISC) in , 2019.

the auspicious and ambitious project in which the government has the intention to sell only electric cars in india. Government of India has shortlisted 11 major cities of the country for the presentation of electric vehicles (VE) in its open vehicle frame as part of the FAME (Faster Adoption and Manufacturing of (Hybrid) and Electric Vehicles in India) program which the government quoted a requirement of 10000 crore rupees for the financial year 20–22. As part of the Union Budget for 2019-2020, the government announced an additional annual valuation of 1.5 lakh rupees (US \$ 2,146) on the plot given on the credit taken for purchasing electric vehicles. Venture capital inflows into new electric vehicle companies increased nearly 170% to \$ 397 million in 2019 (to the end of November). Under FAME II, the government has authorized 5,595 electronic transportation in 64 urban areas of 26 states for city-to-city and intra-city operations. As part of the plan, 2,636 charging stations were approved in 62 urban communities in 24 states / UTs.

Electric vehicles (EV) are the future philosophy of the automotive industry in the world. A future whose establishment is posed and unions find a way to make this activity a success. In 2018, global transactions in electric vehicles including BEVs, PHEVs and FCEVs exceeded 2 million units. This figure reflects the growing recognition of these vehicles and the majority have merged this new innovation into their ecosystem. In any case, more than 70% of these transactions took place in the United States, China and Japan. On the world front, India, in spite of everything, still has a long way to go, but the introduction of electric vehicles into the Indian market has been an extraordinary beginning for the excursion.

Special efforts for electric vehicles are growing with the tireless help of the government, original equipment manufacturers and other government and non-governmental organizations that help publicize these vehicles. Some of the main driving forces are behind the development of electric vehicles.

Financial support from the government in terms of awareness and motivation.

Reinforcement of specifications for these vehicles.

Heavy investment by automobile organizations in electric vehicles

Increased concern about carbon emissions and pollution

Electric cars are currently available on the Indian market

Car Name	Power	Range	Price
Tata Tigor electric vehicle	41 bhp	213 km	9-10 Lakhs
Tata Nexon EV	127 bhp	300 km	14-18 lakhs
MG zs EV	143 bhp	340kms withdraws	20-23 lakhs
Hyundai Kona Electric	134 hp	452 km	24 lakh
Mahindra e-Verito	41 bhp	140kms	9-9.5 Lakh
Mahindra e2o	25bhp	120kms	6-8 Lakh

1.3 PESTLE Analysis

The pestle survey is a structure that helps in understanding the elements of the business sector and continuously improving its activities. Pestle test is also known as pestle test.

1.3.1 Political Factors

The legislature of India has a favorable system to convert India into a fully electric reward. From commercial vehicles to travel vehicles, all vehicles must be electric. They have this vision and are working on this path by separating them from various sponsors for buyers and creating a proper nation base for replacement of electric vehicles in India. The Government of India has also proposed the FAME plot (rapid selection and combination of crossovers and electric vehicles). The plan was intended to encourage the appropriation of electric and half-race vehicles. After the culmination of the distinction, he also proposed FAME 2. Legislators recently advanced in January, significantly boosting the versatility of EVs, with the administration confirming the construction of 2600 charging stations in almost 60 urban areas under FAME II. Tamil Nadu will be installed with around 250 charging stations, while 10 will be affiliated to Pondicherry. Maharashtra has the highest number of 317 charging stations, followed by A P 266. Gujarat 228 Rajastha205 and Uttar Pradesh will get 207 EV charging stations separately.

Delhi and Chandigarh Association areas depend on 72 and 70 charging stations, while Uttarakhand10 and Himachal Pradesh will get 10 also. The Union Territory of Jand K, which has recently been made available, will have 25 in-charge centers.

To go further, the Indian Space Research Organization (ISRO) highlights the advancement of batteries based on locally manufactured lithium molecules. 14 Associations are accessible for development trade; Now promotion space and low cost of ownership.

To be its own character type, EVS will have a different type of registration plate.

1.3.2 Economic Factors

Here are the monetary factors in the analysis of electric vehicles:

In India, electric vehicles are invited by the administration, they now have structured financial approaches that are appropriate for electric vehicles. They give credit and expense exceptions on individual electric vehicles. They also offer a separate spending plan to set up the framework for electric vehicles in India. The administration has arranged and also taught large organizations to make progress that will make electric vehicle reporting simple and imaginative. Simple credit will make the customer more and more passionate about electric vehicles. The cost of loan is also reduced for greater impact.

Another factor is that the largest automotive organizations are available in the Indian market and have a differentiated portfolio as they transport SUVs to exceptional vehicles in each vehicle division and so on.

If we ignore the late financial recession and the impact of the coronovirus epidemic on India's economy and vehicle segment, we found that India is growing per capita wages and total domestic production and, exceptionally, the automotive sector is growing is. Manufacturing is widespread and imports are also being developed.

1.3.3 Social Factors

The following are the social factors influencing the analysis of electric vehicles:

After 2000, there is an important step in the way of life of Indian migrants, a huge no. Families are becoming nuclear. As an effect, at least conservative vehicles are incredibly sought after, as the cost of electric vehicles seriously affects this miracle. Then efficiency is a rewarding thing for the monetization of this wonder.

Pollution is a continuously growing issue in India, with carbon levels rising steadily since the most recent decade. We have urban areas for the most filth on the planet, Lucknow, Delhi, Mumbai and beyond. In addition, contamination levels rose to risky levels in January 2020 and the Delhi government needed to implement a skewed - even framework - to kill the issue. The use of electric vehicles to correct the issue may be a permanent answer.

As it has been generally recommended by different examiners in our nation that, in India, people buy vehicles for social impact as opposed to using it. Similarly, the use of an electric vehicle can be a superficial point of interest for individuals. A person using an electric vehicle can see themselves as a legend for the extra nature.

Indian people here admire and ask individuals, so if a celebrity or social influencer starts using electric vehicles, it will be mimicked by the general population. There are very few individuals currently using electric vehicles.

1.3.4 Technical Factors

The following are the mechanical elements that affect the analysis of an electric vehicle:

Those occasions came when India was one of the nations, which could not meet the requests of the country and the urban Indian. These days power is being produced in India in abundance and apart from this our legislature and experts are constantly trying to build power with the goal that we can transfer vehicles and compensation to fully electric vehicles.

With mechanical advances, organizations have developed high-force batteries that may be capacity limits with the goal that vehicles may have greater scope of replacement after starting from one location. This electric vehicle was a significant concern for potential customers.

Technological advancements created opportunities for accelerating and delivering torque like petroleum and diesel vehicles in the current market. Those who are eager for the pickup of the vehicle, they will not spare even a moment in buying an electric vehicle. The new innovation additionally allows us to add some uproar to the motor. With the goal that a vehicle lover can feel the intensity of the motor.

Electric Vehicle Foundation is the place where India does not currently have a sufficient number of high-intensity stations, for this reason it is lagging behind and could be a factor that influences a customer's objective to buy an electric vehicle. May or not.

Electronic vehicle administration station is likewise an issue, which should be kept in this situation and India does not need to make any expansion. Administration of administration stations for better post deals.

1.3.5. Legal Factors

Here are the legal factors in the analysis of electric vehicles:

The Indian Vehicle Showcase is unique when compared to the announcements of vehicles in different countries, which as an association include infor, buyers trend and level of foundation improvement; Bicycles and small vehicles dominate the market. In addition, there is notable government master activity in the commercial vehicle category; Some state associations ,have in the past launched tenders to insure electric vehicles on open affiliate models. Private (PPP).like best mumbai, navimumbai transport authority,

National Institute of Transformation of India (NITI) Aayog also gave a concession project on a PPP objective behind the action and support of electric vehicles in the Indian urban network. Proportional representation with peers. Various measures for the rapid selection of electric vehicles included private players stringing taxi aggregators to switch to electric vehicles (such as Mahindra). As the use of electric vehicles becomes more and more widespread, it will bring changes in two areas of the law.

1.3.6 Environmental Factors

Here are the ecological variables influencing the pestle analysis of electric vehicles:

In electric vehicle analysis, ecological components are possibly the most important factors that can affect the purchase of an electric vehicle. Take the case of Delhi itself. According to WHO audit of 1,650 urban areas of the world, the air quality in Delhi is the most terrible of all notable cities on the planet. It also affects the districts around Delhi. Air pollution in India is estimated to hit around 2 million people reliably; He is the fifth largest killer of India. India has the highest destruction rate in the world of persistent respiratory diseases and asthma, as demonstrated by WHO. Poor quality air in Delhi causes a loss of 2.2 million or 50% to the lungs.

The most important cause of erosion of air quality files for Indian conditions is carbon emission and various pollutants which are irradiated by vehicles and different vehicles.

2. LITERATURE REVIEW

Here we can see that history is repeating itself as EV is again emerging among the Indian transport industry. Electric vehicles were in full swing prior to 1918, but with the introduction of gasoline-powered internal combustion vehicles, the electrical vehicles witnessed a setback. However, 2017 witnessed the re-birth of EV and this time they were being procured for longer distances. Adding to this, the government has also aided in the betterment of the EV's maintenance and support system. Technological adoptions and perceptions give rise to two aspects: beginning with the attribute of technology, followed by the attribute of the adopter. Looking at it through the lens of management, it can be defined as "innovation diffusion theory (IDT) (Rogers, 1962) and subsequent extensions (such as the TOE framework, Tornatzky and Fleischer, 1990). Adoption of new technology is thus in relation to its usefulness (performance expectancy), ease of use (effort expectancy), social influence and facilitating conditions (Venkatesh and Davis, 2000; Venkatesh et al., 2003)". The above factors prove to be critical before resorting to Electric Vehicles.

A study of residents of the United Kingdoms was conducted by Lane and Potter in 2007, also the study of potential customers of electric vehicles was carried out which was based on two theories, which were: theory of planned behaviour and value belief norm theory. After the study, he concluded that the ease of use, reliability, performance, energy efficiency and safety of the vehicle were the main factors which were affecting the purchase and sales of electric vehicles in a good way. However, there was no study or findings to prove and backup the mentality of consumers of India towards electric vehicles' adoption. There were no relevant studies supporting the perception and adoption process among Indian consumers.

Even with the increase in awareness about green products, green energy, and environmental protectionism, the accurate details of their usage remains uncertain. Most consumers in developed countries are unaware of the environmental benefits that green products can lead to.

To state further, people seldom consider themselves responsible for the degradation of our environment. To increase the citizen's participation in saving the environment, it's of utmost importance to incorporate efficient marketing strategies and awareness campaigns. Without proper exposure, the demand for green products will lie on the graph which will result in very few companies venturing into this space. In order to equalise the supply and demand ratio, it is necessary to increase the people's trust in green products "(Sandeen, 2009)".

Eco-friendly commodities are getting more consideration from buyers. Aside from the customer's obligation towards nature, they like the inclination that individuals take a gander at them distinctively in that they pay more to buy an item as a result of the inspiration to spare the earth and this in turn motivates the consumer to protect the environmental system. (De Craecker and De Wulf, 2009).

Quite a few researches consider cost as being one of the variables that may build the readiness of purchasers to buy green items (De Craecker and De Wulf, 2009). Advertisers should initially think about the business, the nature of the item and the objective clients, and afterward build up a successful valuing methodology. Valuing can positively affect the view of customers in the manner that they accept they are saving money on showing expenses to purchasing an electric vehicle.

The ecological effect turned into the principle thought for customers in their day by day buying choices. Governments have additionally been compelled to give explicit strategies in regards to ecological protection while individuals have begun to accept that it is everybody's obligation to deal with nature and to actually look after the same (Chen, 2010).

As indicated by Oliver and Lee (2010), certain variables, for example, social direction, mental self portrait, and social qualities, impact the individuals who choose to make strides toward environmental friendliness. Moreover, a similar report shows that individuals in Asia practice cooperation more and experience that natural qualities are connected to benevolent and conventional qualities, and this conduct permits customers to pick up data with respect to green items.

Pollution in recent times has increased worldwide, the whole world is experiencing the drastic effects it has been creating all over the globe. To eradicate this problem all the people of the

world should come together and start collecting resources for the findings and implications.(Dief and Font, 2010).

A training and education program has to be made which will aware people about the consumer behavior and understand their environmental responsibilities. Consumers should know that the ecological base of ecological products and services is expensive and costly. They ought to likewise be prepared and taught to make them understand that it is better for nature and their well being to utilize green items, regardless of whether they are more costly. Such help for green items may pay overcharges (Eicholtz et al., 2010).

A survey of IBM consumers (Gimsey&Viswanathan, 2011) also found 45% of the drivers or no knowledge about electric vehicles.

Caperollo and Kurani (2011) worked on a round theory in 36 households on consumer perception and intention to purchase electric vehicles in California, USA, and get to know that electric vehicles The main reason for not adopting was disturbances in the functioning of the battery, the fact of not finding suitable charging stations nearby, refusal to accept new technologies and driving habits

Today, numerous individuals all around the globe are getting mindful of the environmental issues brought about by modern factories and production units. What's more, organizations presently feel increasingly liable for nature and endeavor to deliver items that regard the earth (Kotler, 2011).

Corporates and analysts have not given enough consideration to purchase intention and expectation to purchase green items in the car business (Rahbar and Abdul Wahid, 2011) as their motivation was limited to the manner in which the item was offered on the basic market. Finding the genuine conduct of buyers towards electric vehicles and the aim of clients is a significant factor in settling on genuine choices. Consumers who are exposed to electric vehicles esteem them more and think about them as a possibility for future buys (Kurani et al., 2016; Larsen, 2014; Gimesi and Viswanathan, 2011).

To completely charge an EV battery at home, vehicle proprietors commonly require a full night charge. Research has proposed that clients are eager to pay more for the additional usefulness, usefulness and comfort of electric vehicles. For instance, Hidreu, Parsons, Kempton, and

Gardner (2011) discovered that clients are happy to pay \$ 35 to \$ 75 for each additional mile of independence. They will pay \$ 425-3250 in return for the hours used to charge electric vehicles.

Shopper fulfillment directly affects purchaser certainty. Most fulfilled clients have a drawn out relationship with the brand and, in this way, it is currently evident that green trust is a significant part of building devotion (Chen and Chang, 2012).

The most extreme number of studies on the selection of EVs rotate around specialized, individual and social parameters. Axsen et al (2012) directed an online review dependent on the hypothesis of way of life practice among 711 delegate families in California, USA, and found that embracing this new VE innovation was an eco-star way of life, an innovation situated way of life. Way of life and depends on a receptiveness to change.

From different studies, clients are increasingly worried about the significant distance that electric vehicles c on a commute in one full battery (DeGermancy and Breitner, 2017); Ebue and Long, 2012)

environment friendly items and green advertising are turning out to be increasingly more alluring to enterprises, makers and organizations as they have an incredible chance to grow new items and administrations that fulfill buyer needs as well as a solid domain Requirements of (Hossein, 2012).

Graham-Roett al (2012) in light of his examined semi organized subjective meeting technique 40 non-business UK and ICE drivers and found that the fundamental main impetus behind buying goals is ecological parameters, vehicle cost, fuel cost, battery gear, power source, execution, security and cutting edge innovation.

The greenness of an item and regard for the earth are not an assurance of the offer of a green item. The apparent green perceived value is significant for building long haul connections among organizations and customers. This significantly affects the upkeep of the client relationship. There is a noteworthy connection between saw worth and goal to purchase green. There are a lot of item qualities that make buyer observation. Along these lines, when buyers have a decent observation about a green item, the estimation of the item will be higher in their brain and they

will emphatically spread their mouth to other people, in this way influencing the expectation to purchase purchaser mindfulness. (Chen and Chang, 2012).

subject to the kind of item, there is a specific pace of cost increment that market individuals should know and consider while deciding the cost of green items. In general, even green buyers may consider less about natural qualities when contrasted and earth amicable items, for example, electric vehicles (Ong and al., 2012).

Latest investigations have noticed that in New Zealand, 84% of customers are worried about environmental issues and this influences their buying conduct and their usage. What's more, numerous buyers accept that on the off chance that they are set up to address a greater expense, they desire better highlights and usefulness of the item or administration, and it isn't simply regard for the item's condition that It makes a difference. (Yusuf et al., 2013). By buying green items individuals feel that they are answerable for the earth and they accept this duty as a functioning job in the general public.

Research by Jansen et al (2013) on 369 Danish drivers proposes that the adequacy of EVs relies upon viable experience, cost of procurement, cost of fuel, range and speed likewise the lead of EV.

researchers accept that the principal objective of marketing ought to be to improve the nature of human life and advertisers ought to endeavor to advance individuals' buying expectations with the correct promoting procedure. Personal satisfaction isn't just identified with the fulfillment of necessities, requests, and wants, and fulfillment isn't just occupied by the nature of products and ventures, in light of the fact that the earth we live in must have a specific degree of value (Faraj et al., 2013).

Bergsagel (2013) conducted qualitative research, which was based on the model of adopting electric vehicles in 50 drivers with personal vehicles in the United Kingdom and found that the main factors for purchase are technical costs, personal and social factors.

Carly et al. (2013) researched and found 2,302 people with a driver's license in the United States Adoption and perception varied according to education, , age, gender, experience,

education, environmental notions, and pointed out that numerous factor that reduce the sales of electric vehicles are traditional vehicle cost factors, non-existence of infrastructure, and recharge time. He based his study on the basis of the principle of rational choice.

Green trust is "how much a consumer is ready to rely on the green products as a result of its capability and reliability in terms of green performance (Chen, 2010). Self-confidence has a prominant effect on consumers' buying intentions. Green confidence is influenced by respect for the environment of environmental friendly products (Chen and Chang, 2013). If businesses do not meet environmental requirements or increase the greenery of their products, mistrust will arise between consumers and businesses.

Buyers have a positive impact of low prices, and some customers prefer promotions presented in the form of discounts. Value addition has an important effect on the deal valuation of consumers and can help increase sales (Rahman and Mate, 2013).

Biological information is basically information about the assessment of the item's effect on the general condition. At the point when individuals know about nature, they start to survey an item dependent on its natural advantages or hindrances, called environmental information. Shoppers' aims to purchase green items can be impacted by their knowledge of the environment(Dehghanan et al., 2014).

Since the 90s, concerns about nature experienced a significant turn of events and have become one of the most significant subjects of discussion among social orders the world over, colleges and governments. It went past air contamination and reusing, and developed into conduct and goal. Some created nations, for example, the United States and some European nations, just as some Asian nations, for example, Japan, have started to understand the significance of the earth as far as customers' buying goals, which is related with green advertising (Chahal et al., 2014 A).

Another performance factor for the purchase of an electric vehicle presenting longer charge times. Regarding the autonomy problem, EV customers may feel anxious and unsafe at the point when they need to drive EVs for significant distances from charging stations (Lim et al., 2014).). In rundown, execution factors are related with an EV live buy in self-sufficiency, charging time and wellbeing and dependability issues.

Kupra et al (2014) gave another virtue to the development of research from the political landscape by studying 911 residents of the United States. They found that the acceptance of EVs would greatly increase political confidence, energy independence and being a concern for climate change..

Significant pollution warning signs and use of natural resources are obvious to humans. Due to future results there should be equal efforts in all parts of the world. In around 1990, a different type of marketing began to gain momentum as people were getting more aware of the "green". Awareness towards the environment increased as counter to past and considerable changes occurred in the end of 20th century to generate a green ecosystem (Chahal et al, 2014a).

Previous studies suggest that intention to buy green does not have a direct connection with perceived green value (Jaafar et al., 2012). For taking perceived green value to optimum level, brands try to enhance consumers information about products(Huang et al., 2014).

Brand mentality has an effect on consumers' purchasing intent in the manner in which a brand exhibits its concern for being respectful to the environment, thus providing a better probability of getting picked by its customers Compared to its rivals (Huang et al., 2014). According to the same research, buying intention can be influenced by a number of other factors, such as a consumer's positive attitude toward a green product, which may directly increase purchase intention.

As per an research led in 2014, the degree of greenery is the degree to which "buyers would want to pick a green item as opposed to an ecologically friendly item when every single other thing are the equivalent" (Razak et al.) 2014).

With natural issues turning out to be increasingly more significant for individuals, organizations are expanding enthusiasm for green advertising and green items to deal with their social duty. In the mid 1980s, advertisers attempted to distinguish and advance the components that drive customers to buy earth well disposed items (Vedava, 2014).

Research on EVs and adoption has increased significantly in recent years. In a recent research, Rejwani et al (2015) explored taking a shot at the appropriation of electric vehicles utilizing different hypothetical systems, they received a blend, conduct like conduct of purchasers' electric vehicles from different hypothetical points of view. Arranged and representative.

The connection between the marketing and the environment is portrayed by various terms, which are environment advertising or green marketing, which includes customers, organizations, and governments. The primary job of green marketing is to make mindfulness about pollution and the related worries that makes it progressively extreme (Kumar, 2015).

Green customers are influenced by information about greenness, which consequently influences their conduct. unfortunately, a great many people have no or less information about natural issues, and, henceforth, they don't act dependably (Harvey, 2015).

Electric Vehicles' purchasers are additionally worried by its charging time (Egbue and Long, 2012). For instance, for one hour of charging at a home attachment, the Ford Focus Electric can travel 22 miles while the Chevy Volt can travel barely 11 miles (Schaal, 2016). This distinction influences the purchaser recognition towards purchasing EVs.

Governments around the globe are using approaches to elevate electric vehicles to lessen its reliance on oil, decrease in ozone harming substance outflows, and improved air quality. " In the previous years, yearly worldwide electric vehicle deals have been on the rise, from only hundreds of every 2010 to more than 500,000 out of 2015 and more than 750,000 out of 2016. The combined worldwide market arrived at the achievement of a million electric vehicles in 2015, and from that point immediately developed to 2 million in 2017."

Many studies have shown that the environmental concerns of car buyers have a positive effect on the intention to buy EVs (Bauer et al., 2014; Das et al., 2011; Heyvaert et al., 2015; Jensen et al., 2013). Consumers which are environmentally sensitive and have identified themselves as an environment-friendly human would be more likely to adopt EVs (Barbarossa et al., 2017; Krause et al., 2013). Moreover, people who are concerned with environmental issues and take part in

environmental organisations are likely to adopt EVs (Krishnamurthy & Damp; Kriström, 2016). For example, Erdem, Şentürk and Şimşek (2010) studied the willingness to buy.

The most important factor for consumers to have green trust in a product stem from its specification. It should cause less harm to the environment, and the products have to be recyclable. The most crucial factor that can breach green trust is exaggerating and elaborating more than its needed to be, the information given about the environmental performance of the product, which can lead customers to not trust the company anymore.

A study by the Consumer Federation of America (CFA, 2015) uncovered that more noteworthy buyer information about electric vehicles and their longing to buy one are identified with one another. In any case, just 21% of the respondents said they know a "considerable lot" about electric vehicles, and far less revealed knowing a "lot" about them.

3. OBJECTIVES AND RESEARCH METHODOLOGY

3.1 Objective of the study

- 1. To study the factors that affect consumer's intention to buy electric cars.
- 2. Discover the impact of these factors on each other.
- 3. To find out the most important factors in a customer's purchase intention.

Primary Goal:

Discover the factors that affect consumer's intention to buy an electric car

3.2 Hypothesis

H1: Price sensitivity has a positive impact on the electric automobile purchasing intention.

H2: Environmental awareness has a positive impact on the electric automobile purchasing intention.

H3: Performance factors have a positive impact on the electric automobile purchasing intention.

H4: Infrastructure factors have a positive impact on the electric automobile purchasing intention.

3.3 Variables

3.3.1 Independent Variables

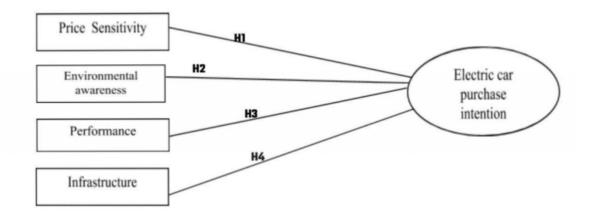
- 1. Price sensitivity
- 2. Environmental awareness
- 3. Infrastructure

4. Performance factor

3.3.2 Dependant Variable

Intention to buy an electric car

3.4 The Conceptual Model



Research Framework Figure 3.1

3.5 Research Methodology

It is characterized as the procedure used to gather data and information to settle on business choices. The system may incorporate research distributions, meetings, studies, and other research methods.

13 3.6 Research Design

Research Design is a quantitative research that has been assessed by disseminating questionnaires to targeted research samples. To break down and audit the information, SPSS was utilized, which helps in surveying the information produced and deciding the outcomes.

4. DATA ANALYSIS AND INTERPRETATION

4.1 Demographics

Gender	Female	72
	Male	143
	25 or younger	138
Age	26-35	48
	36-45	15
	46 or older	14
Occupation	Employed	92
Cocapación	Student	88
	Unemployed	27

	Retired	8
Yearly Income	Less than 1,00,000	67
	1,00,000 – 5,00,000	56
	5,00,000 – 10,00,000	39
	More than 10,00,000	27
Total Respondents		215

Table 4.1

4.2 Analysis Plan

Hypothesis testing using correlation and regression analysis to discover significant relevance between dependent and independent variables.

· Reliability analysis to find the most reliable factor in research

4.3 Reliability Test

Cronbach's alpha is a known and a very common measure of reliability. It implies how closely elements in a series or group are related to each other. When the value is closer to one, it means that the reliability of internal consistency is high. The reliability below 0.60 is considered weak, while 0.70 is considered to be acceptable (Cronbach&Shevelson, 2004).

The Reliability of internal consistency: In reliability analysis, internal consistency is used to measure the reliability of a pairs scale where multiple elements are added to create a total score. This scale of reliability in reliability analysis focuses on the internal consistency of all the elements that make up the scale.

4.3.1 Reliability Test for Purchase Intention: Dependant variable

It is found that the value for Cronbach's alpha is greater than 0.70. So, it is concluded that the data is reliable.

Reliability Statistics				
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No of Items		
.721	.724	4		

Table 4.2

Dependant variable:

- Intention to buy an electric car

4.3.2 Reliability Testing for Environmental Awareness: Independent Variable

The value for Cronbach's alpha is greater than 0.70. Thereby, it is concluded that the data is reliable.

Reliability Statistics				
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items		
.793	.796	4		

Table 4.3

4.3.3 Reliability Testing for Infrastructure: Independent Variable

The value for Cronbach's alpha is greater than 0.70. Thereby, it is concluded that the data is reliable.

Reliability Statistics				
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items		
.793	.807	4		

Table 4.4

4.3.4 Reliability Testing for Price Sensitivity: Independent Variable

The value for Cronbach's alpha is greater than 0.70. Thereby, it is concluded that the data is reliable.

Reliability Statistics				
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items		
.727	.729	2		

Table 4.5

4.3.5 Reliability Testing for Performance: Independent Variable

The value for Cronbach's alpha is greater than 0.70. Thereby, it is concluded that the data is reliable.

Reliability Statistics				
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items		
.731	.734	4		

Table No 4.6

4.4 Regression analysis

4.4.1 Mean Price sensitivity and Mean Purchase Intention

H1: Price sensitivity has a positive and significant impact on the electric car purchasing intention.

	Model Summary				
Model R Square Adjusted R Square Std. Error of the					
1	.374	.140	.136	.47317	

a. Predictors: (Constant), mean_price

Table 4.7

Understanding: We received the value of R = .374 and R square = 0.140 The value of R square suggests to us what percentage of the variance in the dependent variable is explained by the considered independent variables. Therefore, in our research, Price sensitivity can explain 14% of the variance in the purchase intention of electric vehicles.

	ANOVA ^a							
7		G . C G	16	M C	_	C:		
IV.	lodel	Sum of Squares	df	Mean Square	F	Sig.		
1	Regression	7.743	1	7.743	34.582	.000		
						b		
	Residual	47.689	213	.224				
13	Total	55.431	214					
a.	a. Dependent Variable: mean_dependant							

b. Predictors: (Constant), mean_price

Table No 4.8

Interpretation: We received the value (p) = 0.000 Since, p value is under 0.05, therefore the relationship is significant.

Coefficients^a

Unstandardized Coefficients

B Std. Error Beta

Sig.

Model

1	(Constant)	1.368	.103		13.32	.000
					4	
	mean_price	.318	.054	.374	5.881	.000

a. Dependent Variable: mean_dependant

Table No 4.9

This is regression equation:

Y=1.368 +0.318*X

Where,

Y= Purchase Intention,

X= Price Sensitivity

4.4.2 Mean Environmental Awareness and Mean Purchase Intention

H2: Environmental awareness has a positive and significant impact on the electric car purchasing intention.

Model Summary								
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate				
1	.572	.327	.324	.41851				

a. Predictors: (Constant), mean_environment

Table 4.10

Interpretation: We received the value of R = .572 and R square = 0.327. This value of R square suggests to us that what % of the variance in the dependent variable has been explained by the considered independent variables that is environmental awareness.

Therefore, in our study, environmental awareness can explain 32.7% of variance in the buying goal of EVs.

	ANOVA ^a								
7 M	Iodel	Sum of Squares	df	Mean Square	F	Sig.			
1	Regression	18.125	1	18.125	103.48	.000			
					3	b			
	Residual	37.307	213	.175					
13		55.431	214						

a. Dependent Variable: mean_dependant

b. Predictors: (Constant), mean_environment

Table 4.11

Understanding: We received the significant value (p) = 0.000 Since, p is under 0.05, subsequently the relationship is significant.

	Coefficients ^a								
		Unstandardized Coefficients		Standardized Coefficients					
Model		В	Std. Error	Beta	t	Sig.			
1	(Constant)	1.060	.091		11.63	.000			
	mean_enviro nment	.521	.051	.572	10.17	.000			
a.	a. Dependent Variable: mean_dependant								

Table No 4.12

This is the regression equation:

Y=1.060 +0.521*X

Where,

Y= Purchase Intention,

X= Environmental Awareness

4.4.3 Mean Performance and Mean Purchase Intention

H3: Performance factors have a positive effect on the electric vehicle buying goal.

			Model Summary	
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.464	.215	.212	.45185
	a			

a. Predictors: (Constant), mean_performance

Model

Table 4.13

Understanding: We got the value of R = .464 and R square = 0.215 This value of R square implies what % of the variance in the dependent variable is explained by the considered independent variables. Therefore, in our research, Performance can explain 21.5% of the variance in the electric car purchasing intention.

Sig.

Sum of Squares df Mean Square

ANOVA^a

1	Regression	11.943	1	11.943	58.497	.000
						b
	Residual	43.488	213	.204		
				.201		
4	Total	55.431	214			

a. Dependent Variable: mean_dependant

Table 4.14



Understanding: We received the significant value (p) = 0.000 Since, p is under 0.05, subsequently the relationship is significant.

Coefficients^a

		10 Unstandardized Coefficients		Standardized Coefficients		
Model		В	Std. Error	Beta	t	Sig.
1	(Constant)	1.114	.112		9.902	.000
	mean_perfor mance	.456	.060	.464	7.648	.000

a. Dependent Variable: mean_dependant

Table No 4.15

This is regression equation:

Y=1.114 +0.456*X

Where,

Y= Purchase Intention,

X= Performance

4.4.4 Infrastructure and Mean Purchase Intention

H4: Infrastructure has positive impact on the electric vehicle buying goal.

			19	
			Model Summary	
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
WIOGCI	10	it square	Adjusted R Square	Std. Effor of the Estimate
1	.482	.232	.228	.44708
	a			
D 11		(C + 1)		

a. Predictors: (Constant), mean_infra

Table No 4.16

Interpretation: We received the value of R = .482 and R square = .232 This value of R square mentions to us what % of the variance in the dependent variable is explained by the considered independent variables. Therefore, in our research, Infrastructure can explain 23.2% of the variance in the electric car purchasing intention.

ANOVA^a

7 Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.857	1	12.857	64.321	.000
						b
	Residual	42.575	213	.200		
13	Total	55.431	214			

a. Dependent Variable: mean_dependant

b. Predictors: (Constant), mean_infra

Table No 4.17

Interpretation: We received the significant value (p) = 0.000 Since, p is under 0.05, subsequently the relationship is significant.

Coefficients^a

	Unstandardized Coefficients		Standardized Coefficients		
Model	В	Std. Error	Beta	t	Sig.
1 (Constant)	1.215	.095		12.72	.000
				9	
mean_infra	.431	.054	.482	8.020	.000

a. Dependent Variable: mean_dependant

Table No 4.18

This is regression equation:

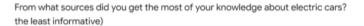
Y=1.215 +0.431*X

Where,

Y= Electric car purchasing intention,

X= Infrastructure

Other factors that influence consumer's electric vehicle purchase intention:



(1- the most informative, 5-

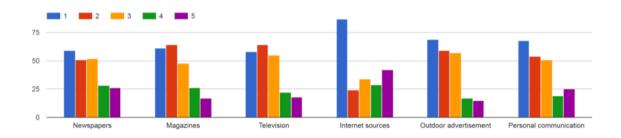


Figure 4.1

Interpretation: This chart shows the sources of knowledge about the electric vehicles that consumers usually get to know from. It shows most of the consumers' knowledge source is from the internet, followed by outdoor advertising and then personal communication.

Below are some statements about the benefits of electric vehicles. For each statement, please indicate if this would persuade you to purchase th... personally agree or disagree with that statement.

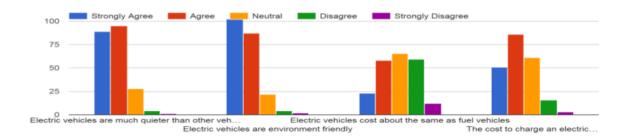


Figure 4.2

Interpretation: This chart shows the benefits of electric vehicles that consumers usually think of as an important factor before purchasing an electric vehicle. It shows that majority of the consumers prefer to agree with the benefits of an EV.

Looking at the following list of costs, please choose options that would put you off buying an electric car.

217 responses

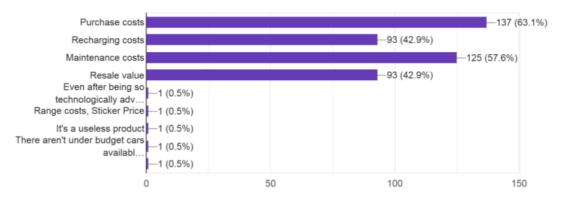


Figure 4.3

Interpretation: This chart shows the list of costs that would put consumers off from buying an electric car. It shows that the majority of the consumers consider purchase cost to be the factor that puts them off of buying an electric vehicle, followed by maintenance costs and then recharging costs and resale value.

5. MANAGERIAL IMPLICATIONS

There are brands that have been making efforts towards environmental cognizance. They believe that the 'greenery' factor is itself enough for an item to sell in the market. Although, to observe, the automobile industry has begun implementing green marketing in a different light. They've tried to formulate and execute a green strategy that persuades consumers into buying electric cars. Although the study states that the 'greenery of cars' isn't enough reason that encourages the consumers among many other factors to purchase green auto products. The findings of this research hereby indicate that environmental awareness, infrastructure and performance are the main factors that influence indian consumers to buy electric cars. Additionally, the price factor can be one of the hurdles that affects the intention to purchase the green auto products. It is significant to modulate a strategy that falls as per sustainable consumer demand. This strategy has various advantages that not only includes generating revenue but also manages to work towards reducing research and development costs. Companies that use green marketing may

impart a better perspective towards potential consumers. A brand that works towards protecting and sustaining the environment, gathers eminence and goodwill more than its competitors.

6. LIMITATIONS

Limitations of the Study

Each search has its limitations. Although the intention should be as specific as possible, some limitations have been identified, due to the nature and methodology used:

- The total number of respondents to this study is 215. This study has been conducted in India in a practical way and the conclusions drawn on this basis may not be a reflection of the entire population.
- The study was dominated by male population which was 143 out of 215.
- Data is collected through a structured questionnaire, given to those who are readily available and ready to complete the questionnaire. Thus, only a specific group of people participated in the

study and the results may not apply equally to all regions of the country.

- Respondents' responses are based on their perceptions and their general outlook on life. As a result, some of the respondents' responses may result in data manipulation due to misinterpretation or bias of the article.
- Opinion of the entire population was ignored. This may lead to inconsistent opinions in the sample. The study is unsafe for selection of bias and may lead to sampling error.
- Furthermore, the conclusions drawn from the study cannot be generalized.

7. CONCLUSION

According to this research study, electric vehicles' producers and the Government of India need to spend and contribute more on social acknowledgment of the vehicle by establishing more infrastructure, with greater emphasis on performance that can build confidence in cars. The result unmistakably delineates that the populace is very much aware of the natural advantages, but it will not be enough for consumers to buy electric vehicles. It will be combined with the responsibility of the government and manufacturers, with investment in vehicle manufacturing, consumer perception should be built by providing the above facilities to make the dream a reality, people are starting to adopt electric vehicles and pollution Many are protecting India's future from respiratory diseases, which is a big concern for the world at this time.

ANNEXURE - QUESTIONNAIRE

This questionnaire is designed to know the factors affecting Consumer Purchase Intention & Consumer Perception towards Electric Vehicles, the analysis will be used in the research paper to be written by the authors named Kalyani Upadhyay, Harshit Sharma and Ali Gaba, final year MBA students.

Major Research Project- Consumer Perception and Purchase Intention of Electric Vehicles

The automobile industry is one of the main culprits for the worsening environmental issues. The amount of CO2

emitted from cars has a major influence on climate change and air pollution. Hence, it is essential to motivate

customers to purchase green products, such as electric cars. We are conducting a research on consumer

behavior and factors affecting the purchase perception of electric vehicles. The data collected will be used for educational purpose only.

Name *
Age *
Mark only one oval.
25 or younger
26-35
36-45
46 or older

* Required

3.	Gender*
	Mark only one oval.
	Female
	Male
	Prefer not to say
4.	Occupation *
	Mark only one oval.
	Employed
	Unemployed
	Student
	Retired
	Student with part time employment
5.	What is your approximate yearly income?
	Mark only one oval.
	Less than 1,00,000
	1,00,000 - 5,00,000
	5,00,000 - 10,00,000
	More than 10,00,000
C	Consumer's Perception and Purchase Intention

	the most informative, 5					
	Mark only one oval per row.					
		1	2	3	4	5
	Newspapers					
	Magazines	\bigcirc	\bigcirc	\bigcirc	\bigcirc	
	Television	\bigcirc			\bigcirc	
	Internet sources	\bigcirc		\bigcirc	\bigcirc	\bigcirc
	Outdoor advertisement	\bigcirc		\bigcirc	\bigcirc	\bigcirc
	Personal communication					
7.	Looking at the following buying an electric car. * Check all that apply.	list of co	osts, pleas	se choose	e options	that would

	, ,	aloug. co	with that		
Mark only one oval per row.	Strongly Agree	Agree	Neutral	Disagree	Strong
Electric vehicles are much quieter than other vehicles					
Electric vehicles are environment friendly	\bigcirc	\bigcirc		\bigcirc	
Electric vehicles cost about the same as fuel vehicles		\bigcirc		\bigcirc	C
The cost to charge an electric vehicle is much less than fuel costs for a petrol or diesel vehicles		\bigcirc	\bigcirc	0	

Factor's Influence

9. Performance *

Mark only one oval per row.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I would buy an electric vehicle if maintenance cost is lower for EVs if compared to fuel cars.			\bigcirc		\bigcirc
I would buy an electric vehicle with excellent acceleration			0		
I would buy an electric vehicle if increased interior volume within the vehicle is provided				\bigcirc	0
I would buy an EV if increased driving range is provided				0	

10. Environmental Awareness*

Mark only one oval per row.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Electric vehicles are environmentally-friendly because they have zero emissions		\bigcirc			
Electric vehicles motivate consumers such as yourself, to save environment		0	0	0	0
EV ownership improves social image as it contributes in sustainability.			0	0	0
Shift towards cleaner fuel is a must because climate change is real.	0	0	0	0	

11. Infrastructure *

Mark only one oval per row.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I would buy an EV if there is at least one service station in every city.					
I would buy an EV if an electric fuel option is provided at every gas station.					
I would buy an EV if availability of charging stations are increased.	\bigcirc	\bigcirc			\bigcirc
I would buy an EV if accessibility to efficient charging stations were enough.				\bigcirc	

12. Price Sensitivity *

Mark only one oval per row.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Price is a significant factor for not buying electric car	\bigcirc				
I'd purchase an EV if its cost is approximately same as petrol/diesel vehicles.				\bigcirc	

13. Purchase Intention *

Mark only one oval per row.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I would want to buy and electric vehicle in future	\bigcirc	\bigcirc	\bigcirc		
I intend to buy an electric vehicle					
I would consider buying an EV if everyone else is using it.					
I admire people who has an electric vehicle					

consumer purchase

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