Sustainable Development in the Transportation Sector

Aniket Swaraj

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First Impression: April 2023

Sustainable Development in the Transportation Sector

ISBN: 978-93-93810-59-5

Rs. 1000/- ($80)

Published by:
Empyreal Publishing House

PREFACE

The rise of electric vehicles (EV) has been one of the most important technological advances of recent times. With growing concerns about climate change and fossil fuel depletion, electric vehicles have emerged as a promising solution to combat these challenges. This book examines the impact of electric mobility on India and its future by analyzing various aspects such as sustainability, consumer behavior and market trends. It also delves upon ongoing trends in the bike rentals, online car trading and online ticketing industries.

The book contains several studies and research papers which investigate various aspects of modern-day transportation. The authors of this book have tried to provide a comprehensive overview of the current state and potential of electric vehicles in India. In addition, the book examines consumer behavior and satisfaction with electric vehicles and analyzes the factors that influence their purchase decisions. Electric mobility solutions by Ather, Revamp Moto and Tata Motors have been researched upon. Rentals of electric bikes have also been popularized in India by Yulu and Rapido. The book also contains studies on online ticketing through Chalo App, online car purchases and sales through CarDekho.

This book aims to be a valuable resource for anyone interested in the future of electric vehicles in India, including policy makers, industry experts and the general public. We hope that this book will stimulate further discussion and research on this important topic and help build a sustainable future for India.

ACKNOWLEDGEMENT

We are grateful for the opportunity to present this edited collection on Latest Research Trends in Sustainable Business Approaches. First and foremost, we would like to express our sincere gratitude to the Management, Principal and Vice-Principals of SIES College of Commerce and Economics (Autonomous) for granting permission to produce this book and for their support in our endeavour. We would like to express our appreciation to Empyreal Publishing House and Nex Gen Publication House for giving us this publication opportunity.

We want to thank all our colleagues in the Bachelor of Management Studies department at SIES College of Commerce and Economics, Sion (East) for their assistance and co-operation in making this book possible.

We thank all those who contributed their valuable research articles for this book. They have placed their trust and hope in us for coming out with an impactful and insightful publication.

This publication is another endeavour to satisfy the understudy student body's unquenchable interest. The readers of the book are our motivation behind the production and distribution of this book.

Lastly, we are highly grateful to our family members for their ongoing support and encouragement.

Aniket Swaraj
Fleur Fernandes

Table of Contents

IMPACT OF ELECTRICAL VEHICLES AND ITS FUTURE IN INDIA

Aniket Swaraj, Divy Jain, Deep Vora, Saloni Doshi, Mansi Kotak and Srushti Shah
SIES College of Commerce and Economics (Autonomous)

ABSTRACT
This content discusses the sustainability of electric vehicles (EVs) in the Indian automobile market. Researchers have identified limitations of technological innovation as a solution to environmental issues faced by the automobile industry, and have found that the adoption of EVs can help to achieve sustainability goals. The authors of this content review literature on the mechanisms of EVs and how they can replace combustion vehicles, as well as the differences in impact between gasoline and EV vehicles. They also examine the challenges faced by EV companies in the market, including power generation, charging infrastructure, and price. The objectives of this content include understanding the future of EVs, spreading awareness about them, and understanding public perception of EVs. The significance of EVs is also discussed, including their cost effectiveness, noise reduction, and air pollution reduction capabilities. The research methodology for this content includes a survey of 80 people to gather their opinions on EVs. The results of the survey are analysed and discussed in the context of the literature review.

Keywords: Electric vehicle, Innovation, pollution, Gasoline vehicles

INTRODUCTION
As there is increasing in competitive pressure all over the globe concerning factors like costs it is important for automobile industries to do innovative practices for the sustainable development of industries. Researchers have come out with the limitations of master plans based on technological innovation as an answer to the environmental problem faced through automobile industries and to help the industries sustainably developed with the help of innovation and practicing those innovation on daily basis. India has started to follow the path of sustainable development by electrification in the automobile sectors. It is important to introduce and use more and more electric vehicle due to poor air quality index in urban cities. The government of India is trying to introduce the electric vehicle in the country with certain rules and regulations, but it is in the hands of state government to make proper framework and infrastructure such as charging station in the state at a specific location.

The innovation done by the automobile industries to introduce the electric vehicle is such that it is cheaper as compared to other vehicles which runs on petrol, diesel and it is easy to charge the vehicle as the charging point is available at the parking and the entire system works on software. The person who buys the electric vehicle has to update the software for unlocking the new features of the vehicle. It is important for automobile industries to get support from the government, investors and customers to help them for development in the sector of electric vehicles.

LITERATURE REVIEW
Author:- Rajeev Ranjan Kumar studied the void of electric vehicle through integrative review methodology. The research consists of 239 articles published across Scopus Q1. It is focusing on the mechanism of EV and how EV will replace the combustion vehicle. And further author adds Adoption of electric vehicle: A literature review and prospects for sustainability.

The difference between the impact of gasoline vehicle and EV vehicle and how it will impact in future. And lastly the perception of people and government about it.

Sustainability Of Electric Vehicles: A short study of the Indian Electric Vehicles Market Anish Singla and Radhika Bansal. Following research paper studies about the air pollution

generated by vehicles in day-to-day life and how EV can help us to reduce it. And achieve the goal of decreasing 2 degrees Celsius by 2050. They have taken example of Tata Nexon and Kia and compares it with EV. It also studies about the challenges faced likes' power generation and charging station, price, low travel range by the EV company to sustain in market.

OBJECTIVES

1. To know about the future of electric vehicles.
2. To understand about different innovation done by the automobile industries.
3. Spreading awareness about electric vehicles.
4. To understand people perspective on electric vehicles.

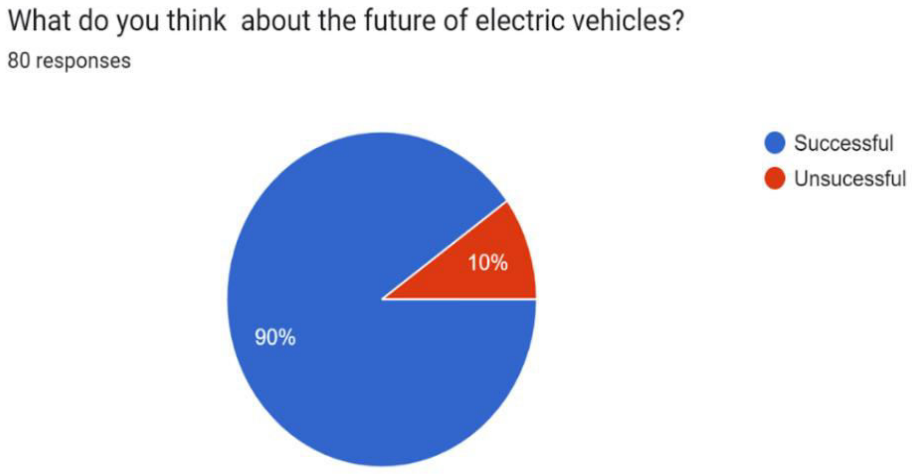
SIGNIFICANCE

For success of electronic vehicles, we need success of charging stations we need more charging stations so that electronic vehicle will be less dependent on fuel. Also, India is trying to reduce carbon footprint for that Government of India announced that cars need to be electrified by 2030 as a result electric vehicle adoption has reduced air pollution in India. Electric vehicle is cost effective as electric vehicle has less components compared to petrol or diesel car also it makes less noise and reduces noise pollution. The battery of electronic vehicle should be lightweight.li-on based, PB acid and Ni batteries are used for that purpose Compared to conventional diesel or petrol vehicles driving range is very less of electronic vehicles Mahindra e20 electronic vehicle hatchback charges in 5 hours the hero electric e sprint electric scooter charges in 8 hours.

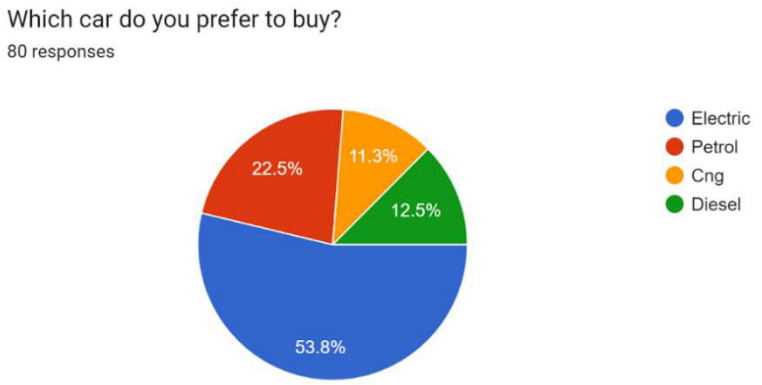
RESEARCH METHODOLOGY

The survey is done from 21-12-22 to 22-12-22 and we got 80 responses, and we came to know about the opinion of different people regarding electric vehicles.

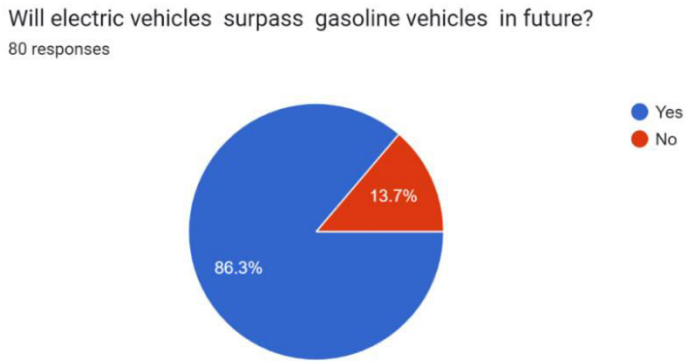
DATA ANALYSIS AND INTERPRETATION



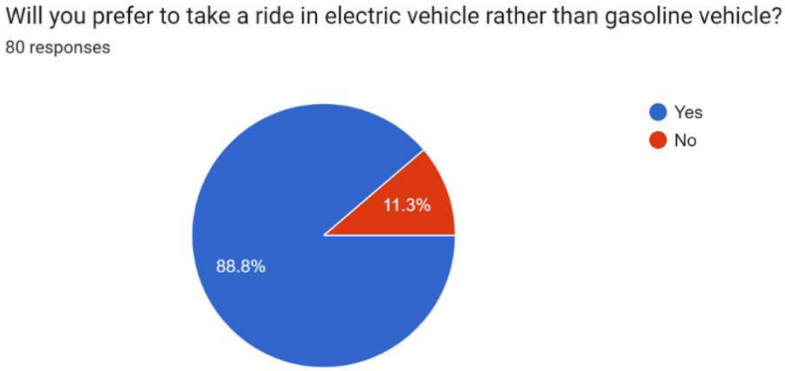
- 90% of the people are predicting that the future of electric vehicle will be successful and rest 10% are predicting that it will be unsuccessful.



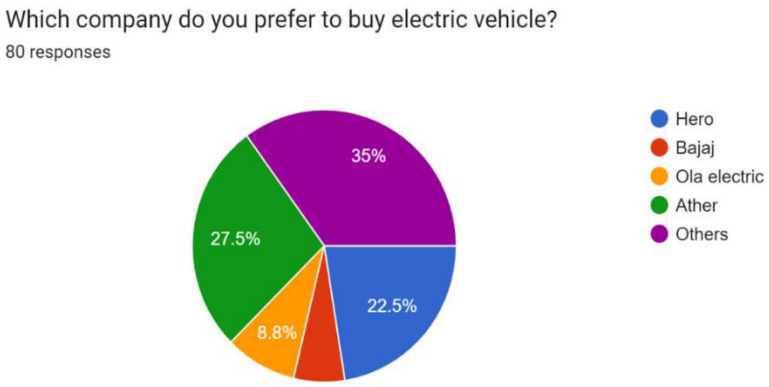
- As we can see 53.8% are in favour of buying electric car while 22.5% are for petrol, 11.3% are for CNG and rest 12.5% are for diesel. It can conclude that most people prefer to buy electric vehicles.



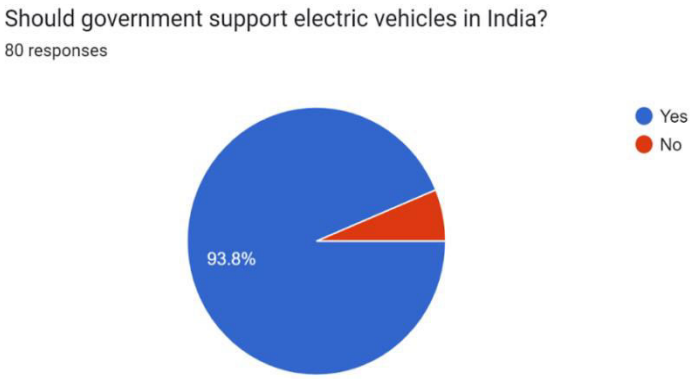
- Due to awareness about the environmental condition 86.3% are saying that it will surpass gasoline vehicles while rest of the 13.7% are saying that it will not surpass and remains the same



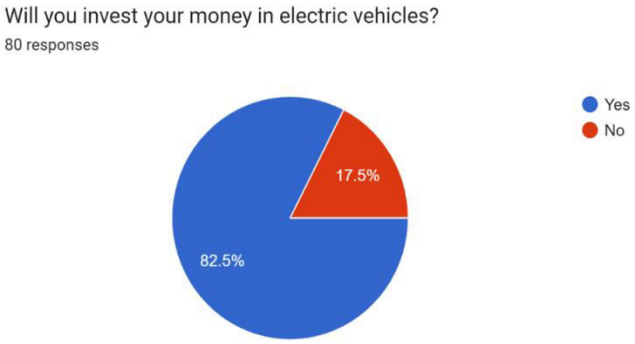
- As we came to know that 88.8% people prefer to ride on an electric vehicle whether it is public or private while rest of 11.3% supports that they will travel in gasoline vehicles.



- When we asked people which company, they will prefer this were the results 27.5% was given for ather, 8.8% was given for Ola electric, 22.5% for hero, 6.2% for Bajaj and 35% for other company in the market



- The important aspect for introducing electric vehicles in country is the government we came to know that 93.8% thinks that government should support and rest 6.2% thinks that government should not support



.

- 82.5% are ready to invest their money in electric vehicle while rest of the 17.5% are not sure whether to invest or not

SUGGESTIONS

1. To suggest government to build charging station on nationals and state highways.
2. As Lithium batteries throws out Co2 at large quantities the companies has to do innovation to tackle the problem.
3. To find more efficient way to reduce the cost since electric vehicles is expensive.
4. The electric vehicles should be made just as gasoline vehicles in terms of speed and average.
5. The battery and other parts should be changed effortlessly without any problem faced by the user.
6. To make strict guidelines for the development of electric vehicles in India

CONCLUSION

From the above information we can conclude that electric vehicles are the next big thing for automobile industries and the Indian economy. It is important for us to the initial stage for electric vehicles running on the Indian roads it is predicted that sales of the electric vehicles will rise at a 49% CAGR between 2022 and 2023 so more and more company will start their electric vehicles production and we can see different innovation in the automobile sectors in the future. It is important for us to be aware about the advantages if we start to use electric vehicles.

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- Indians perception on electric vehicle Maneshwar Palanisamy Devendra
- Sustainability of the automobile industry Fleur Fernandes, and Melissa Brian D'silva

YULU - ELECTRIC BIKES

Aniket Swaraj, Anulaxmi Thevar, Mittali Vijan, Smriti Nair, Reet Matta and Tejaswee
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ABSTRACT

The rising rate of urbanisation that is closely connected to economic processes has exposed the globe to many challenges like difference, environmental degradation, traffic jam, infrastructural considerations and social conflicts. Therefore, urban property has emerged jointly of the foremost debatable discussions across the globe. The present network of transportation will not continue with the growing demand in metropolitan cities. Short distance travel has become AN unresolved issue for daily commuters. The case presents how distance trips reach their final destination, however MMVs have emerged as another mode of transport for resolution problems with daily commuters concerning the first-mile property, last-mile property and short distance trip to reach their final destination. MMVs are essentially light-weight vehicles that occupy less area on the road. These vehicles embody bicycles, e-bikes, skateboards, hoverboards and different battery-operated vehiclesThe rising rate of urbanisation that is closely connected to economic processes, has exposed the globe to many challenges like difference, environmental degradation, traffic jam, infrastructural considerations and social conflicts. Therefore, urban property has emerged jointly of the foremost debatable discussions across the globe. The present network of transportation will not continue with the growing demand in metropolitan cities. Short distance travel has become AN unresolved issue for daily commuters. The case. The case narrates the journey of Yulu, a dockless bike-sharing venture that promoted the construct of inexperienced consumerism among the daily commuters at cheap rates. The venture ab initio started within the IT town of Bangalore and later distended its operations to different cities like Pune, Navi city, Gurugram and Bhubaneswar. The speciality of this venture is that it offers a property answer to ever-increasing issues of traffic jams and exasperating pollution problems in metropolitan cities.

Keywords: Sustainability, Micro Mobility, E-Bikes, Traffic Planning, Pollution Free, Urban Transport Policy (Author Stefan Gossling)

INTRODUCTION

There has been rapid urbanisation in the past decades. People are moving from smaller villages and towns to bigger places to upgrade,grow,and for their better future. Thus the urban cities are crowded and that invites a lot of problems. There are problems of space,problems of jobs and the list goes on. The rapidly rising urban population has further aggravated the problem of transportation networks. The existing network of transportation can no longer keep up with the growing demand in metropolitan cities; therefore, bike sharing is set to emerge as a popular alternative to urban transportation. As a result, micro-mobility vehicles (MMVs) are quickly acquiring the market as they provide a solution to the problem of first mile, last mile connectivity and short distance travel.

OBJECTIVES

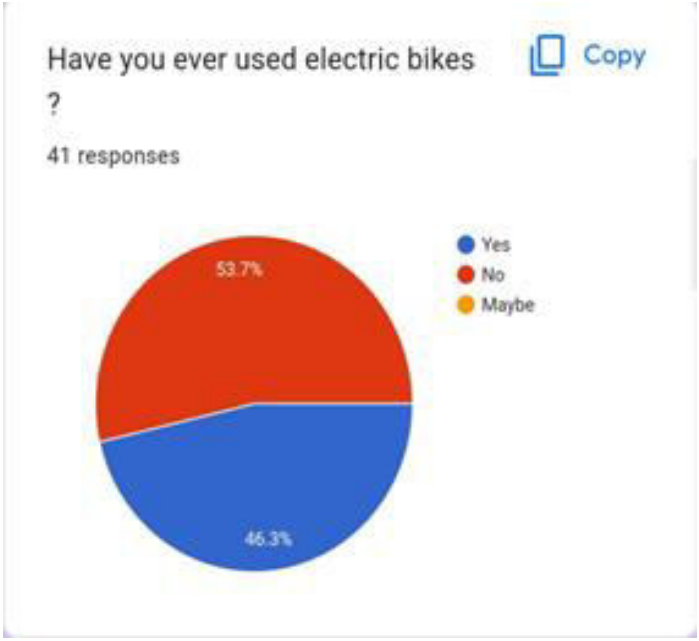
1. To study the current situation of e-bikes industries in India.
2. To analyse people's perception as Yulu bikes are a new innovative, sustainable company of India.
3. They are committed to creating liveable cities of tomorrow and their motto is "Green mobility "solutions.
4. Yulu works on completely digital platforms that make it easier to book a ride.

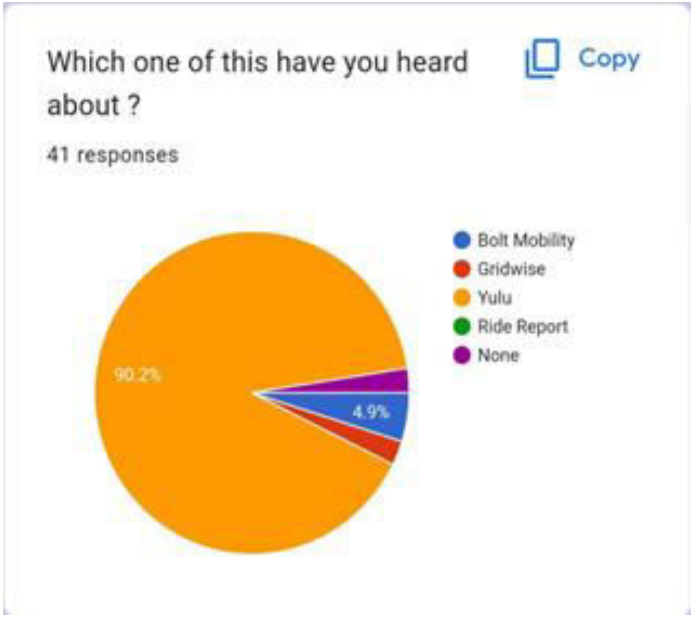
5. Their vision is to provide smart, shared and sustainable public bike sharing.
6. They also help in reducing traffic congestion in urban cities.

RESEARCH METHODOLOGY

We had gathered the information from different google research platforms and the google sights. We selected the topic as Yulu is relevant to the youth and a lot people are not educated about the topic We used google forms for gathering our research to know about the people's options regarding the brand names

DATA ANALYSIS AND INTERPRETATION





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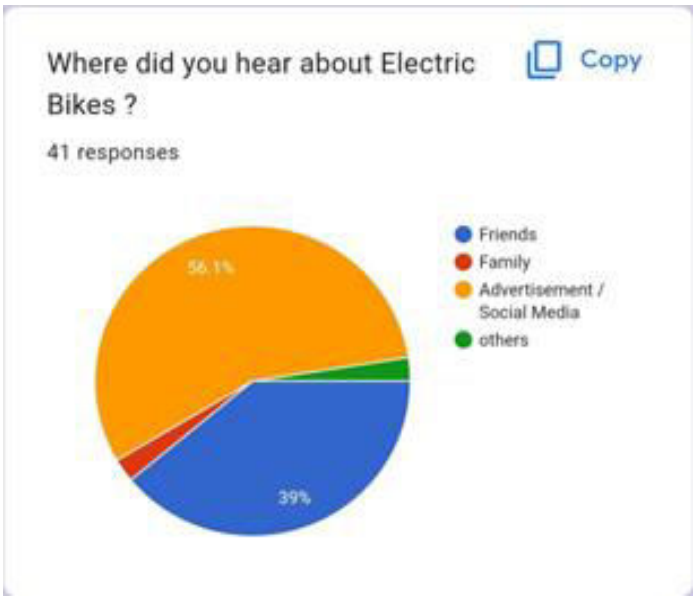
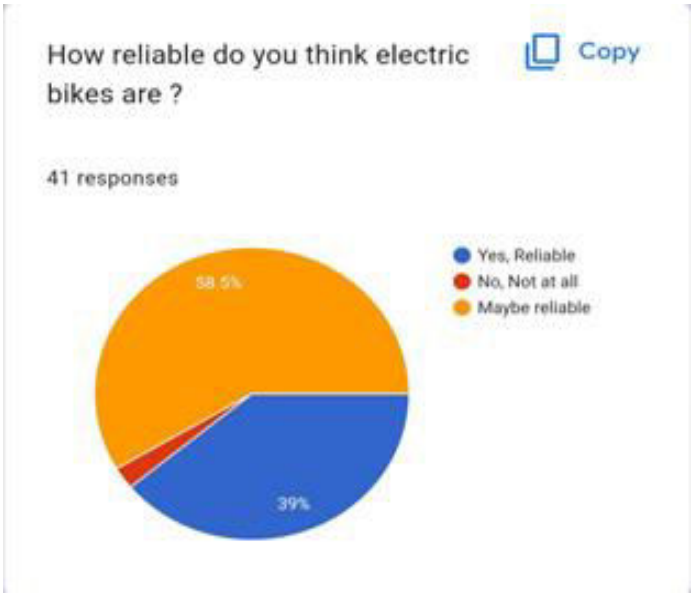
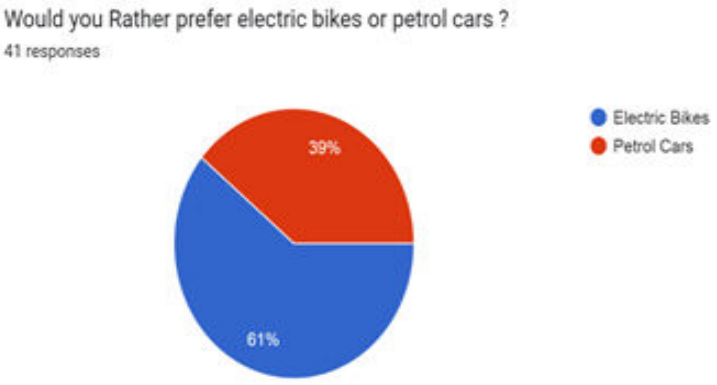
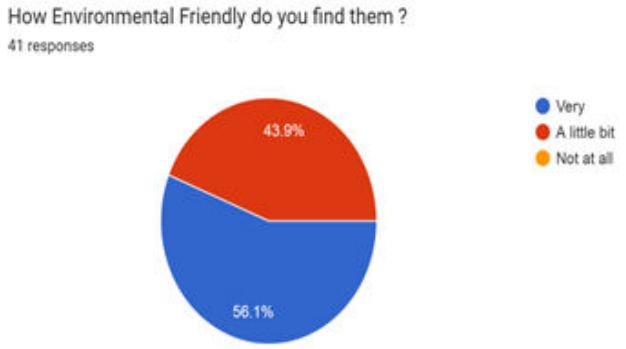
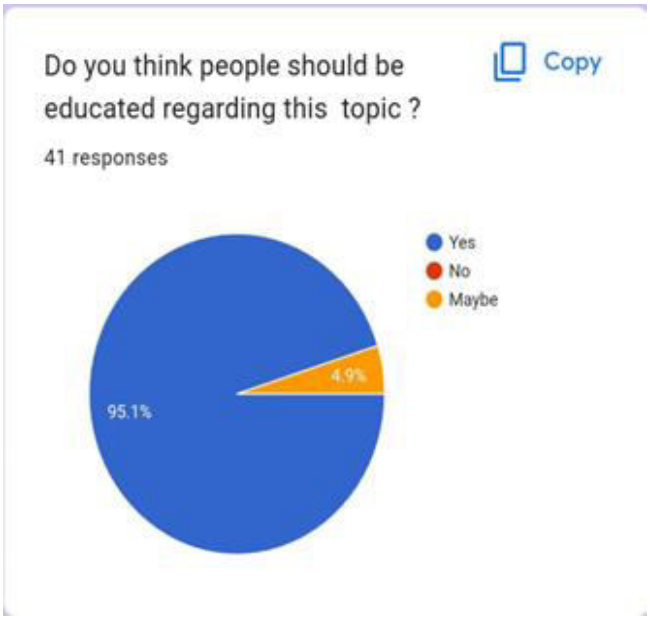
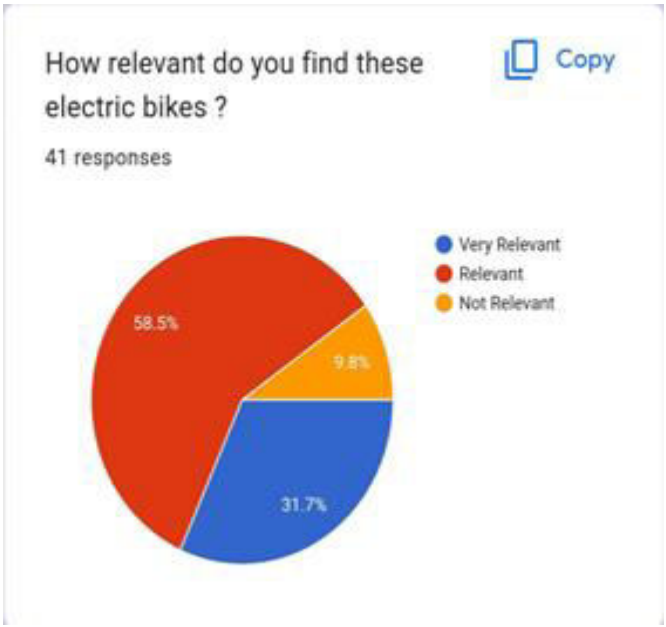







How Environmental Friendly do you find them ?
41 responses
43.9%
56.1%
Very
A little bit
Not at all


Do you think people should be educated regarding this topic ?
Copy
41 responses
95.1%
4.9%
Yes
No
Maybe


How relevant do you find these electric bikes ?
Copy
41 responses
58.5%
9.8%
31.7%
Very Relevant
Relevant
Not Relevant

CONCLUSION

The increasing traffic in the cities have made people think of an alternative source for travelling on the roads. Along with the increasing traffic the air quality is also deteriorating day by day due to excessive use of fuel. Yulu is easily accessible, convenient as well as economical for everyone to use. Yulu is economically cheap and it is economically sustainable by offering rides at cheaper rates as compared to other means of transport. It ensures social sustainability by enabling participation of different stakeholders to use its vehicles. Besides, it also helps in generating employment opportunities. It also provides environmental stability by helping us save natural resources such as fuel. As Yulu is an electric bike it does not add to carbon footprints and thus it promotes the idea of green consumerism. Yulu is comparatively easy to maintain and has way more lesser running costs which makes Yulu viable and convenient for the customers. In the past 2–3 years, a number of new businesses are entering this segment which includes Rapido, Pedl, Vogo and Bounce. These vehicles are providing daily commuters a respite from the traffic woes in major urban centres. This segment is moreover untapped. Yulu has successfully ventured into the micro-mobility segment and implemented the theory of three pillars of sustainability, that is, economic, social and environmental sustainability. Commuters are increasingly accepting of Yulu as it is way more convenient for covering short distances. As it is an electric bike, it does not require fuel which makes it way more cheaper for consumers. The rising prices of fuels not everybody can afford bikes which run on fuel so the demand for Yulu is increasing rapidly. However, many organisations tried to enter this segment but could not sustain for much longer. For example, zoom came up with Pedl which is the shared-bicycle concept but could not survive for much longer. Similarly, MobiC is also serving in the same segment but is not deploying any new bikes. There are players like Yana and Hexi in Bhubaneswar. Other than this, some small players are there in different cities, but they are not at par with the requirements of the market. Vogo, is backed by ola and bounce is also there in the market.

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THE FUTURE OF EVS IN INDIA

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ABSTRACT
In India, the demand for environmentally friendly electric vehicles is growing. New automakers are revolutionising the sector by developing ground-breaking new models. With new pricing models, the market for electric vehicles is expected to experience even greater growth in interest. All currently producing automakers are conscious of this change and are attempting to introduce new hybrid or electric vehicle models. Since developed nations like the UK and France intend to ban the sale of diesel and gasoline vehicles starting in 2040, analysts predict that five years before that deadline, all new cars sold in Europe will likely be electric. The automobile sector is experiencing increasing commitments and rivalry from top automakers and companies.

According to energy experts, demand for vehicles will be driven by the Chinese and Indian markets, and the political agendas of these nations would prioritise the development of electric vehicles due to the reduced constraints posed by carbon emissions. Due to the expanding electric vehicle sector, several businesses aim to introduce charging stations for these vehicles.

Keywords: electric vehicle, environment, India

INTRODUCTION
Environmental pollution has reached a completely new level as a result of the usage of non-renewable and harmful sources to produce energy. We urgently need to stop using non-renewable resources and cut carbon emissions because of the speeding up of the global warming. The amount of carbon in the atmosphere has increased since the industrial age. The burning of fossil fuels is the main human source of carbon emissions. The study and development of electric vehicles has accelerated as global concerns about fuel saving and environment protection grow. Rising automation is causing an industry revolution for a new one in the 21st century and it is also having an impact on the automobile sector in India. Internal combustion engines have been replaced with electrical engines in automobiles, opening the way for electric vehicles (EV). Since their intervention, EVs have been accepted by numerous nations, having a good effect on environment.

LITERATURE REVIEW
The majority of literature search was devoted to electric and hybrid vehicle subjects. The analysis of research studies and publications demonstrated the fundamental principles and favourable outcomes anticipated, in support of society and future demands for the conservation of fossil fuels and awareness of environment contamination. Chemical batteries, fuel cells, ulta-capacitors, flywheels and electric motor provide traction for electric cars. The benefits for electric cars include low pollution, high efficiency and smooth operation(MehrdadEhsani, YiminGao, StefanoLongo, Kambiz M. Ebrahimi,2018).

The operation of electric vehicles was contrasted with that of internal combustion engines and hybrid electric vehicles, along with its benefits and drawbacks for the future of technology.

In the modern period, fossil fuels are the main energy source used to power machines and vehicles. The use of such fossil fuels to produce energy has significant negative impact on the environment (Khazaei 2019). Such fossils are burned, releasing large volume of carbon dioxide and other somewhat important greenhouse gases, which raises the temperature of atmosphere (Hamilton 1978). The necessity to switch to electric vehicles comes into play as we begin to

consider how to enable sustainable use of fossil fuels and how to lessen our immediate reliance on them (Geurtsen and Wilford 2009). By using electric vehicle as the major source of fuel for automobiles, we minimise the need for fossil fuels, lessen the pressure we put on global market to use fossil fuels and potentially even revolutionise how people view fuel(Williander and Stalstad 2013).

EV motors are significantly more environment friendly than other conventional fuel types despite their high cost and sustainability as their only fuel source, thus we should be willing to pay that price for a cleaner and alternative fuel source. Since all lives that run behind the wheel depend on fossil fuel, such an influence of fossil fuel cannot be ignored and at the same time cannot be prevented. We need to start thinking about how to make fossil fuel usage sustainable so that the next generation can benefit from its uses.

Transportation related activities have placed a strong emphasizes on safe, efficient and emissions reduced transportation. Future replacement of conventional automobiles with electric ones has been suggested and researchers have examined how consumer socionomic factors and financial incentives influence the adoption of electric vehicles worldwide. Many governments have begun financial policies to promote the use of electric vehicles but, decision makers must adopt a long term perspective to effectively implement them (Sierzchulaet al 2014, X Zhang et al 2014).

The demand for hybrid vehicles in India's major citites was analysed. Alternative fuel is necessary for sustainability due to the depletion of fossil fuel reserves, environmental impacts and global warming. According to the report, conventional thinkers are more concerned about the environment and Indian customers are ready to pay a premium for environment friendly car.

(Debabrata Das 2011), It determined that EVs are the greatest way to minimise city pollution with significant societal and economic benefits from electric vehicle and hybrid electric vehicle (HEV) use and that there maybe need for the design and production of small, globally electric concept car for India. Additionally, it described how the government and international communities helped to advance and speed up th electric vehicle (EV) initiative.

(Chetan Kumaar Maini 2005)

OBJECTIVES

The study aims are listed as follows:

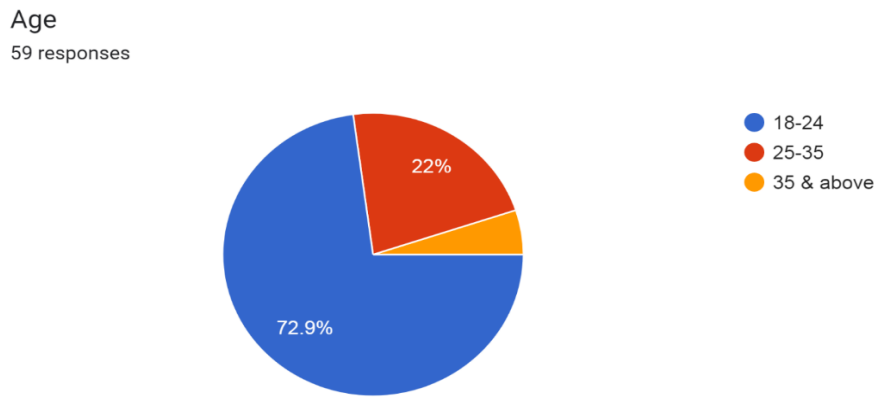
1. To comprehend the trends in Indian automobile production and sales.
2. To comprehend India's emission standards.
3. To comprehend the various countries vehicle standards.
4. To examine how much energy is consumed by light-duty vehicles according to the standard vehicles.
5. To look into light-duty vehicle standards for reducing global warming emissions.
6. To look into national electric vehicle trends and sales targets.
7. To understand the opportunities and challenges in the Indian electric vehicle market.

RESEARCH METHODOLOGY

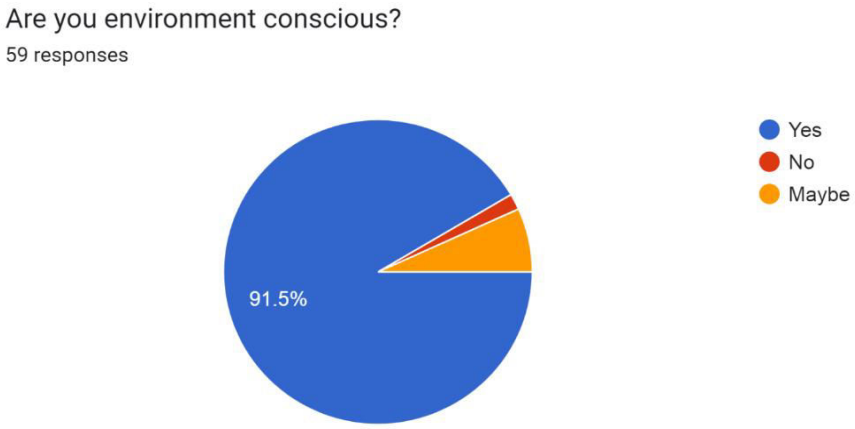
The goal of methodology is to explain the steps taken in conducting research. Secondary data as well as primary data was used for the study. Secondary data was accumulated through various internet websites, journal articles etc. Primary data was collected by circulating the questionnaire. I was able to collect around 59 responses.

DATA ANALYSIS AND FINDINGS

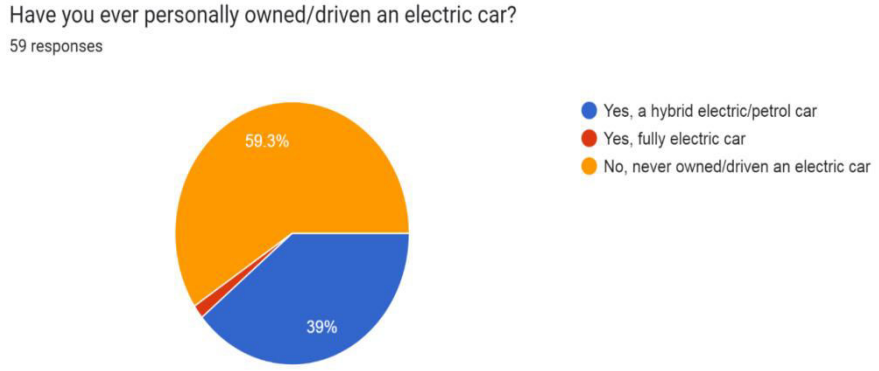
1. **Majority of Respondents were between the age group of 18-25**



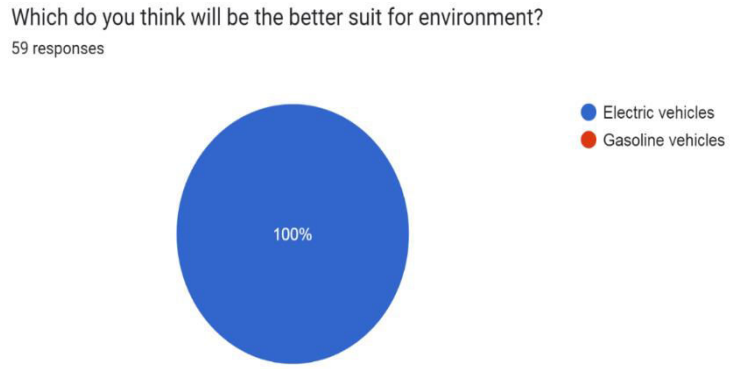
2. **The question was are you environment conscious? and as you can see around 91.5% of respondents are environment concious.**



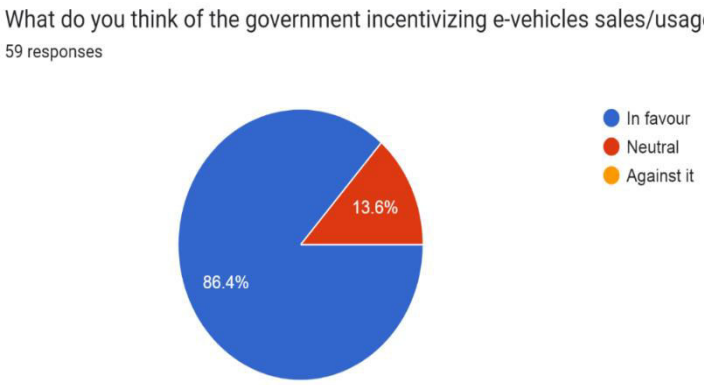
3. **39% of people have driven/owned an electric car and 59.3% of people have never owned or driven electric car**



4. 100% of people think electric car will be better suit for environment



5. 86.4% of people are in favour of government incentivizing electric vehicles sales/usage



RECOMMENDATION

The current analysis offers the following suggestions for boosting EV uptake. It is advised that businesses work with the government, banks, and financial institutions to offer vehicle loans with low interest rates to middle-class consumers in order to increase utilisation.

Young people today are very environmentally sensitive and participate in family decision-making. Therefore, businesses should advertise and promote their automobiles in this way. Businesses should also provide special offers, discounts, or incentives to college students who intend to purchase electric vehicles. Government and producers should raise customer knowledge of electric vehicles in order to promote them.

Consumers in India are still lagging behind in adopting electric vehicles; as a result of questions about charging, service stations, and a lack of awareness, businesses can initiate free awareness campaigns in collaboration with their dealers. Due to the rising cost of gasoline and diesel, customers are increasingly looking for automobiles that are environmentally friendly and have low fuel consumption.

CONCLUSION

Electric vehicles are an increasingly popular form of sustainable transportation in the world. The penetration of EVs has also begun to pick up speed in India. To overcome these obstacles, India has to embrace EVs more widely and easily. As a new participant in the EV transportation

market, state government incentives and consumer characteristics were two of the most significant impediments found. All consumers are eager to minimise pollution, but there are many costs involved, including those for acquiring, minimum operating costs, vehicles, payback periods, running costs, maintenance costs, and electricity prices, as well as resale. Consequently, an economical car is needed for the Indian markets. EV adoption is significantly impacted by the infrastructure for charging, electric car performance, safety issues, and user anxiety. As a result, the researcher believes that the penetration pricing model is better suited for the Indian auto industry, which has a large number of middle class consumers. This means that in order to capitalise on the expansion in this industry and save a significant amount of national fuel, Indian auto officials must take action. Using these electric vehicles will also result in lower emissions.

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STUDY ON ELECTRIC VEHICLE OF ATHER ENERGY COMPANY

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ABSTRACT
India is the fifth largest car maker in the world and has the potential to become one of the top three in the near future - with about 40 crore customers in need of mobility solutions by the year 2030. With the ever - growing demand, fuel scarcity, increased fuel prices and the adverse effect of carbon emissions in the atmosphere leads to Studies on economic and environmentally friendly alternatives for petroleum fuel consumption. The innovation of electric vehicles has paved way to a new era of transportation. This research examines the topic of how electric vehicles is a boon to the future of the automobile industry as well as for the environment. In this study, we will also understand about the Ather Energy Company, its role towards the production of EV, which is environmentally friendly. Also, we will study how Ather will lead in automobile industry in Indian market.

Keywords: electric vehicle, sustainable, automobile industry, reusable battery

INTRODUCTION
The global rise in carbon dioxide emissions has been mainly attributed to the transportation industry. Fossil fuels are significantly used by the automotive sector. Automobile manufacturers are looking into a variety of new environmentally friendly alternatives for their goods due to government-imposed environmental restrictions and the impending depletion of oil reserves. Electric cars are frequently cited as the most practical answer. Cars that run entirely or mostly on electricity are known as electric vehicles. It does not use an internal combustion engine, but rather an electric motor. The first electric vehicle was created by Robert Anderson in Scotland somewhere between 1832 and 1839; the precise year is unknown.

There are three different types of electric vehicles designed to meet different driving needs. They are all electric, plug-in hybrid electric and fuel cell electric.

Ather Energy is an Indian electric vehicle company, headquartered in Bangalore. It was founded by Tarun Mehta and Swapnil Jain in 2013. It manufactures two electric scooters - the Ather 450X and the Ather 450 Plus. ATHER 450 The Ather 450 is constructed using an all-aluminium frame, comes with a 5.4 kW (7.2 BHP) Brushless DC electric motor, and a 2.4 kWh lithium-ion battery pack. The scooter can accelerate to 40 km/h in 3.9 seconds, attain a top speed of 80 km/h, and can travel 75 km on one charge in city-riding conditions (107 km in the Indian driving cycle). The scooter features a 7-inch touchscreen dashboard, and comes with features like on-board navigation, diagnostics, all-LED lighting, auto-cancelling indicators, smartphone integration, and cloud connectivity to send and receive data from Ather servers. Other vehicle can connect to the charging point and start charging using the Ather Grid app for iOS and Android. Ather has plans to set up around 60 points in Bangalore & Chennai, and set up more Ather Grid in other cities as it expands. Ather also sets up a home charging point at customer's homes which will charge the Ather 450 of 80% including four MTPA capacity which is under commissioning.

LITERATURE REVIEW
1. **Vishwas Bhatt (2021)** said that Ather has grown exponentially in the last few years, with thousands of scooters on the road. It has truly been a remarkable journey, having started out with a few hundred scooters in Bengaluru alone, to more than 29 cities across the country.

2. **A.K. Digalwar & Ganneri Giridhar (2015)** identified that the EV's are one of the best alternatives to overcome environmental crisis. But EW market is at a budding stage in India compared with other developed countries. Through Interpretive structural model (IST), it is identified the critical factors of implementing EV in India such as driving power, range and features. Also, the commitment of government to create awareness among Indian consumers.

3. **Hoen and Koetse (2014)** found that having more EV models available on the market increases the probability of choosing an EV. It can be seen as an indicator of EV market maturity and thus influence people's perception of uncertainty. This may account for the low sales of EV as currently there are only a few brands with EV's for sale, and some potential EV buyers probably do not like the specific brands or prefer more options to choose from.

4. **A.J Singh (2021)** said that "Inside Ather Energy's Manufacturing Facility: 1 Scooter Built Every 4 Minutes".

5. **Comparative Environmental Life Cycle Assessment of Conventional and Electric Vehicles, Troy R. Hawkins, Bhawna Singh, Guillaume Majeau-Bettez, and Anders Hammer Stromman (2012),** following research paper have the USP of revealing the pollution created while the production of EV. 50% of life time pollution of a EV is emitted while manufacturing it. Out of 50% Co2 emission, 35% to 41% is created by EV batteries. As production of EV batteries require minerals like cobalt, graphite, lithium and Manganese. To mine this minerals lot of carbon is emitted. Rest 16% to 18% is produced while the production of Inventers and the passive battery cooling system as it contains high amount of aluminium. It also revealed that EV can more harmful to the environment than fuel vehicle if they use non-renewables (coal-based plants) source of energy that is around 9 ounces Co2/km as compared to 7.5 ounces Co2/km by fuel vehicles.

6. **Satyendra Pratap Singh, Nitish Sharma, Shukla Ashish Chandrakant and Surendra Pratap Singh (20th March 2021)** studied the effects of air pollution in India. This study says according to the global report, many cities in the India are most polluted cities. Major sectors contributing to the air pollution are industrial sector and transport sector. The reason why this study is focusing so much on-air pollution is because among this 51% of air pollution is caused by the industrial sector and 27% by the transport sector. Air pollution contributes to the premature deaths of 2 million Indians every year. And the further the authors added in order to minimize the air pollution, Electric Vehicle (EV) can act as blessing in lowering the GHG emission.

7. The paper provides an overview of studies on the market penetration rate of Electric Vehicle, Hybrid Electric Vehicle, Plug-in-Hybrid Electric Vehicle, and Battery Electric Vehicle, as well as their various modelling approaches and optimisation techniques. The study is unique in that it addresses the essential barriers and insufficient charging facilities for a developing country like India **(Goel, S., Sharma, R., & Rathore, A. K. (2021).**

OBJECTIVES OF THE STUDY

1. To understand the impact of Electric Vehicle on Environment.

2. To know the quality of Ather Energy vehicles.

3. To study how Ather will compete with other EV's Company.

4. To study on the sustainability of Ather Energy Vehicles.

HYPOTHESIS

Hypothesis 1

H0 – Ather will not survive in Indian market.

H1 – Ather will survive in Indian market.

Hypothesis 2

H0 – Electric scooters will not improve the environment.

H1 – Electric scooters will improve the environment.

RESEARCH METHODLOGY

Research Methodology is the specific procedures or techniques used to identify, select, process and analyse information about a topic.

SAMPLE SIZE

60 people from different age group have been selected as a sample size for the research.

DATA COLLECTION METHOD

Data collection means collecting of data or information by different sources. There are two type of data primary data and secondary data which are explain below,

Collection of Primary Data

The primary data required for the study was collected from 50 active respondents Data was collected by Questionnaire method prepared through google forms. The respondents were people of different age groups.

Collection of Secondary Data

The researcher collected secondary data for the study from books, journals, periodicals, newspapers, articles, Website of government publications, proceedings, annual report, and other published records.

DATA COLLECTION AND INTERPRETATION

CHART 1

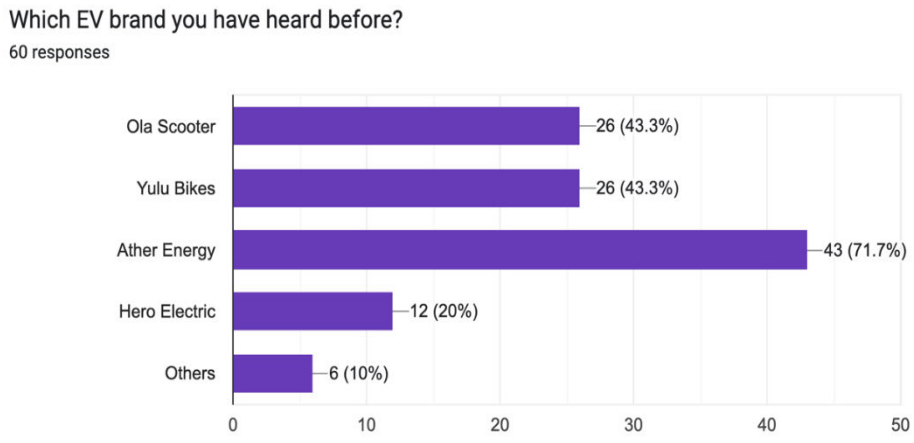


CHART 2

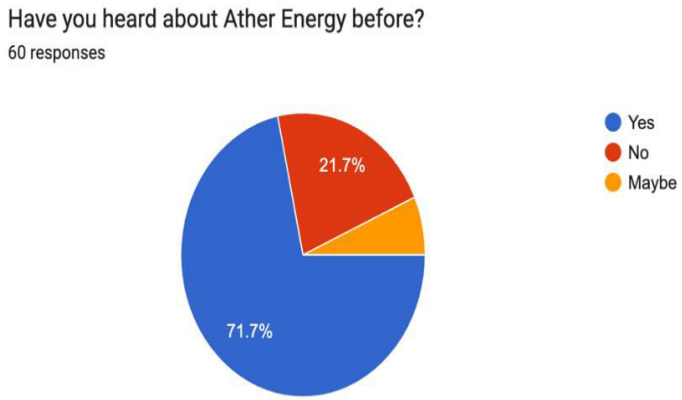
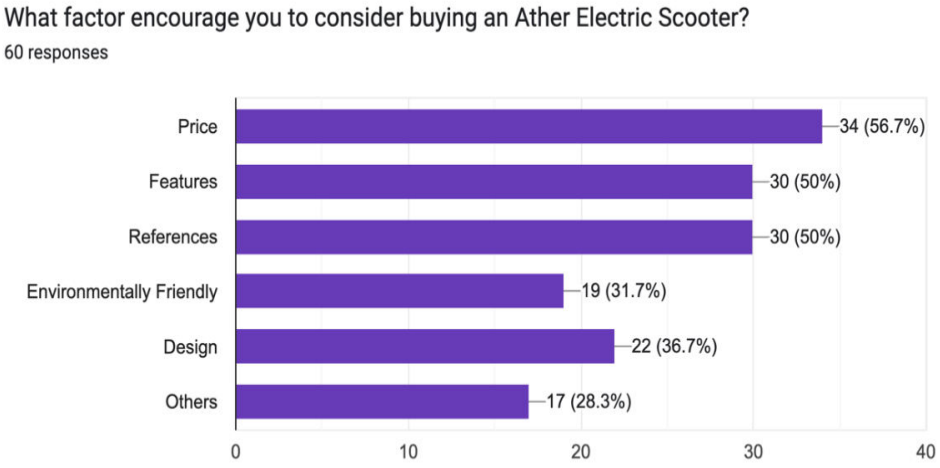


CHART 3



INTERPRETATION

1. According to chart 1, out of 60 responses, 43 responses were in favour of Ather Energy. 26 responses were in favour on Ola and Yulu.
2. According to chart 2, 71.7 % audience have heard about Ather energy company through its advertising campaign.
3. According to chart 3, price is the main factor that encourage audience to buy Ather scooter which is 56.7%, followed by its features and design which is 50% and 36.7% respectively.

RECOMMENDATIONS

Based on the studies and findings arrived at, the following suggestions are given:

1. As per the data, Ather Company should focus more on its design factor.
2. In the future, Company should put its own charging station with better charging facility.
3. it's advisable to produce electricity from renewable energy instead of non-renewable energy.
4. As Electric Vehicles battery make Electric vehicles way more expensive than fuel vehicles, it advisable to adopt Economies of Scale and a solution for the expensive batteries.

CONCLUSION

As per the research it can be concluded that Electric vehicles is an unavoidable future of India, because of the pollution and the price of the petrol. Ather Energy is focusing more on the younger age group, with its stylish designs and impactful marketing tactics. However, Ather is also continuously working on its quality of battery which they use in their vehicles. In future, company promise to using reusable battery, to overcome the problem of E-waste. Only when electric vehicles are better and cheaper, then only it's possible for India to shift into 100% electric vehicles and also which are actually more environmentally friendly.

A STUDY ON SUSTAINABILITY OF CHALO APP

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ABSTRACT
The research finds CHALO to be a technology-driven transportation solutions company aimed at improving public transportation from various places and reach there destination safely. The main focus of this startup is to improve city bus services, make reliable and encourage the public to use bus transportation as a priority mean of transport. CHALO offers implement a CHALO app which is easily available in mobile app store where customers can track buses live and see their arrival times live. Where they will get regular update of he company.

Keywords: Keywords related to CHALO app services include:

Transport, Route, schedule, fare, ticket, pass, trip, service

The BEST bus company, it can be used in marketing materials, company websites, or search engine optimization to help people find information about the company and its services.

INTRODUCTION
Mumbai-based startup 'CHALO' was founded in the 2014, to do away with these very hassles. With the help of technology, Chalo is making traveling in city buses a smooth experience for travelers across various Indian cities approximately 22 cities . Chalo is a technology-driven transport solutions company that aims to make travel by public transport better. The startup's key focus is on improving the bus services , easier and more convenient to use, and less time-consuming, thus increasing ridership in these buses.

CHALO also established an application which is very simple and convenient for users to use and book there respective ride as per their needs.

LITERATURE REVIEW
1. 'BEST's CHALO app saves ALAKH man-days of time'- SOMIT SEN :- Mumbai: A recent study by the company found that people in Mumbai saved more than 100,000 man-days of production time in three months by using the Chalo mobile app to commute on BEST buses.
2. SWARAN SRIKANTH – A free app called CHALO app allows users to track buses that are currently in operation and purchase tickets on their phones. The service Is accessible throughout India's cities in addition to Mumbai. However, a number of Mumbai residents have recently used social media to emphasize the inconvenience the app has brought about when making purchases.
3. YAZDI TANTRA 15 January 2022 :- CHALO is a free app that tracks buses in 20+ cities across India. If you take the bus often, CHALO is the app for you. Use your GPS device on the city bus and stream its location live to your mobile screen. With just one tap, you can see the exact location of your bus and know when it will arrive at your stop.
4. Inside: CHALO'S attempt to stay relevant with live passenger tracking & cashless payments Indian Social Oct 23, 2020
5. Hindustan Times :- Soon, 'Chalo' app to make your bus commute easier
6. Tom-tom how CHALO redefines bus travel in India using location technology Kenneth Clay :- Sr. Marketing Manager Nov 11, 2021

7. Startup talky :- CHALO Success Story – How it Tracks Bus Routes and Offers Hassle-Free Travel? CHAYANIKA GOSWAMI ANIK BANERJEE JUL 11, 2022
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10. Current Affairs » Maharashtra launched CHALO mobile app & smart card for bus travel Posted by SUMIT ARORA Published On December 24th, 2021
11. IN.LINKEDIN.Com CHALO 05-May-2022 — CHALO is India's #1 bus transport technology company that provides live bus tracking services and contactless payment solutions to transform …
12. TechCrunch – CHALO raises $40 million to digitize bus commutes in India Manish Singh @refsrc / 2:09 PM October 5, 2021

OBJECTIVE

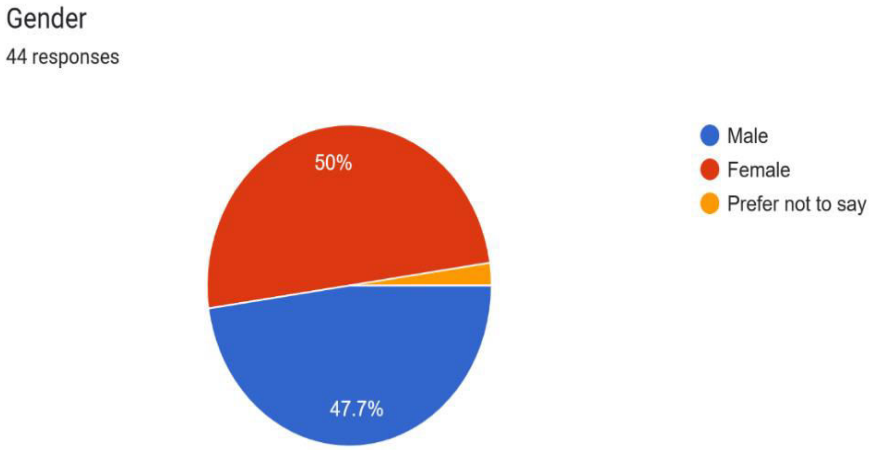
But the general goal of bus transit apps is to provide people with a convenient and easy-to-use way to access detailed information about bus routes, timetables, fares, and other public transportation services. The app also allows users to schedule and pay for bus trips, track the real-time location of buses, and receive notifications of delays and other important updates. The ultimate goal of the bus transit app is to make public transportation easier for people to use and encourage more people to choose this mode of transportation

RESEARCH METHODOLOGY

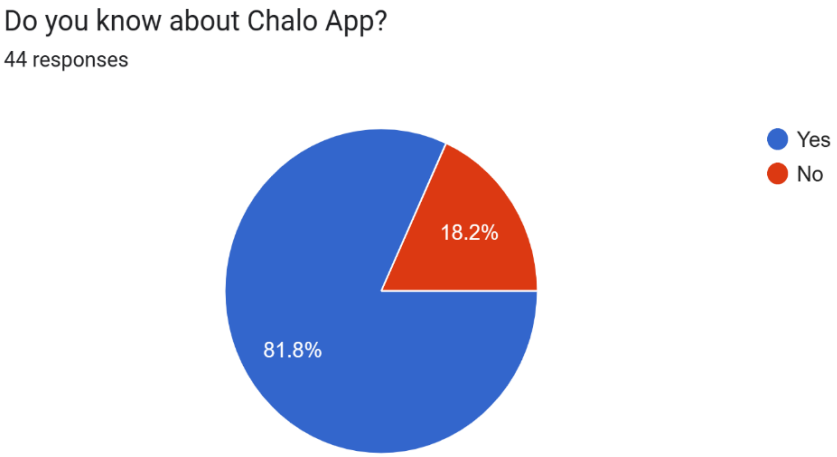
To study the sustainability of the "CHALO" app (or any other app includes)

- **Surveys:** Surveys can be used to gather data from a large number of users about their perceptions of the app's sustainability, as well as their usage patterns and the environmental impacts of their app usage.
- **Interviews:** Interviews with experts, such as app developers or sustainability experts, can provide valuable insights into the design and development processes used to create the app, as well as any sustainability-related considerations that were taken into account.
- **Focus Groups:** Focus groups involving users of the app can provide valuable insights into how users perceive the app's sustainability and the environmental impacts of their app usage. User testing: User testing can be used to gather data about how users interact with the app in a real-world context, including any sustainable features or functionality that they use.
- **Analytics:** Analytics tools can be used to gather data about app usage patterns and the environmental impacts of app usage, such as data on energy consumption or data transfer.
- **Case Studies:** Case studies on the "CHALO" app (or small group of apps) include data collected from a variety of sources, including expert interviews, user surveys, and app usage data analysis. May be included. To provide a comprehensive overview of the app's sustainability.
- **Life Cycle Assessment:** Life Cycle Assessment (LCA) is a tool for evaluating the environmental impact of a product or service throughout its life cycle, from raw material extraction to disposal. The CHALO app lifecycle assessment can be used to assess the environmental impact of the app and identify opportunities for improvement.

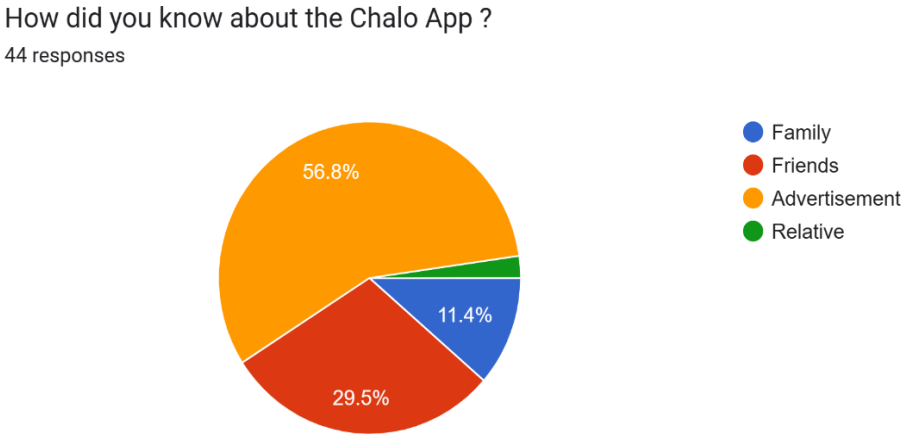
DATA ANALYSIS AND FINDING



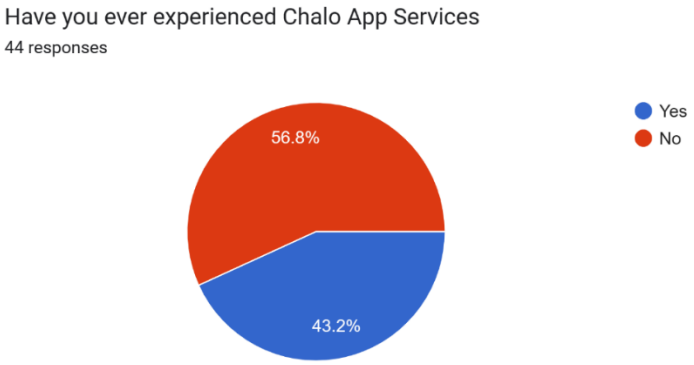
- **Majority respondents are Female 50%**



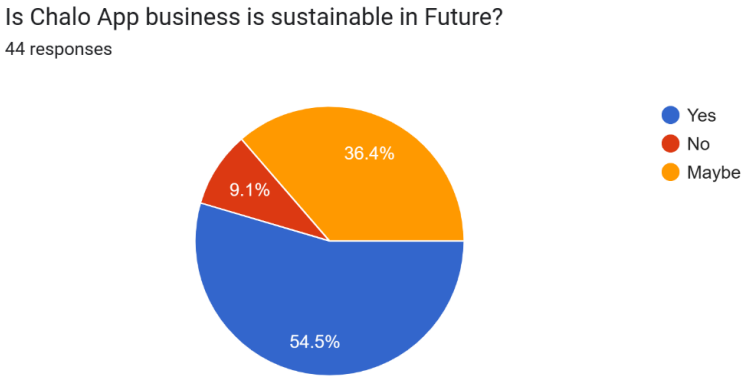
- **Majority of respondents is Yes 81.2%**



- **Majority of respondents in Advertisement 56.8%**



- **Majority of respondents is No 56.8%**



- **Majority of respondents is Yes 54.5%**

RECOMMENDATIONS

There are several ways to make the CHALO Bus Ticket app more sustainable. Please encourage the use of public transportation. Public transport is generally more energy efficient and environmentally friendly than traveling in your own vehicle. Use digital ticketing and payment systems that reduce the use of paper and plastic. Work with local governments and transport agencies to improve the sustainability of public transport. Consider offering incentives and rewards to users for environmentally friendly behavior. Using or carpooling public transportation. Optimize routes and schedules using data and analytics to reduce fuel consumption and emissions. Consider integrating with other modes of transport such as biking and walking to facilitate multimodal mobility. Work with suppliers and partners to reduce the environmental impact of the app and its operations. Use the app to promote sustainable travel practices and educate users about the benefits of using public transport.

CONCLUSION

This app helps users plan and pay for bus trips, making using public transport easier and more convenient. This app helped increase public transport usage and reduce the number of cars on the road, resulting in less congestion and less emissions. This app has helped improve the efficiency of the bus system by optimizing routes and timetables and reducing the need for paper tickets. The app created a new revenue stream for the bus system by allowing users to

easily purchase tickets and pay for additional services. Overall, the success of the **BEST** Bus CHALO app will depend on its ability to meet the needs and preferences of its users, as well as its ability to contribute to the sustainability of the transport system.

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A STUDY ON SUSTAINABLE ONLINE AUTOMOTIVE SERVICES-CARDEKHO

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ABSTRACT
Online businesses have developed because of the evolution of the internet. The Internet has given a platform to businesses to reach a vast number of audiences. People start using online business services at in the comfort of their homes. This provides an opportunity to businesses to explore the potential of online services. This paper discusses the growth and sustainability of online automotive services cardekho and how customers view online car purchasing, renting and selling as customers purchase small items online. The report shows that there is enormous potential in the online car services, which shows that people are accepting and trusting online car services. Some people are a bit skeptical regarding online car services, the quality of cars, proper condition of cars. The sustainability of the online business entirely depends on how the company presents the service quickly to its customers and how satisfied the customers are with the services related to cars provided by the company. This can help the company sustain itself in this industry for a long period.

Keywords: Online, Sustainability, Service, car

INTRODUCTION
Buying, selling and renting a car it`s challenging to get these services at one place. The Online platform has made it easy for service providers to provide all the services on a single platform. This helps customers to gather at one platform for all the solutions. Online car services will help us understand the potential as well as sustainability. The online car rental service will grow by 9.4% from 2021 to 2029. At first, we had to go to different places to render these services. To buy a car, we had to go to the showroom; to sell a car, we had to go to a place that mainly does the business of selling cars to rent a car we had to go to a different place

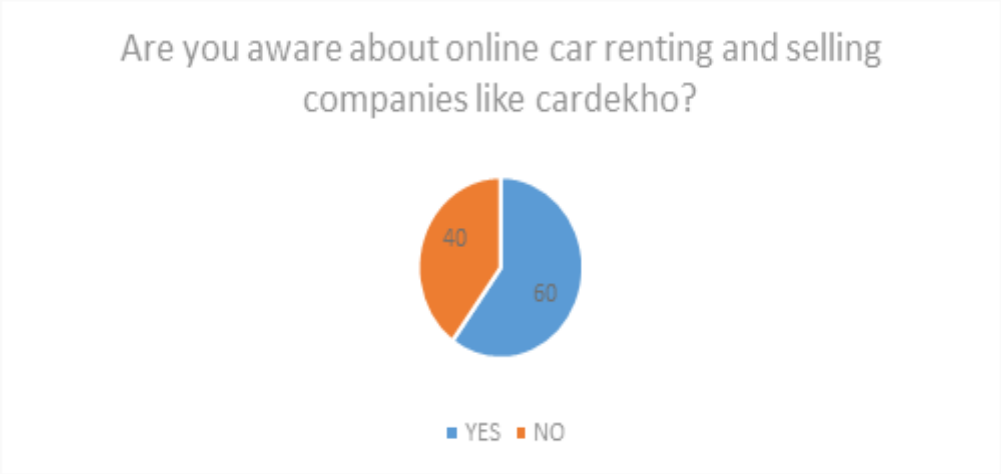
LITERATURE REVIEW
Anik Banerjee and Rishabh Rathee 2022 in their article startup talky Car dekho success story mentioned the usp, vision and mission of the company. They also mentioned the business model of the company. Aman Rawat 2022 in mint mentioned about the potential of the business and it's the gist of the finance of the company and how it can sustain the business in future. Manish Singh in his article tech crunch "CarDekho, from being a car research portal, has evolved to become a complete ecosystem for car buying, lifecycle management and selling,".Shubham singh in his article in successko mentioned about the services it offers to its customers It has come up with a new feature since last year where gives 360-degree interior/exterior views with sounds of the car and explanations of features with videos; search and comparison by make, model, price, features; and live offers and promotions in all cities. The platform also has used car classifieds wherein users can upload their cars for sale, and find used cars for buying from individuals and used car dealers. By 360 Degree the understanding related to the specific vehicle is great.

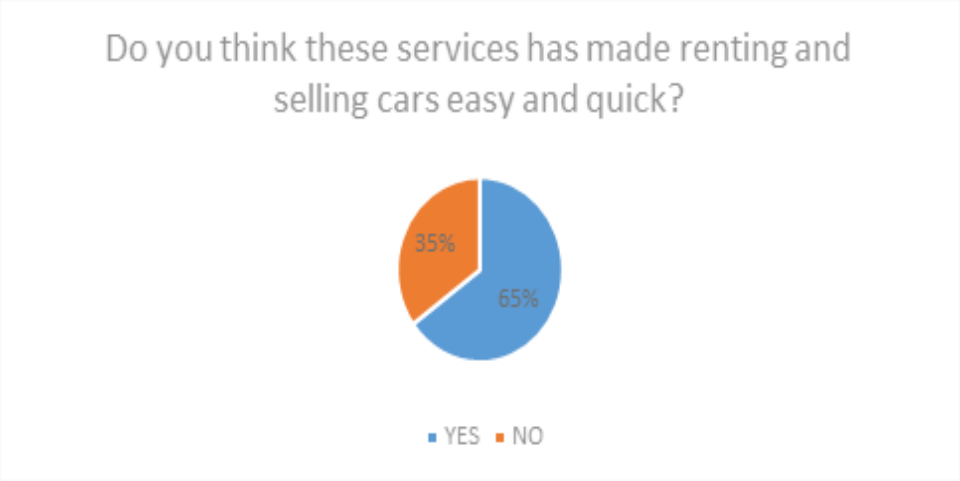
OBJECTIVES
1) To identify preferences of customers regarding the service
2) To understand the sustainability of businesss
3) To understand online market for car service

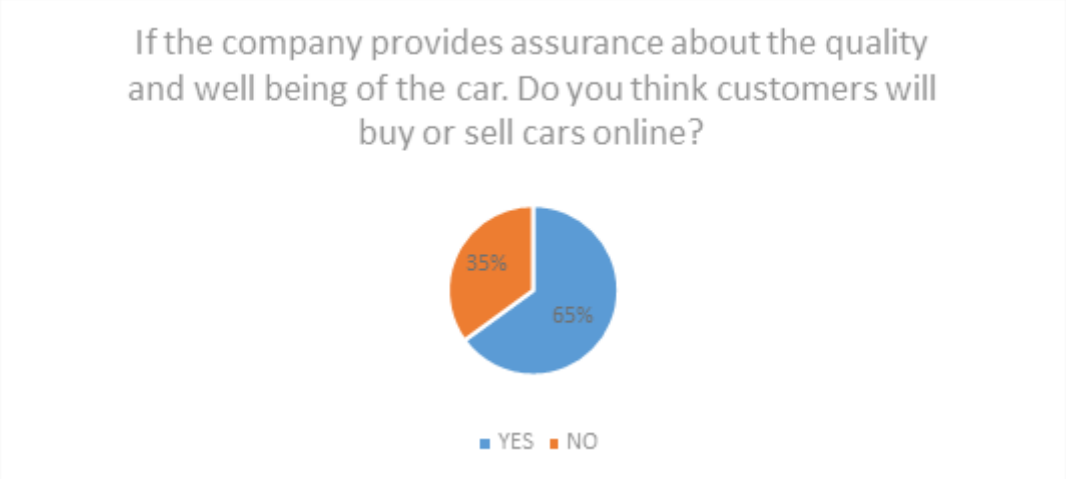
RESEARCH METHODOLOGY

The data collected for this research is a combination of primary and secondary data. The data collected for this research is a combination of primary data sources that is google forms and secondary data sources through publish journals, reports, internet, newspaper articles.

DATA ANALYSIS







FINDINGS

- Most of the people are aware about the online car buying, selling and renting services offered by the company cardekho
- 65% of the people believe that this type of online services has made car buying, selling and renting easy
- Most of the people are willing to use this platform to buy , rent or sell cars online
- People believe that they will get good price from online rather than buying from physical stores
- As other online services, online car services are recognised by the people and also some are bit sceptical about availing the online car services offered by the company
- With proper guarantee and proper condition of the car majority of the people are willing to buy cars online

RECOMMENDATIONS

- Better deals online attracts customers to buy cars from online rather than buying cars from physical stores.
- Awareness about the online car services should be spread through the medium of advertising, hoardings and newspaper

- Customers can be assured regarding online car services with customer reviews, safety and perfect delivery of the cars and smooth service experience given to them
- The company must understand what kind of service customers expect from them as online car service company
- There should be proper disclosure of cars condition, performance and owners of the cars if it is on rent so that customers can have full satisfaction of the services

CONCLUSION

As the future is towards digitalization and online business is growing enormously, it provides enormous opportunities to many different businesses, which were before in physical formats now customers can purchase any product or service from their home with one click. Online car services have the potential to grow and are sustainable and have made buying, selling and renting cars easy. The process of online car services is quick compared to physical stores.

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A STUDY ON CONSUMER BEHAVIOUR TOWARDS TWO-WHEELER ELECTRIC VEHICLE AND ITS SUSTAINABILITY IN INDIAN MARKET

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ABSTRACT

It's been centuries that the Internal Combustion engines have dominated the vehicle industry. Innovations have been a regular task in Internal Combustion engines from 2 stroke engines to 4 stroke engines and now with hybrid engines. This study focuses on consumer demand for EVs, given the impact of consumer innovation and concerns about EV functionality over Conventional vehicles. A conceptual framework is developed and implemented that includes technology ownership assessments and adoption-level innovation measures based on a cohort of psychological and social factors. Continued depletion of fossil fuels, environmental changes and rising prices calls for vehicles to replace IC engine Vehicles to electric vehicles. Electric vehicles have been adopted by the Indian Automotive Industry as an industrial and environmental solution. Although the government has issued an electronic vehicle regulation, the current market penetration of electric vehicles is very low. Hence the objective is to understand consumers behaviour and their perceptions about EVs. Data is collected through questionnaires and small market research.

Keywords: Electric vehicle, Batteries, Automotive industry, Consumer

INTRODUCTION

Today, **Electric vehicles** are a hot topic of future mobility. This increase has continued over the last decade, but electric vehicles have been around for a long time. The history of electric cars dates back to his 19th century. Anyos Istvan Jedlik designed an electric car prototype in 1828 but it was American inventor Scottish Robert Anderson who developed the first practical electric car in the 1830s.

William Morrison created the first electric car in the United States in 1891. His top speed in his six-passenger car was 14 mph (23 kms/hr). It was Morrison's invention that sparked interest in electric vehicles. Electric cars were known for their smooth, quiet rides and easy-to-control setups, unlike their steam and petrol competitors. Early gasoline cars required many switches to shift gears, which were dangerous and tiring, which led people to opt for electric vehicles, leading to the popularity and demand for electric vehicles.

It was around the same time that the hybrid version of the electric car was introduced. When EVs became popular in the United States in the 1900s, the total number of EVs accounted for 33% of the automobile industry. However, electric cars at the time could not travel long distances and with no infrastructure built up for promoting the same the electric vehicle technology went outdated and so it was also a time when their popularity began to decline. Gasoline cars replaced electric cars as roads and transportation improved, and speeds and ranges slowed, but in the late 1960s and 1970s, rising fuel prices and environmental concerns pushed electric cars into the market. gradually began to increase in need. However, it wasn't until the 1990s that electric vehicles gained significant momentum.

An electric vehicle (EV) which runs with one or more electric motors & these vehicles are powered by batteries that are charged via solar panels, or by converting fuel into electricity using fuel cells or generators. Electric vehicles are the future of the automotive industry and this shift in the automotive industry will challenge all established companies as well as start-ups.

The electric car was first developed in the late 19th century, when electricity was one of the preferred ways to power a car, as it offered a level of comfort and ease of use that rivalled the gasoline cars of the time provided internal combustion engines have been the primary method of powering cars and trucks for nearly 100 years. India's automotive sector in electric vehicle is a growing industry. Federal and state governments have programs and incentives to promote electric mobility in the country, and several regulations and standards are in place. Countries can benefit greatly from a shift from internal combustion engines to electric motors, but there are challenges such as lack of charging infrastructure, high initial costs and scarcity of renewable electricity. Still, e-commerce companies, automakers, app-based transportation network companies, and mobility solution providers are entering the space, gradually increasing the capabilities and awareness of EVs.

The first concrete decision to promote electric vehicles was made in India in 2010. Under a scheme of Rs 9.5 billion approved by the Ministry of New and Renewable Energy (MNRE), government has announced financial incentives for EV manufacturers to sell in India. The regulation, which took effect in November 2010, offers incentives of up to 20% on the ex-works price of a vehicle and is capped. However, the subsidy program was withdrawn by the MNRE in March 2012.

In 2013, India unveiled the 2020 National Electric Mobility Mission Plan (NEMMP), embarking on a major electric vehicle transition, addressing issues of national energy security, vehicle pollution and expanding domestic manufacturing capacity dealt with the program that will provide subsidies and create infrastructure to support electric vehicles, but the plans remained mostly on paper. In parliament he presented the federal budget for 2015-16 and then Finance Minister Arun Jaitley announced an initial expenditure of Rs 750 crore to accelerate the introduction and manufacture of electric vehicles (FAME). The program was announced with the aim of increasing sales of cars with clean fuel technology to up to 7 million by 2020.

STATEMENT OF PROBLEM

- **Lack of Efficiency:** Many start up companies have not met the required mileage of the vehicle and due to which promotion of the electric scooter is lagging behind.
- **Lack of Infrastructure:** Even though many companies or people have started using electric scooter but there are some problems in the infrastructure i.e., charging station availability in in pumps, time consuming for charging it & lack of service station here people can maintain their vehicle.
- **Lack of Safety:** The batteries that are fit in the scooter are not protected that well as it catches fire in heat.
- **Low Speed Limit:** Due to less speed limit in the electric scooter the time taken to reach the destination is high.

LITERATURE REVIEW

(Exploring consumer preferences towards electric vehicles: The influence of consumer innovativeness, 2016)

They focused on understanding consumer responses to EVs by assessing whether their ability to innovate is related to their stated preferences for EVs. He defined consumer innovation as innate consumer innovation, revealing a willingness to accept new items with different or more sophisticated features and functions. The technical specifications of electric vehicles differ significantly from those of internal combustion engine vehicles. The real differences between electric vehicles and conventionally powered vehicles include range,

price premium, operating costs, fuel consumption habits and environmental benefits. As a result, some analysts see electric vehicles as a type of disruptive innovation (Christensen, 1997). Due to the unique characteristics of electric vehicles and the low volume of current sales (DfT, 2013), it is difficult to predict the expected consumer response based on the existing market.

(Nath, 2021) His journal states that the Indian government amended the current FAME-II (Faster Adoption and Manufacturing of Electric Vehicles-II) initiative in June this year. The government will instead increase the subsidy rate for electric two-wheelers from Rs 10,000/kWh to Rs 15,000/kWh and limit incentives to his 40% of vehicle cost, thereby closing the price gap between petrol and electric two-wheelers, it was previously 20%. The policy aims to install at least one charging station per 3km x 3km grid, with approximately 2,700 charging stations in major cities, other cities with populations over 1 million, smart cities and hill state cities across the country. charging stations are also supported. In addition, charging stations are planned every 25 km on highways.

(Tornekar, 2020), he cites eight possible reasons for the slow growth of EVs in India. He argues that charging times, EV prices, range depending on battery capacity, charging infrastructure, limited battery life, fear of new technologies, lack of government incentives, advertising and awareness campaigns are the key said to be an obstacle to the growth of EV.

(Kalra, 2022) A survey of 63% of consumers found EVs to be over budget, but capital costs have always been a major issue in EV purchasing decisions. The lack of adequate charging infrastructure in our country is a major impediment to the widespread adoption of electric vehicles. But major OEMs are also taking steps to enter the EV components industry to reduce their reliance on imports and meet the government's 50% localization requirement for government subsidies.

OBJECTIVES OF THE STUDY

- To understand market for electric two-wheeler vehicle and its sustainability.
- To understand the challenges, foresee by consumers while choosing petrol vehicle over electric vehicle.
- To know more about consumer understanding towards Electric Vehicle.
- To understand popularity and brand image of Revamp Moto.

RESEARCH METHODOLOGY

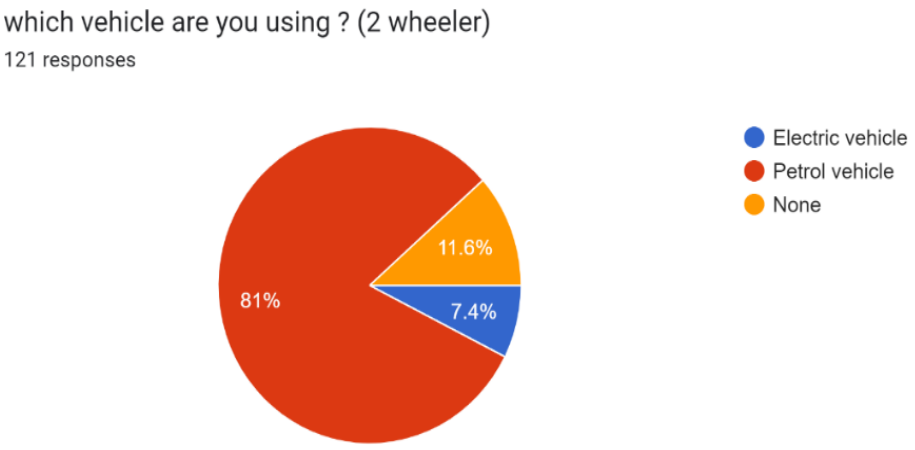
This research is descriptive and quantitative in nature. The data was obtained from students & parents of SIESCE Sion East. Descriptive study can provide a clear picture or description as possible. The research paper describes the Consumer behaviour of people towards electric scooter. The primary data was collected with the help of a questionnaire which consisted of 20 questions. Survey was conducted through Google forms. 121 responses are collected between the age group 18 – 50 years as the target audience.

- **Research Design:** Survey search
- **Sampling Method:** Convenient sampling
- **Sampling Unit:** Middle age group
- **Data Collection:** Primary and secondary data
- **Method of Data Collection:** Questionnaire
- **Types of Questionnaires:** Open and close ended questions
- **Software Used:** Google forms

DATA ANALYSIS & FINDINGS

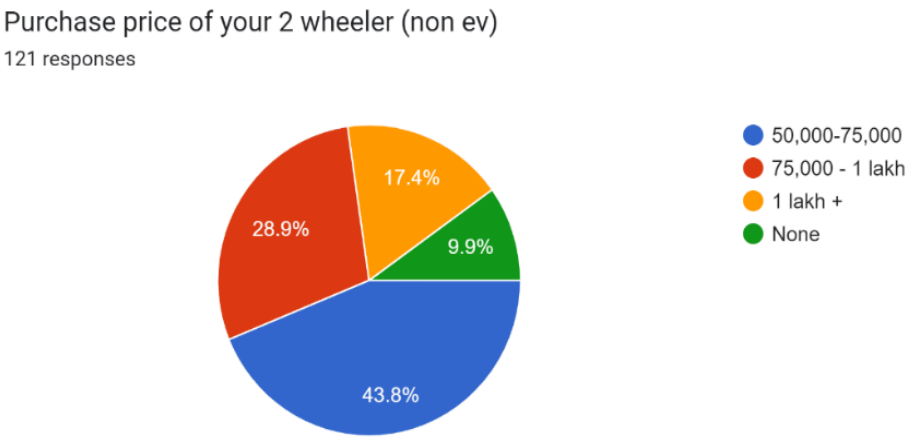
- The following pie diagram shows **Current vehicle they are using two-wheeler which either electric or petrol or none.**

Almost 81% (98) use Petrol vehicle, 7.4% (9) use Electric vehicle and 11.6% (4) doesn't use any two-wheeler vehicle.

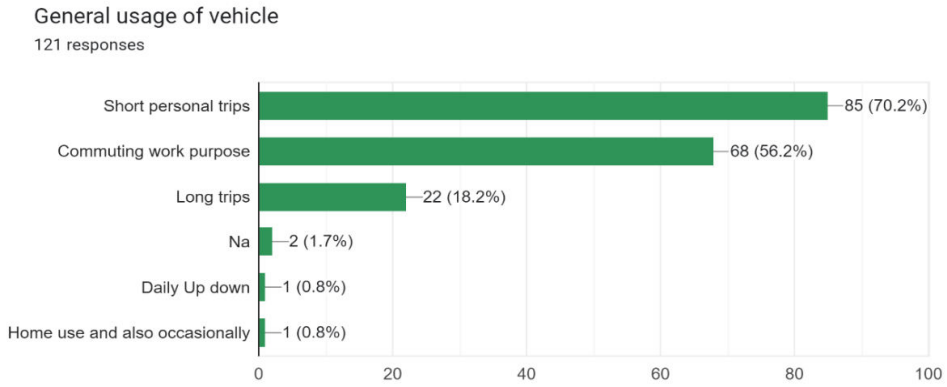


- The following pie diagram shows **Purchase price of respondent 2-wheeler non-EV.**

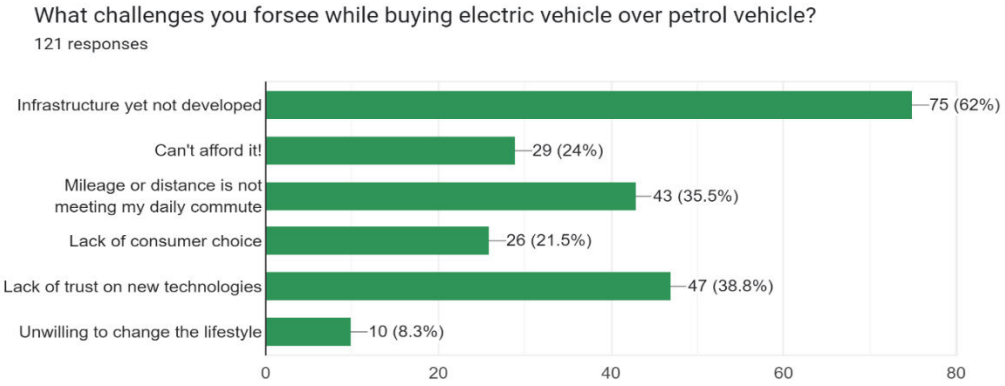
43.8% (53) respondent purchase price is between Rs.50,000 to 75,000, 28.9% (35) respondent have purchase price between Rs.75,000 to 1 lakh, 17.4% (21) respondent have purchase price above Rs.1 lakh & 9.9% (12) does not have purchased two-wheeler.



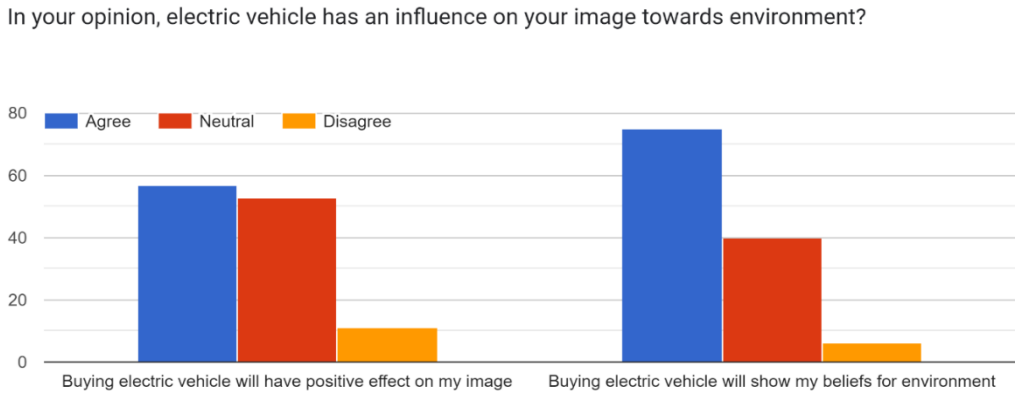
- The following graph shows **General usage of 2-wheeler vehicle by the respondent.**



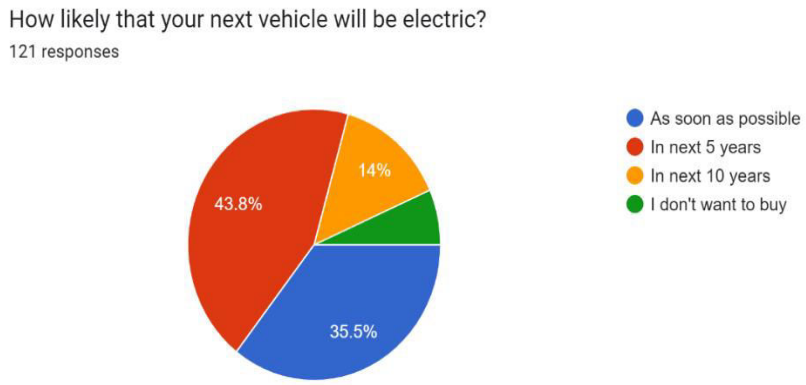
- The following Bar graph shows the **Challenges that foresee the respondent while buying an electric vehicle over petrol vehicle.**



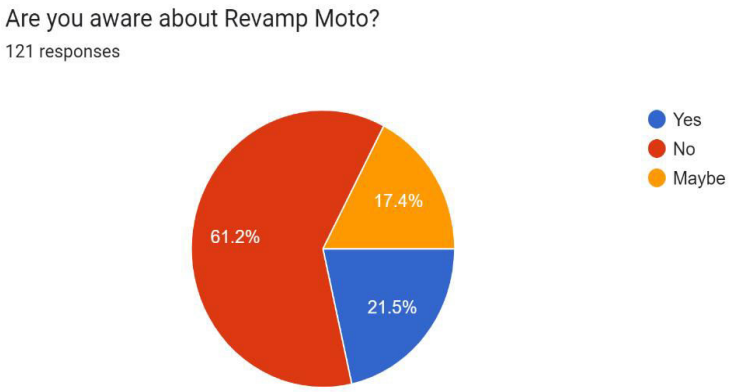
- The following graphs talk about the Opinion of respondent about electric vehicle having an influence on your image towards environment. There are nearly 47.9% respondent says Buying electric vehicle will have the positive effect on my image & 66.17% respondent says Buying electric vehicle will show my belief for environment



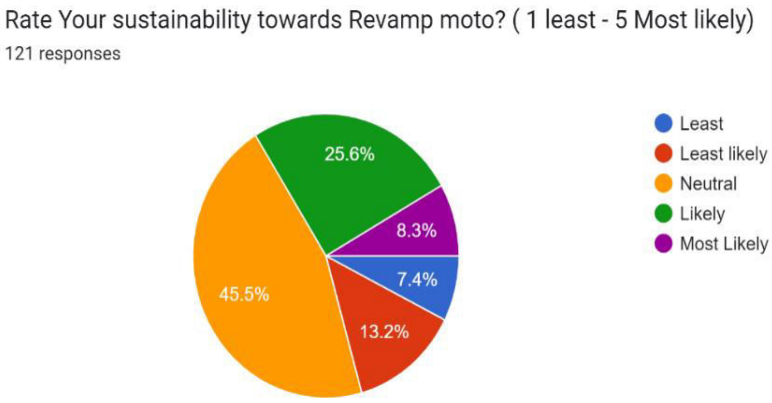
- The following Pie diagram talks about **How likely the next two-wheeler vehicle will be electric?** Almost 35.5% (43) are buying it as soon as possible where as 43.8% (53) respondent will be buying their next two-wheeler vehicle in coming 5 years down the period.



- The following pie diagram ask about the awareness about Revamp Moto company. Nearly 61.2% (74) respondent are not aware about Revamp moto, 21.5% (26) respondent says they are aware about the Revamp Moto company and rest are Maybe aware about the company.



- The following pie diagram talks about the Sustainability of Revamp company. Nearly 45.5% (55) respondent are Neutral about the company sustainability 25.6% (31) respondent are likely that company may sustain.



RECOMMENDATION OF STUDY

Since the ages people are using the petrol two – wheeler vehicle even though the prices of the petrol are at peak level and though petrol vehicle are highly polluting our environment in turn which highly increasing global warming. Though electric vehicle is a second option over the petrol vehicle still we are finding through the study challenges in the adoption of electric scooter.

The reasons are as follows

- High cost of electric vehicle over the petrol and high cost of maintenance.
- Lack of infrastructure development facilities in the nearby areas.
- Research should be done on reducing the time for charging the batteries
- Companies need to work more on the body structure so that after looking to the scooter people may get attracted.
- Strategically for long term sustainability thrive on charger infrastructure being built by various power distribution companies rather than battery swap.
- 1.5hrs, 70km range at speed of 25kmph is not an exciting combo to switchover specified price tag.
- The government has to work on the addition of more incentives under its ambit by slashing GST on EVs to 5% will be great move which must be complemented by other tax benefits.

As far as the Revamp Moto company a start-up in the Electric scooter is concern though their two-wheeler is costing lower than their competitors but the failed to attract consumer as 1.5hrs, 70km range at 25kmph speed is not an exciting combo to switchover specified price tag. They have to also work on the above factors to sustain in the market.

CONCLUSION

Majority respondent are ready to buy the electric scooter in coming years as the high petrol price and exhaustion of the fossil fuel resource with increasing in the air pollution due the internal combustion of engine which is increasing the global warming with uncertainty of the weather. But still people are holding back their foot because of high price with low a mileage, lack of infrastructure. This is why the majority of consumers are against buying EVs & also lacks consumer awareness of about the electric vehicles. So, in coming years if there is better infrastructure, awareness campaigns and EV promotional activities will surely help this industry to penetrate the Indian automotive market

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A STUDY ON CUSTOMER SATISFACTION TOWARDS ELECTRIC VEHICLES

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❖ ABSTRACT

A study of electric vehicles helps us to gain knowledge about electric vehicles compared to normal vehicles. To Spread awareness about the electric vehicle knowledge and what people thought regarding the electric vehicles. For this I had conducted a survey between ages of 18-60 to know about electric vehicles. India is the second largest producer and manufacturer of two-wheelers in the world. It stands next to Japan and China in terms of the number of two-wheelers produced and domestic sales. The Indian two wheeler industry has had spectacular growth in the last few years. The face of the auto industry that was redefined with the invention of fuel-efficient technology is all set to see the dawn of a new era in the two wheeler industry. It's not petrol or diesel or any other fuel, but it is electricity that has initiated a revolution in the two-wheeler industry in India.

Keywords: Electric bike, Two-wheeler, Scooters, Fuel-efficient, Energy saving

❖ INTRODUCTION

KLB KOMAKI has ventured in the ELECTRIC VEHICLE BUSINESS since 2016. This is one of the most reliable and well equipped manufacturers of Electric Vehicles with best services at nominal prices. Komaki Electric Vehicle Division includes E-Rickshaw, E-Scooty & E-Loader. All vehicles have been manufactured with highest quality spare parts with arrangement for excellent customer service.KOMAKI ELECTRIC SCOOTY ''XGT KM'' is our top selling model. The vehicle is trendy, comfortable, lightweight and the adapter can be attached easily to the socket at home or at work for charging. We have been delivering it for 2 years now and with increasing sales our target of 1 lakh E Scooties will be achieved until 2019 Our infrastructural unit is based in Thrissur, Kerala and Kapashera, Delhi with offices and warehouses in Delhi NCR. We have a well equipped production and assembly unit accompanied with an excellent sales and marketing team aiming to provide highest quality product and after sales services. With the rising cost of fuel at International level, increasing levels of pollution and congestion in the transport system the electrically charged bikes or scooters have a very bright future in the area of personal transportation.

❖ OBJECTIVES

- To find out the awareness of consumers about the Komaki electric bike in Mumbai city.
- To find out the reason why consumers refer to Komaki electric bikes.
- To find out the factor influencing the sales of electric bikes.
- To find out the market share of different manufacturing companies dealing in electric bikes.

❖ LITERATURE REVIEW

C Simon Washington, Nareiaee Haworth (2014) clarified that there are as of now in excess of 700 urban communities working bicycle share programs. Indicated advantages of bicycle share incorporate adaptable versatility. Physical movement. Emanations and fuel use. Certain or express in the figuring of program benefits are presumptions with respect to the methods of movement supplanted by bicycle share ventures. An optional and remarkable common and support, two parts are then consolidated to gauge the bicycle 's general commitment to changes in vehicle kilometers voyaged**.**

James Belies, Pyrou Chung, James Macdonald (2013) led an examination on "Empowering

E bike utilization: This report looks at the control of intensity helped bikes in Australia and abroad. The present controls are investigated and purposes behind updating the directions in Australia are plotted. The examination investigates the issues of significance to the encircling of controls covering these vehicles, and recognizes the activities that are expected to empower these vehicles to make a bigger commitment to the urban transport assignment.

Hatwar, N.; Bisen, A.; Dodke, H.; Junghare, A.; Khanapurkar, M. (2013). Projected a new approach in the design of e-bike which consists of a hybrid system of battery and super capacitor for increasing speed, and avoiding the complaints of long charging time and short lifespan of battery.

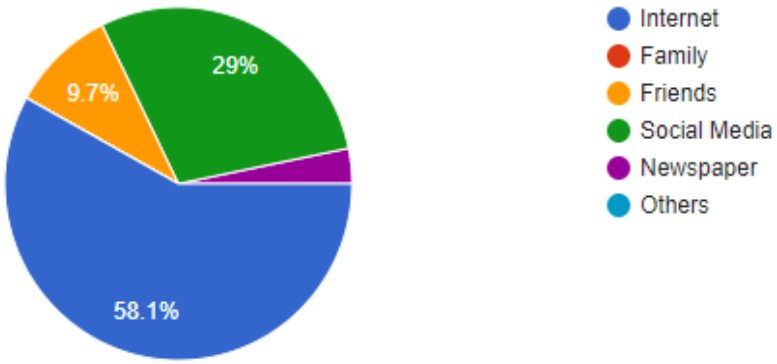
❖ RESEARCH METHODOLOGY

- **Sources Of Data** - The data for the research is collected from both primary and secondary sources.
- . **Primary Data** - The Primary data has been collected through the form of a questionnaire. The questionnaire was prepared beforehand and it was prepared through the study. The questions are all based on the research topic and each question is prepared with a focus of getting useful knowledge which is informative data. All the questionnaires are prepared in the Google form and all the responses were collected through it.
- **Sampling Method** - Simple Random sampling Method has been used to collect the data for research study. Since the study is about Komaki electric vehicles the data has been collected from the age group of 18. The form was circulated to people of this particular age.
- **Secondary Data** - The secondary data has been used for the research paper which made it easy to acknowledge it. The secondary data was collected from various websites, articles and journals. This adds accolades to the research study.
- **Tools For Analysis Of Data** - The tools used for the research study are mostly using pie charts and graphs with the Google form and most of the data are analysis in percentage form.

❖ DATA ANALYSIS AND FINDINGS

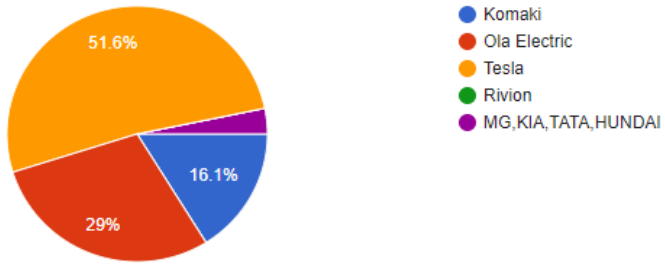
In view of the above mentioned objectives, the study is derived by taking surveys via Google form from the Students, College dropouts, Freshers, etc whose age were above 18. The questions were raised based on the Consumer awareness towards electric vehicles.

★ From where did you get familiar with the term Electric Vehicle?



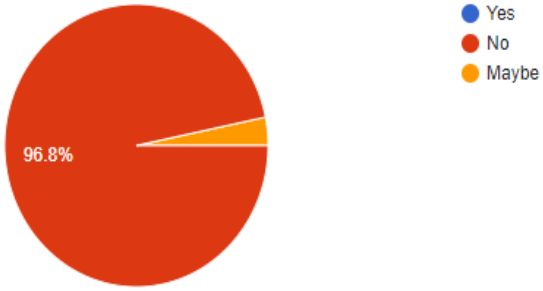
As per above pie-chart that almost **58%** of people were familiar with the Electric vehicle through the Internet. And **29%** of people through Social media and around **9%** of people through Friends and remaining through Other sources like newspapers, etc.

★ Which companies selling Electric Vehicles have you known ?



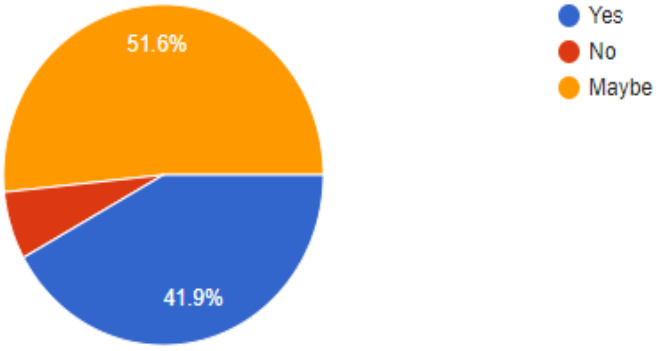
As Tesla is a well known mnc company around **51%** of peoples know Tesla for electric vehicles and **29%** of peoples were thinking about Ola electric. Only **16%** of people were aware of Komaki company, which is kind of a start-up company.

★ Have you bought any Electric vehicles from Komaki ?



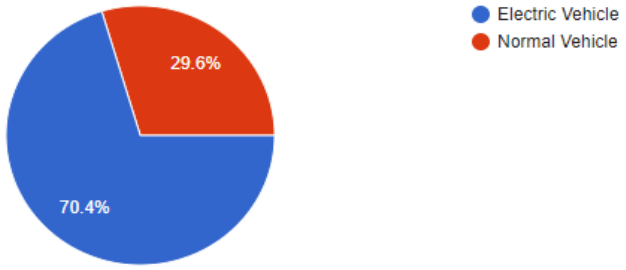
As per above pie-chart, Comparing with the top mnc's, **very few percent** of peoples bought electric vehicles from Komaki.

★ Are electric vehicles safe?



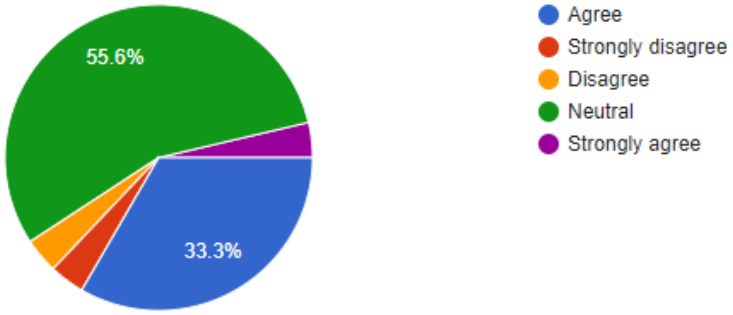
As per above chart, **only 40%** of people think electric vehicles are safe and **almost 50%** of people are not sure about electric vehicles safety.

★ **Would you prefer an Electric Vehicle or Normal Vehicle running on fuel and diesel?**



Almost **70%** of people were thinking about going with electric vehicles rather than normal vehicles due to the rise in the price of petrol. And **29%** of people still think normal vehicle better than electric vehicles.

★ **Are Electric Vehicles more comfortable than Normal Vehicles ?**



As per above pie-chart, **55%** of people are still not sure with the comfortness of electric vehicles compared to normal vehicles. **Only 33%** of people are okay with electric vehicles.

❖ **SUGGESTION**

➔ Electrical-bikes are utilized just for short separation due to low battery limit, so producers should focus on innovative work to expand the limit of Electrical bikes.

➔ Another significant issue in Electrical-bikes is the requirement for visiting charging of the batteries, to conquer this issue charging focuses ought to be opened at different spots.

➔ More number of service centers need to be opened at least in major areas to cater to the problems & needs of the customers when needed.

➔ As most of the people prefer high speed, the speed of the electric bikes need to be improved so as to increase the sales of the Electrical-Bikes.

➔ Promotional activities should be increased to create awareness and increase sales. Like it should be displayed in auto shows and to attract more youths, demonstrations and special offers should be given to college students.

❖ **CONCLUSION**

The concept of e-bike has entered into Mumbai in the past 4-5 years and the same is gaining momentum, as there are around 10 dealers currently for e-bike in the city. As an eco-friendly

product it is more suitable for the city as it can reduce the emission of harmful gasses and thereby it can reduce the atmospheric pollution. Due to frequent increase in the fuel prices, the electrically charged vehicles seem to be the cheapest one compared to the traditional vehicles. Electric bikes are more suitable for rural areas where the numbers of petrol bunks are not adequate, so that the rural people can charge the vehicle with the help of electricity.

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RESEARCH ON ELECTRIC BIKES [REVAMP MOTO] AND ITS SUSTAINABILITY

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ABSTRACT
The world in the recent past has been dealing with an acute problem of rising carbon emissions, leading to a rapid increase in pollution globally. As per Energy Policy Institute at the University of Chicago (EPIC) data, there has been close to a 61% increase in pollution since 1988 in India. This brings us to the solution of Electric vehicles. Electric vehicles run on rechargeable batteries and cause close to no air pollution. Revamp Moto is an Automotive Ev startup with a vision of empowering society with sustainable adaptive solutions. We are developing modular and adaptive electric 2-wheeled platforms. This research is conducted and documented to further understand the company and the sustainability aspect in the long run.

Keywords: Electric Bikes, Revamp Moto, Sustainability

INTRODUCTION
Travel is part of everyone's daily life. The floating population in and around Mumbai itself in a single day is close to 1 crore. The number of vehicles used also will be extreme. All this is causing excess pollution. The population is just rising and the same is the number of vehicles on the road and the pollution.

To tackle this issue countries around the globe have started the implementation of electric vehicles. E-bikes have been a relatively nice option as a replacement. Electric bikes are been rolled out in massive numbers in India. There are multiple players in this sector [Eg: OLA, Ather etc]. Revamp Moto is a very recent startup based out of Nashik. The company is into developing modular and adaptive electric 2-wheeled platforms. Revamp Moto runs with a motto of bringing sustainability to all aspects of the product. It has 2 products to date. The first product is a commuter-friendly bike RM Buddie 25. The bike has a range of 70km, a top speed of 25km, a payload capacity of 120kgs and will be fully charged in under 3 hours. It can be retrofitted with basic carriers and platforms for additional baggage. The other product is RM Mitra which is built with the purpose of helping small businesses and individual sellers. This e-bike model is bigger in size and has a higher payload capacity. The retrofitting in this model is targeting small businesses like grocery sellers, medical field, food carts etc and who can provide better service with reduced cost and sustainability kept in mind. The added platform can carry a variety of things like insulated boxes for a vaccination drive, and a small portable cooking setup for a tea or food seller or grocery seller who wishes to give a personalized customer experience. Through this E-bike model, the company aims on providing sustainable solutions. The sellers also end up following sustainability, as their production process and setup are made more compact and portable. The company Revamp moto was recently presented on the show Shark Tank and they received investments from a few of the investors for their amazing products.

Statement of Purpose
- To understand the rising trend of Electric Bikes.
- To study Revamp Moto and its sustainable EV products.
- To understand how sustainable and profitable are E-Bike

LITERATURE REVIEW
Environmental impacts of hybrid and electric vehicles - Troy R. Hawkins, Ola Moa Gausen & Anders Hammer Strømman. The International Journal of Life Cycle Assessment volume 17. This study focuses on the environmental impacts of electric hybrid form of vehicles

Adoption of electric vehicle: A literature review and prospects for sustainability - Rajeev Ranjan Kumar KumarAlok. Journal of Cleaner Production Volume 253. This research paper focuses on the adoption of electric vehicles in the future.

Enhancing Sustainability of Electric Vehicles: A Field Study Approach to Understanding User Acceptance and Behaviour - Thomas Franke, Franziska Bühler, Peter Cocron, Isabel Neumann, Josef F. Krems. This is a key study that focuses on improving the sustainability of electric vehicles and understanding consumer behaviour.

A systematic review on sustainability assessment of electric vehicles: Knowledge gaps and future perspectives -Nuri C.OnataMuratKucukvar. Environmental Impact Assessment Review Volume 97. This study gives an overview of electric vehicles and their advantages, disadvantages and future prospects.

OBJECTIVES OF THE STUDY

The ongoing research extensively studies the sustainability of electric bikes and the sustainability of Revamp Moto products.

- To study the benefits of E-Bikes both environmental and financial benefits. Given the current climate deterioration, consumers want to know if the product is a green product economically.
- To understand the products manufactured by Revamp Moto.
- To understand the significance of these products and their utility.
- Why are consumers shifting towards Electric vehicles?
- Are Electric bikes safe to use given the recent battery and safety issues?
- To understand sustainable policies taken by the company.

RESEARCH METHODOLOGY

It enumerates the description of the sampling plan, the research instrument used for the collection of data pretesting of questionnaires, and the use of statistical tools & techniques for the analysis of the collected data.

Scope

The scope was limited to the geographical boundaries of Mumbai.

Need of Study

To improvise the shopping experience in the country by highlighting the existing problems, identifying the root cause & working on providing solutions for the same.

Research Design

It is an arrangement of plans, which guides the collection of data and analysis of data. The purpose of the research design is to ensure that the data collected is accurate & relevant. Any research work requires clarity of objective to be achieved.

Data Collection Method: The type of method used is Convenient Sampling.

Primary Data: For this, we have made a set of questionnaires & circulated it through google Forms so that we can collect data considering covid restrictions.

Secondary Data: It will be collected to add value to the primary data. Newspapers, Journals, and Research Papers of 2-3 people.

Research Instruments

For the research, a questionnaire was formed to interview the respondents, while designing the questionnaire every attempt was made to make it precise so that the purpose of filling up the responses does not consume time.

The questionnaire was made & circulated through Google forms making it convenient for every respondent to fill it in their leisure.

Selection of Population

The study has been limited to Mumbai. The majority of the population consisted of Graduation Students followed by homemakers, women & working people.

Limitations to the Survey

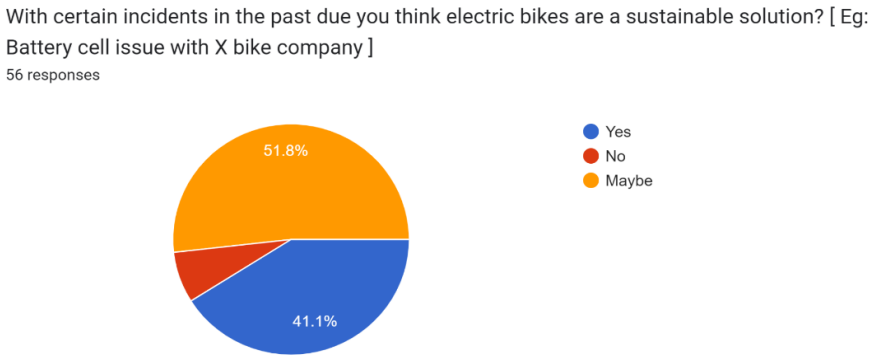
Considering the time constraint, and the type of data collection we had, the actual results might vary marginally from the original data.

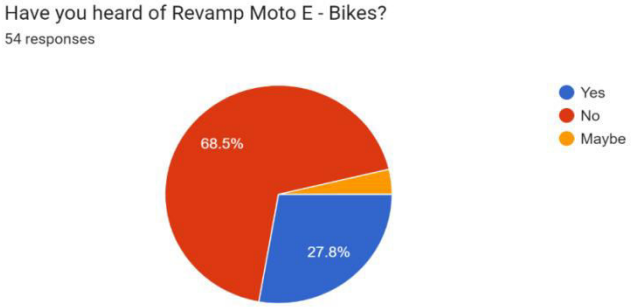
DATA ANALYSIS AND FINDINGS

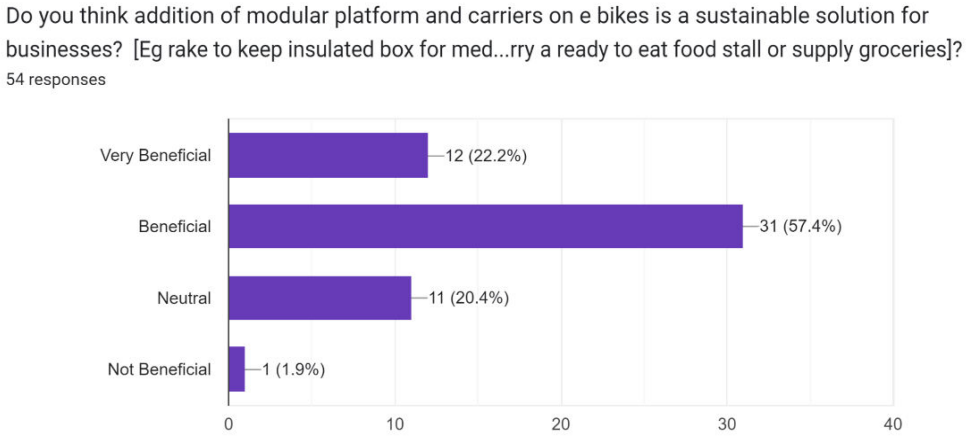
The age group who answered the questionnaire was as follows:

25.9% - 15 to 20, 37% - 20 to 25, 1.13 - 25 to 30 and 35.2% - 30 and above. The percentage of females who answered is more than males.

Surprisingly 90.7% of the respondents don't own an E-Bike but close to 90% of them think that E -bikes will help reduce pollution over time. However, there are concerns over the recent battery fire incidents and the poll shows close to 40% are still confident about buying e-bikes.







- From the above responses, it is clear that consumers appreciate the concept brought in by Revamp Moto and would prefer to buy their products.

RECOMMENDATION

- Companies should arrange for the production and supply of batteries for their e-bikes.
- Sustainability should be implemented in all aspects of the company. Eg: Recycling old batteries. It's done in the Netherlands.
- Stringent regulations should be placed in the production of e-bikes [with respect to design and product manufacturing].
- Charging has been improved in the updated version of the bikes, however, placement of charging points at regular intervals is necessary.
- Government subsidies could further push the product and help consumers buy it at a lower price.
- Better advertisement of the product and benefits. Awareness programmes to tap the rural market.

CONCLUSION

It has been found that most consumers prefer electric bikes. The products offered by Revamp Moto also seem to appeal to the consumer as it's both design friendly [customisable as per demands] and also come with extra utility space like carriages for goods, and medical boxes. Small business owners and single sellers find this product really useful as it saves time, space and money for them. They can run their business operations from the bike itself and still make it economical for the business. Products like RM Mitra and Buddie 25 should be popularized more and pushed further in the market. With the rising fuel prices and the thought of sustainability in mind, there is a wave of change towards electric vehicles. Therefore this segment of the market is on a bullish trend. With a few tweaks, e-bikes will be a great product.

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SUSTAINABILITY OF ELECTRIC BIKE

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ABSTRACT
This study examines the viability of electric bikes and the difficulties individuals have while purchasing them. It shows how businesses are using various strategies to enhance sustainability. Additionally, it investigates the several advantages of buying an electric bike.

Keywords: Electric bike, Sustainability, Environment, Electric vehicle.

INTRODUCTION
The desire for green transportation solutions can be connected to the increased awareness of environmental challenges. We've all encountered many car kinds this year whose major goal is to lower carbon emissions. The bicycle has evolved from being a dated form of recreation to a cleaner mode of transportation and a small, lightweight tool for personal mobility. Electrical bicycles will be employed in large cities all over the world as the foundation for individual public transportation in this way. The e-bike idea has not been fully developed, and there has been little research on the parameters of e-bike travel behaviour. The goal of this study is to identify sustainable strategies for raising e-bike awareness around the world. The external costs of transportation, such as those related to air pollution, noise, traffic congestion, and accidents on the road, are the main emphasis of modern urban transportation strategies. These expenses are mostly a result of the city residents' predominate use of individual transportation, primarily transportation by vehicle. Utilizing bicycles to meet the transportation demands of city dwellers is consistent with the idea of sustainable urban development because, aside from walking, bicycle riding is the most ecologically friendly form of transportation for city dwellers. Bike-sharing projects have been developed in order to enhance the proportion of bike journeys in the modal split of various cities across the world. According to **Vahan Data**, India's sales have climbed by **2.7 times in 2022**. They have been successful in selling **388,000 units** in the first nine months of 2022.This research article discusses the numerous benefits of using an e-bike or an e-cargo for transportation. The positive consequences of an electric vehicle on the environment and its inhabitants are listed below.

Reduced fuel usage required to meet the transportation needs of city residents Congestion has been reduced.

A decrease in the amount of noise and pollution produced by vehicles running on fuel; Adding to the availability of an urban transportation system.

LITERATURE REVIEW
The India Energy Source Alliance (IESA) predicted that through 2026, the Indian electric vehicle market will expand at a compound annual growth rate of 36%. Electric cars make up up to 2% of the auto industry, which contributes for 7.1% of India's GDP, according to Hidrue et al (2018). After the years 2020–2021, when more brands and efficient cars debuted and consumers started to choose electric vehicles over traditional two-wheelers, there hasn't been much study on the customer experience. According to analysis conducted by consulting firm RBSA Advisors, "India's electric vehicle (EV) sector is anticipated to increase at a compound annual growth rate (CAGR) of 90% in this decade, reaching $150 billion by 2030." In terms of penetration, only 1.3 percent of all vehicles sold in India in 2021 will be electric cars. Contrarily, the market is rapidly growing and is anticipated to increase in value. A gigaton of carbon dioxide emissions might be saved by India's move to shared, electrified, and networked

mobility by 2030. The sheer quantity of India's population and the expansion of its cities only serve to highlight the significance of e-bikes and scooters. In the majority of the globe, these causes contribute to climate change and pollution.

In India, the idea of electric mobility is not new; it was initially advocated in early twenty-first-century ideologies that prioritised pollution control. Soon after the 2015 Paris Climate Summit, governments from all around the world pledged to reduce their carbon footprint and achieve carbon neutrality with renewable energy. In both industrialised and developing nations, including India, e Mobility swiftly rose to become the preferred means of transportation. Experts have noted that the widespread use of electric scooters and scoots will remove the growing number.

OBJECTIVE

To comprehend the steps a company takes to cut carbon dioxide emissions.

To comprehend the level of consciousness across various age groups

To comprehend how the business contributes to the creation of a clean environment

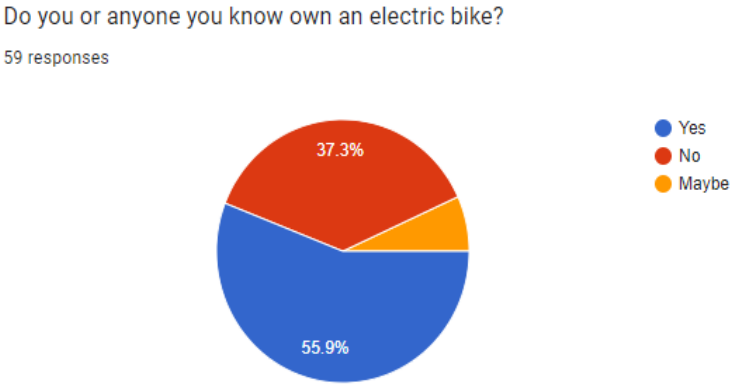
RESEARCH METHODOLOGY

According to the present poll, which was performed among individuals of different ages, roughly 93.3% of the public has heard about electric bikes. Most of them have discovered them through social media. The government should take the required actions to lower the price of these bikes because there is a significant demand for electric bikes. When making a purchase, over 82.2% of people consider the product's price and durability. There are fewer odds of global warming if these bikes are replaced with standard bicycles. Your movement and riding experience are more liberated with electric bikes. With the battery and charging infrastructure, you can go further, quicker, and for longer distances. The nicest thing about riding a battery-powered bike is how easy you can avoid the heavy traffic and clogged roads that are typically seen in rural areas. When compared to ICE cars, e bikes provide cheap and economical transportation alternatives, and battery bikes' lower number of moving components also lowers maintenance costs. You can ride more quickly to work, school, far-off trails, and wherever else you want to go with it as well. To have the best riding experience, you may also combine your Electric Bikes in India with extra electronics and sensors.

The survey found that the cost of the bikes was the primary deterrent to buying an electric bike. These bikes should be sold to clients at a considerably lower price than other bikes because they are environmentally beneficial. According to business studies, there are significant differences at the management and innovation levels when put under comparison (Roth Cardoso et al., 2020). Therefore, governmental or business e-bike promotion programmes are essential. The adoption process may heavily rely on the daily marginal cost or daily cost savings. In addition to providing evidence that customer pleasure increases the psychology of cost-savings, cost-saving considerations during the purchasing process may be a key approach for the adoption of e-bikes (Van Poucke et al., 2016). Furthermore, the customer's immediate goal is to realise cost saving.

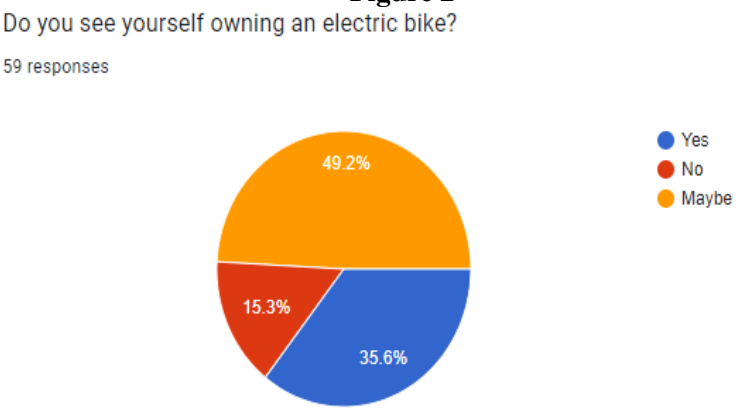
DATA ANALYSIS AND FINDINGS

Figure 1



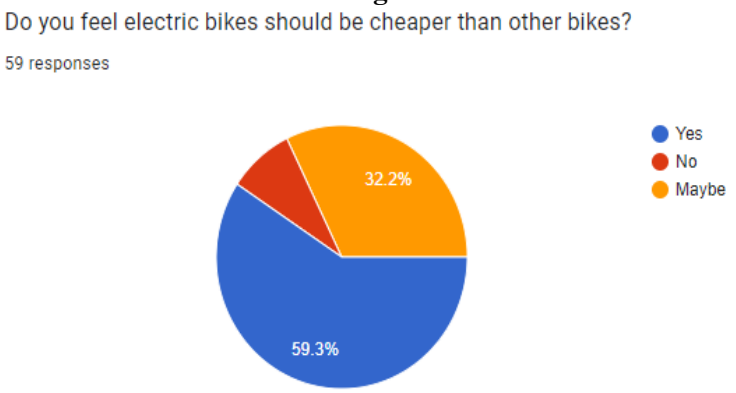
In figure 1 we can see that 55.9% people already own an electric bike. Remaining 37.3% don't own an electric bike.

Figure 2



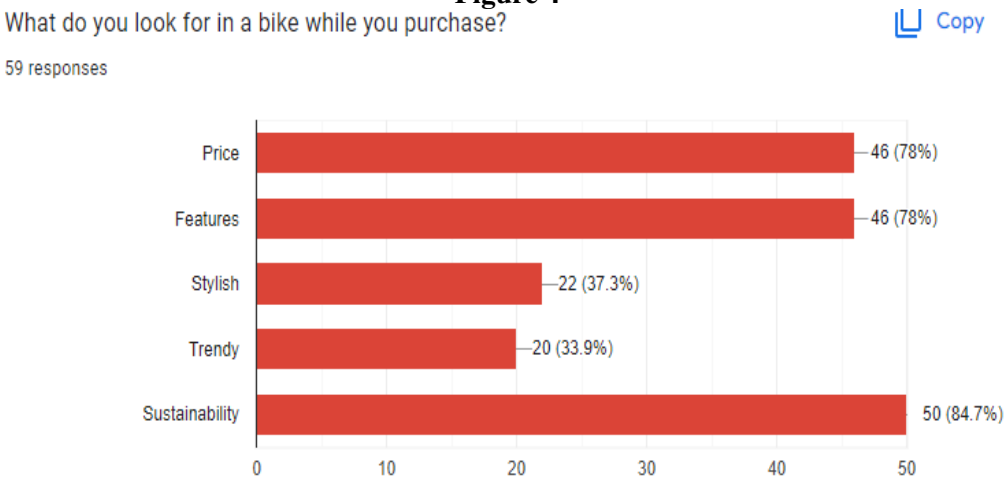
In figure 2 we can see that 49.2% people are not sure whether to invest in an electric bike. This is due to the lack of awareness about the advantages provided by them. In order for people to buy electric bike the government must make sure that there is awareness spread to the people.

Figure 3



According to the survey 59.3% people believe that the cost of electric bikes should be lesser than other bikes.

Figure 4



In figure 4 majority of them check the sustainability before buying.

RECOMMENDATIONS

The purpose of this survey was to understand how individuals feel about utilising electric bikes and how businesses are promoting the idea. In order to gauge people's comprehension of this concept and ascertain whether they are aware of its advantages, this research was created to elicit responses from participants. The primary data collection strategy was chosen in order to get honest and accurate responses from the respondents. The approaches employed in this investigation were quantitative and descriptive. A survey using a Google form was made available. The questions on the Google form were meant to assess their understanding of this subject as well as their opinions on it. They were also asked if there will be a market for electric bikes in the future. Everyone who responded thought it was a wonderful investment.

The flowing are some of the responds from the respondents:

1. "*I feel they have a future. Right now, they are in vogue just for the sake of trends but in the future they might become one's necessity considering the fuel prices presently. They are a much cheaper option than regular fuel-based bikes.*"
2. "*Electric bikes surely have a future as our generation looks for means to save all forms of energy and not harm the environment all the people, I know also have the same outlook towards it too so, yes Electric bikes surely can be the only bikes company sell pretty soon*"
3. *"Electric bikes has a great future ahead coz electric bikes don't use any fuel rather needs electric battery which helps in controlling air pollution."*
4. *"Yes I think electric bikes have a future as the price of petrol is constantly increasing and the need for a pollution free mode of transport is necessary"*

According to the survey it is clear that most of them are aware about bikes but don't possess one. This is due to the lack of encouragement. Everyone must shift to using electric bikes because they are sustainable in the long run.

CONCLUSION

Global economies are most concerned with environmental sustainability in order to prevent future climate calamities. Enhancing environmentally friendly modes of mobility like E-bikes would have a big impact in this area. Our findings make a substantial contribution to Chinese research on the psychology of ride selection for e-bikes and the suitable TPB extensions for a

different ride category. We came to the conclusion that an individual's perception of financial gains from cost reductions would positively influence adoption behaviour, while cost differentiation would negatively influence it. Additionally, the importance of individual psychology as it relates to perceived relative advantage highlights how much better e-bikes are than traditional forms of transportation. Also addressed for the first time, speed and mileage capacities turned out to be favourable E-bike adoption variables.

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SUSTAINABILITY IN ELECTRIC VEHICLES: TATA MOTORS

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ABSTRACT
Many perceive electric vehicles (EVs) to be eco-environmentally sustainable because they are free of emissions of toxic and greenhouse gases to the environment. However, few have questioned the sustainability of the electric power required to drive these vehicles. This paper presents an in-depth study that indicates that massive infusion of EVs to our society in a short time span will likely create a colossal demand for additional electric power generation much beyond what the electric power generating industry can provide with its current generating capacity. Additionally, such demand would result in much adverse environmental consequences if the current technology of electric power generation by predominant fossil fuels continues. Other rarely accounted facts on environmental impacts by EVs are the substantial electric energy required to produce batteries that drive EVs, and the negative consequences relating to the recycling of spent batteries.

Keywords: Sustainability, Electronic Vehicles, Greenhouse gases, Fossil fuel, Recycling

INTRODUCTION
There is an extraordinary surge of interest in and the preference of producing fuel- electric powered hybrid (HEVs) and all-electric powered automobiles (EVs) by Mansinthe governments and public within the industrialized nations. This surge of interest and choice is attributed to numerous factors referring to the lifestyles-threatening air pollution in many components of the world, the high petroleum charge, confliction generating Middle East regions and the alarming fashion of worldwide warming due to fast boom of greenhouse gasoline emissions through all resources, which include the ones from transportation.

India is one of the world's fastest growing economies and the rapid industrialization hassled to a corresponding increase in generation of industrial waste, which if not disposed of carefully would lead to harmful implications for the environment. Quantity of hazardous waste generation in the country was around 7.17-million-ton during2016-17, of which only 3.68 million ton (49.46%) was recycled.

Tata Motors' awareness on waste control is aligned with the Waste Management Hierarchy as mandated within the national regulations; namely – *save you/dowdyish, *reduce, *reuse, *re-cycle, *energy / material restoration and *secure disposal. The company's method to waste control is centered on the utilization of waste distoversion from landfill / incineration. Tata Motors' flowers are vertically integrated and carry out more than a few manufacturing sports in-house which result into a wide type of wastes, which might be disposed in compliance with the regulatory requirements. Some Tata Motors' vegetation has the option of co-processing risky waste –i.e. The utilization of high-calorific cost wastes as gasoline alternative in cement kilns, that is powerful direction for electricity / fabric healing from unsafe waste.

Tata Motors is ready to solidify its lead within the electric powered vehicle (EV) sectioning India. The brand has now introduced a separate sub-brand for EVs called '.EV.' The '. EV' branding can be the only distinguishing detail between ICE-powered and Evasions. The carmaker may even flow away from current blue accents and shall offer new sunshades across its electric variety. EVs are the destiny of mobility, and all automakers internationally are slowly figuring out it. Tata Motors is not any exception and has consequently decided to offer a special repute to its electrified line-up. In India, Tata Motors currently retails four electric cars.

They are the Tigor EV, Nexon EV, Tigogenin the fleet-only Press-T EV. An electrified version of the Punch micro-SUVs absinthe works. Literature Review: Satyendra Pratap Singh, Nitish Sharma (2021). A review on Air Pollution In present scenario, air pollution has become a serious concern for India. According to recent global report, many cities in the India are most polluted cities. Major sectors contributing to the air pollution are industrial sector and transport sector. Among this 51% of air pollution is caused by the industrial sector and 27% by the transport sector. Air pollution contributes to the premature deaths of 2 million Indians every year. Inorderto minimize the air pollution, Electric Vehicle (EV) can act as blessing in lowering the GHG emission. Electric Vehicles offer numerous advantages such as decreasing the pollution level and reduction in oil import bills etc. Although there is considerable number of threats in establishing the Electric Vehicles in India.

TfhlsmIienruhyhoadadlaemdpuitrat,hsoee'msutccrtr.hroaaygRerfdjriobib.eigeovrooaa.exnun,spnhi4stdootio,micenlcmlu,nuobalitoaatneanrubrhoondtiixlgtopnepsiemodsanelerloaua,tmtridtrcieigviiouotetlnxaeitdiese,tt[vgcVsphtThh1ohelotareea]ameohnsr,vharctjvotiegcrtihrcehcioahpbredelomehnltlelersueetamnsaeptsRnirrttnosenoni[ghenet3qf[mptIoeinf2in]tpu.3tu.wtet]omddgir7hlirfoaIfirsaoe.enaam5tprsnmifcdxt%itohodwsreihasemnsa.ctuaointfeiAuconotrumertdhgsconl.frmnbdiearldeneses.trnaolgpgartEeecAhahosicyltendceonshiwrtongccpdtrea[eaigrotb4cormtinr]miasd,,caontoistinrnzorgegendioxide, lead, carbon monoxide, Sulphur dioxide, and particulate matter. Reason behind large share of vehicular pollution is India's gigantic automotive industrywide., 4th largest in the world. According to the Ref. [1], the population of electric vehicle in India is increasing at the rate of 37.5%. And the government is focusing the more concern towards the Electric Vehicles [2] and charging stations [3]. In reference [4], placement of charging station has been proposed to optimize the charging stations and provide the maximum power as per the requirement.

Henry Ford, The New York Times, (1914) p. 10

More than 100 years ago, Henry Ford and Thomas Edison worked together on a car powered purely by electricity. Although the electric car was prevalent at the beginning of the automobile era, over the long run it could not stand the superiority of the internal combustion engine vehicles (ICEVs).Over the last years, electric mobility gradually infiltrated many areas such as public transport, logistics, and individual mobility, demonstrating a remarkable comeback. Electric vehicles "are not simply replacements for conventional vehicles; they provide access to revised and wholly new values". However, the great breakthrough is still to be achieved. Many new companies entered the automobile market with innovative products, while some of them such as Better Place and Mia Electric went bankrupt only a few years after their inception. Although many governmental programs were designed and launched to drive the introduction and diffusion of electric cars, the success of these programs has been rather moderate.

Paul Wolfram (2016) Types of Electric Drivetrains

BEVs

Pure battery electric motors (BEVs) are also known as battery-handiest electric motors (BOEVs). BEVs have no engine and are propelled through electricity that comes from one or numerous onboard high-electricity batteries. Modern models use a regenerative braking device to keep strength. Examples include the Renault Zoe and the Nissan Leaf. The Zoe has a 22 kWh Li-ion battery, and an strength intake of 14.6 kWh in keeping with a hundred km, which yields a range of about one hundred forty km to 210 km per battery charge on the New European Driving Cycle (NEDC). The 2015 Leaf comes witha24-kWhbattery (plus a 30 KWh choice for the 2016 model), and an social consumption of 15kWh in keeping with one hundred km.

PHEVs Plug-in hybrid electric powered motors PHEVs
permit electric riding on batteries (in fee-depleting mode), but also traditional combustion-fueled driving (in price-maintaining mode). Usually, they may be prepared with an electric powered motor and a excessive- energy battery, which can be charged from the energy grid. Modern PHEVs can bedriven in electric powered mode over varying distances before the combustion engines needed. In electric powered-riding mode, the electricity efficiency of the propulsion machine is an awful lot better, and is akin to that of a BEV.Vs

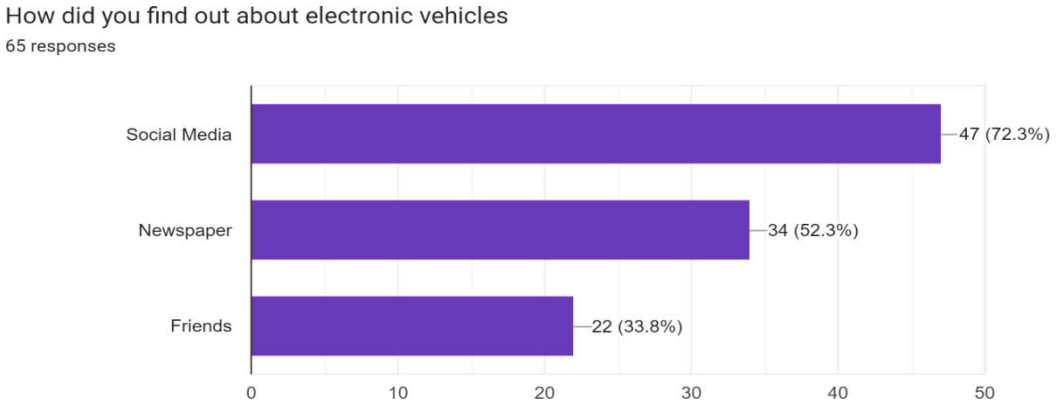
OBJECTIVE

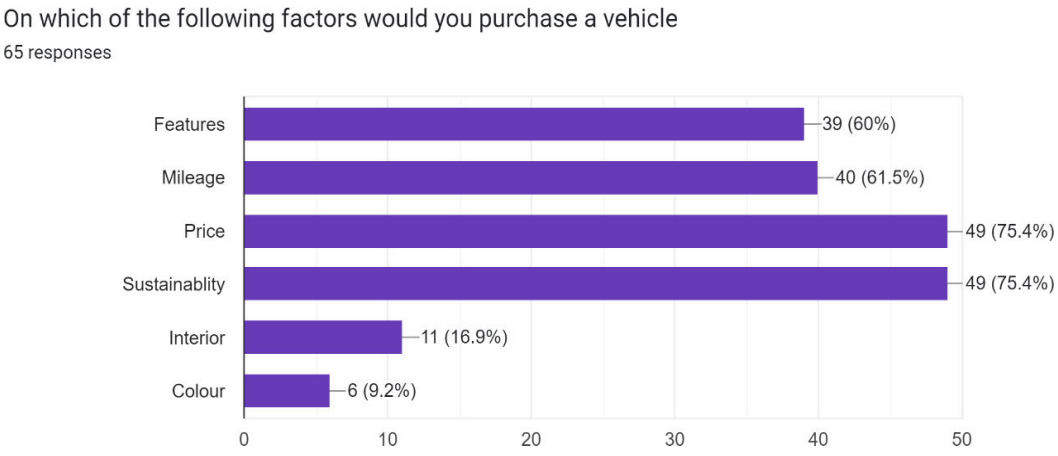
1. To study how consumers behave towards electric vehicles.
2. Harmful effects of toxic chemicals released by vehicles resulting in air pollution.
3. Tata Motors and similar brand's key role in introducing electric vehicles in India
4. To see people's preference when presented different aspects of electric vehicles

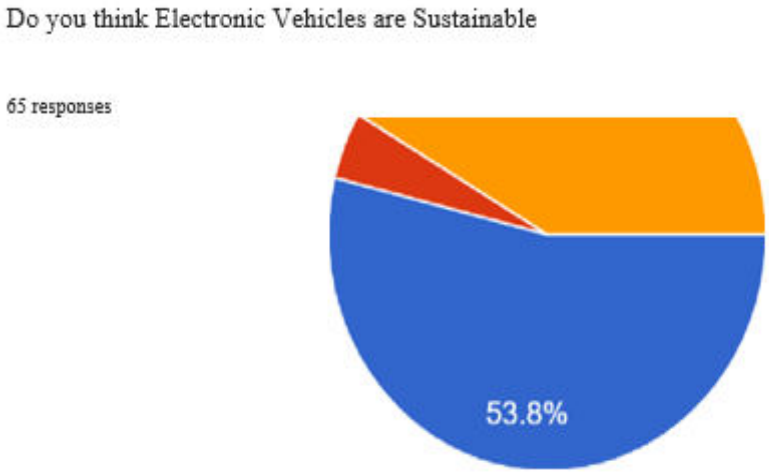
RESEARCH METHODOLOGY

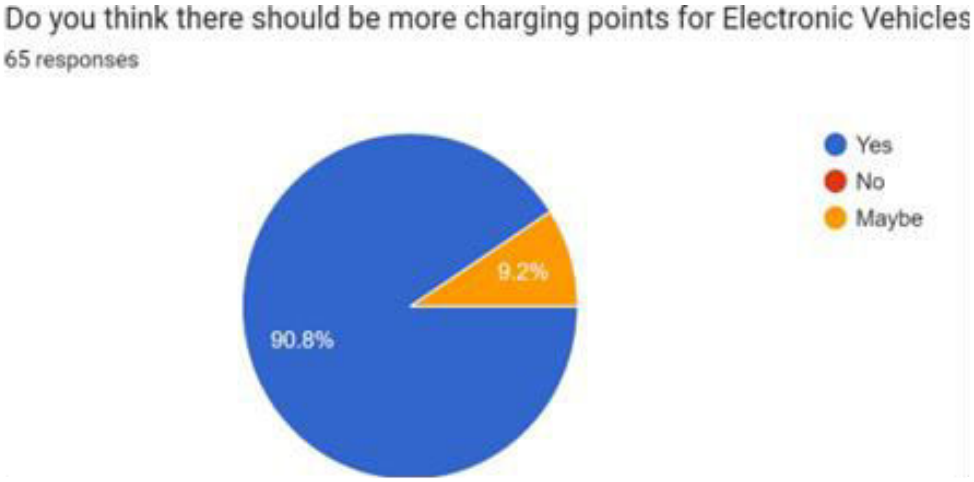
The universe of the study are mainly students from different colleges. Simple random sample collection was used to collect data. The information is collected from both primary and secondary data. Primary sources: The main sources of collection of data are primary sources. Google form was used to conduct a survey and collect data through a questionnaire The questions were answered by choosing predetermined responses. The questions were related to usage of skincare products having natural ingredients. Secondary sources: The other data for research have been collected from secondary sources like websites, etc.

DATA ANALYSIS









FINDINGS

1. It was found out that 72% of the respondent got to know about Electronic Vehicles through ocial media, 52% through newspapers and 33% through friends.
2. 72% of the respondent already knew that tata motors is leading in the market share of Electronic Vehicles.
3. 75% consider price and sustainability as the key factors while purchasing a vehicle.
4. 90% think that there should be more charging points for Electronic Vehicles.
5. 84% of the respondent have heard about Tata Nexon EV, 44% have heard about Tata Tiago EV, whereas 38% have heard about Tata Tigor EV.
6. 54% think that Electronic Vehicles are sustainable.

RECOMMENDATIONS

Companies should increase the manufacturing of electronic vehicles as the electric motor and battery combination used to power electric cars is much simpler and has fewer moving parts than a conventional petrol or diesel engine.

Companies should understand that Electronic Vehicles are better for the environment.

Electric cars do not contribute to local air pollution that can cause health issues in the population and damage the environment.

Companies like Tata Motors can spread more awareness about sustainability and the benefits of electronic vehicles through various platforms as 72% of the respondent know that tata motors is the leading in the market share of Electronic Vehicles.

Companies should introduce more efficient electric motors and the use of lithium sulfur batteries in order to attract drivers.

CONCLUSION

In view of the rising levels of greenhouse gases in the atmosphere, the development that the electric car sector has seen in recent years is not only warmly welcomed but also desperately needed. The main aim of this research is to highlight how important electric vehicles have become and to what extend consumers support it. It was also important to understand how much knowledge consumers have about electronic vehicles. Out of 65 participants, all have heard about Electronic Vehicles. This shows that Tata Motors has developed various marketing strategies in order to sell their electronic vehicles Governments are attempting to reduce fuel pollution, thus automakers are prepared to phase out vehicles powered only by internal combustion engines (ICEs). By 2025, it is predicted that sales of EVs and HEVs would make up 30% of total vehicle sales due to the rapid rise of these types of vehicles. The biggest obstacle to the widespread adoption of electric-powered transportation is cost related, as gasoline and the vehicles that run on it are readily available, convenient, and less costly.

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A STUDY ON CONSUMER BEHAVIOUR TOWARDS RAPIDO BIKE TAXI SERVICES

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ABSTRACT
The study concluded that it is crucial to examine the marketing tactics employed by Rapido Cycle Taxi services in the current business environment. Most users are happy with his Rapido bike taxi service, according to survey data, but there are negatives like increased rates and other variables like product design. If required, more actions will be taken to address his problems with Rapido pedicab service customer retention. Businesses may create marketing strategies if they comprehend customer preferences and views in general. Create a marketing plan and market share for the bicycle taxi services in Rapido.

Keywords: Satisfaction, Marketing, Business, Taxi Services, Customer.

INTRODUCTION
Rapido is a motorcycle ride-hailing service that allows users to book and pay for motorcycle rides through a mobile app. The service is available in various cities in India and is designed to provide a convenient, affordable, and safe transportation s year in Bangalore. Has operations in more than his 95 cities across the country.

Rapido's founding dates to the days of a carrier based on a logistics and supply chain driven model that allowed customers to move packages seamlessly. It wasn't bad for the company, but according to his Aravind Sanka, one of Rapido's co-founders, "We quickly realized that moving from B2B to B2C would give us more room for growth. I got it." B2C meant the company could no longer handle trucks but had to switch to bicycles to ease the transportation needs of its customers. This is because switching to automobiles means delays due to additional financial burdens, more competition, traffic, etc. for the company. So, with the simple idea of facilitating his customer journey, first he sowed the seeds of Rapido. made possible.

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- Assisi Avinash Kade & Dr. Vaibhav Patil", (2018) "Customer Satisfaction Survey for Special Link connecting toll taxi service ola and uber to Pune City." In this article, we attempted to study the customer satisfaction levels of people using OLA and UBER taxis in the city of Pune. This report shows why is the market leader in the Pune taxi market and why chooses OLA/UBER over other car/bus services. It was also observed that almost 100% of respondents use a toll taxi service in Pune city.
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OBJECTIVES

- To investigate the numerous aspects that influence users when selecting a bike taxi service.
- To determine the role of consumer innovativeness in the choosing of Rapido bike taxi service.
- This study was conducted to evaluate the effect of consumer voucher redemption behaviour on the choice of Rapido Bike taxi service.
- The purpose of this study is to analyse user satisfaction with the Rapido Cycle Taxi service and to make suggestions for service improvement**.**

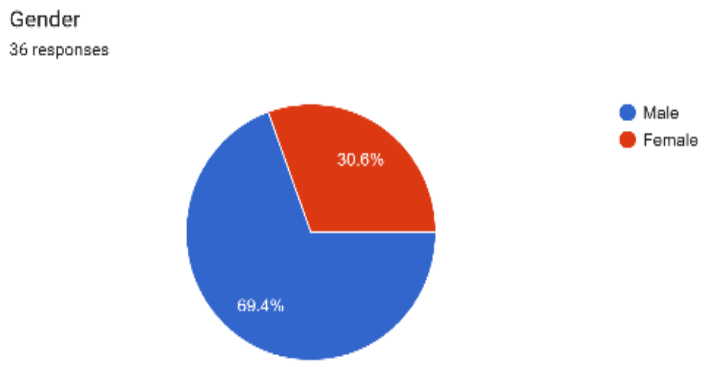
RESEARCH METHODOLOGY

In this research paper data are collect through Primary and Secondary collate and analyse data. Define the tools used to gather relevant information in a particular study.

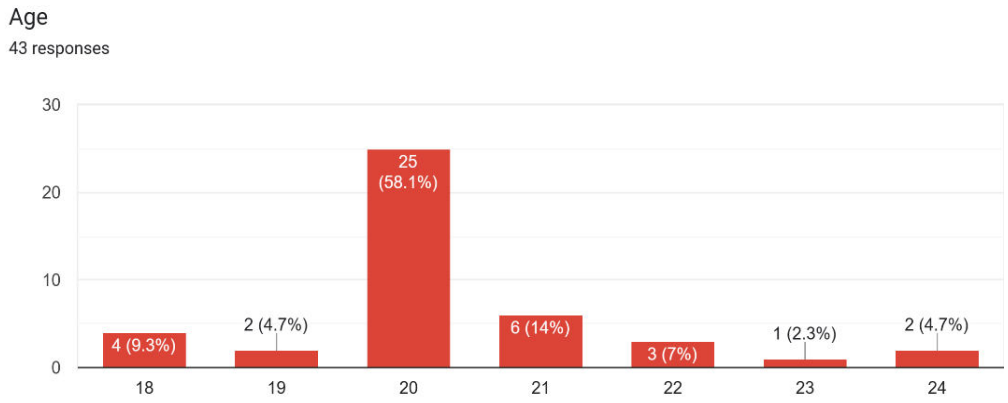
Primary data can be collected through various methods, including surveys, through google forms. A Consumer Satisfaction Towards Rapido bike services collect primary data through in-depth interviews with students, observations of students' social media use, or surveys administered to a sample of students.

DATA ANALYSIS AND FINDINGS

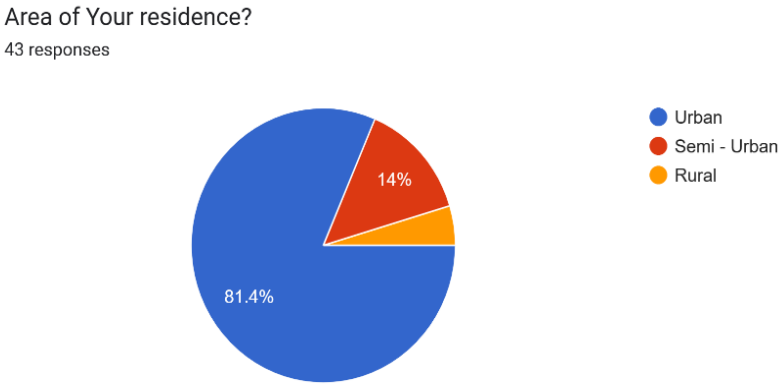
• Majority (69.4%) of the respondents were male.



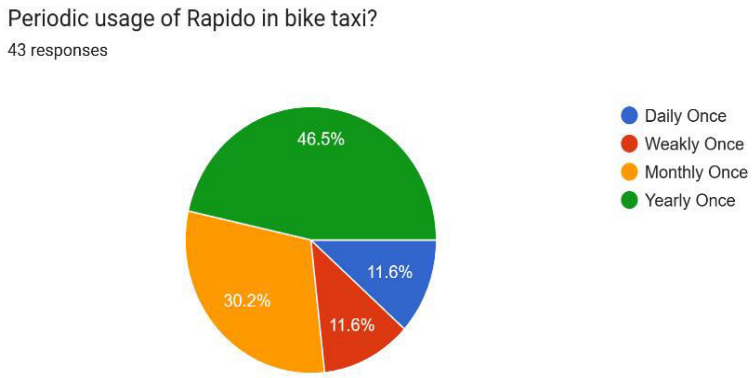
• Majority (25%) of the respondents were 20 years.



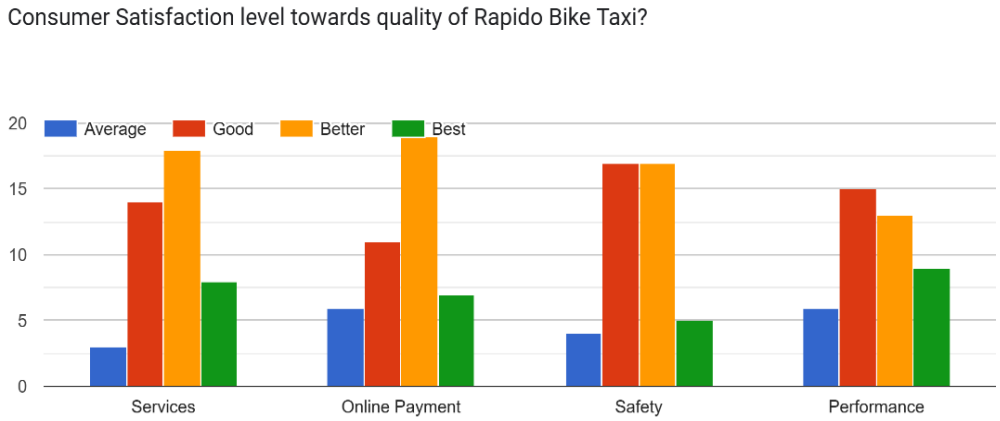
• Majority (81%) of the area of respondents URBAN.



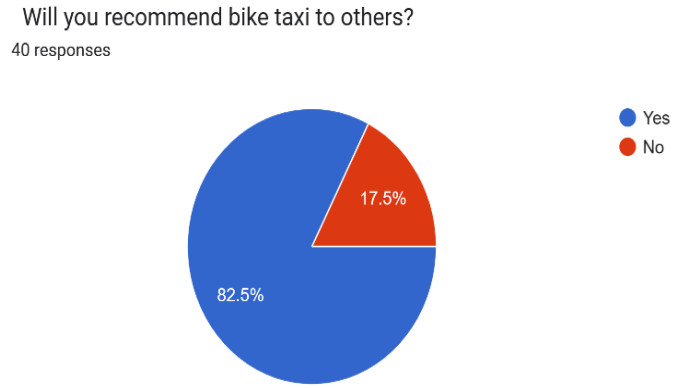
• Majority (63%) of the area of respondents yearly Onces.



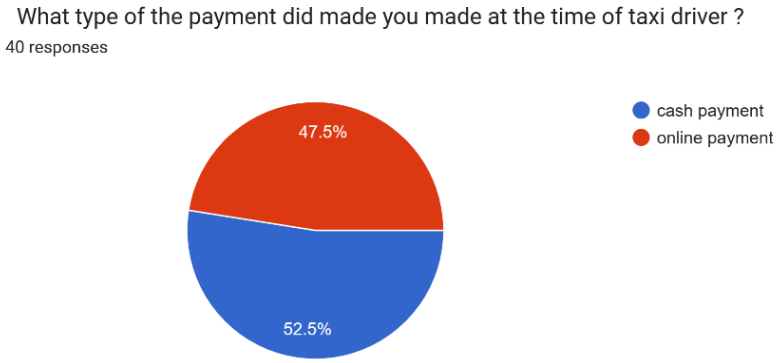
• In this Chart show that majority respondents Find like Better Services and Online Payment, Safety.



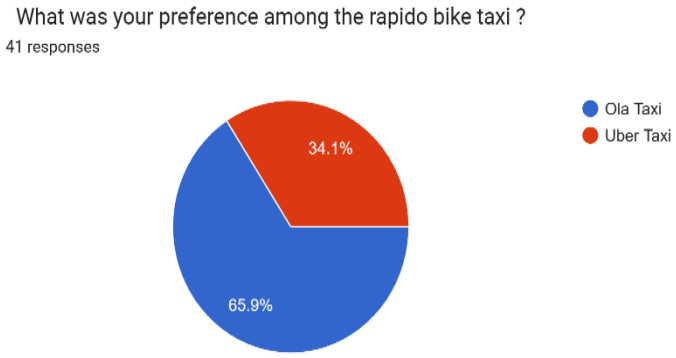
• Majority (82.5%) the factors of yes compare between the Rapido taxi with other taxi system.



• Majority (52%) the respondents are type of the cash payment use of the respondents.



• Majority (65.9%) respondents are preferring Ola Taxi.



RECOMMENDATIONS

After completing research and learning about the market, the company realized it needed to keep the needs of the younger generation in mind. The company should improve its bicycle promotion strategy. The company should improve its advertising strategy for additional services. The company needs to know customer satisfaction while conducting regular surveys. Regular surveys can directly address customer satisfaction. The company should either upgrade the bikes it offers or introduce new ones. The company should not only focus on customer satisfaction but should encourage the company to monitor the performance of its competitors from the beginning of the business. companies must make changes according to other competitors' and customers' expectations. this study suggests that Rapido cycle taxi marketing techniques and strategies can be improved. Most of the respondents learned about his Rapido pedicel service through family and friends. The study suggests that the design of the mobile phone could be further improved. The price offer/discount offer additionally allows him to acquire member customers.

CONCLUSIONS

It has been observed that most customers are satisfied with the pre-sales service**,** and most of these customers are dissatisfied with the after-sales service, which is a concern of the company Rapido needs **i**mprovement on some parts of the bike especially maintenance. High customer satisfaction allows companies to retain existing customers and attract new ones through word-of-mouth advertising. The Customer Satisfaction Index is a great tool for improving Rapido's cycling services. Therefore**,** they should be used sparingly and kept as secret as possible.

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A STUDY BASED ON YULU BIKES

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ABSTRACT
Yulu is a bike-sharing company that offers electric moped rentals through a convenient app-based system in Bangalore, India. The company was founded by Amit Gupta as a sustainable transportation solution for short distance travel, and has gained popularity for its ability to reduce pollution and ease traffic congestion. Renting a moped through the Yulu app is easy and does not require a driving license or helmet. The mopeds have a top speed of 25 km/hr, comfortable seating, and good brakes. The app allows users to start, pause, and end their rides and provides information about the moped's charge and distance capabilities. Yulu has worked to achieve economic sustainability through its business model and has attracted customers through its services and convenience. The company's focus on economic development is balanced with environmental protection and social well-being.

Keywords: (yulu, Sustainability, short distance, traffic, dockless)

INTRODUCTION
Sustainable development is now essential given the world's growing urbanization and population growth rates. More than half of the world's population is thought to reside in urban areas. As a result, they are congested and lacking in resources for infrastructure, health, and sanitation. The issue of the transportation network has been made worse by the metropolitan population's fast growth. Due to the inability of the current transportation infrastructure to meet the expanding demand in major cities, deckles bike sharing is expected to become a well-liked substitute for traditional urban transit. Micro-mobility vehicles (MMVs), which offer a solution to the issue of first mile, last mile connection, and short distance transport, are consequently swiftly gaining market share.

The world's two most populated cities, Shanghai and Beijing (in China), are also experiencing a revolution in micro mobility. In both cities, dockless bikes and scooters have gained popularity as a form of transportation. Because of their increasing popularity, businesses like Ofo and Mobike have earned the title of unicorn enterprises. The business grew its operations in 200 places across 19 nations in just two years after its founding (CBInsights, 2019). These vehicles have significantly reduced pollutant levels while also easing traffic congestion.

Bangalore resident and Indian Institute of Technology (IIT) alumnus Amit Gupta saw the need for a sustainable means of transportation, particularly for short distance, and established a bike-sharing business as a result called yulu.

OBJECTIVES
1. To analyze how yulu concentrates on its economic development at the same time how it balances environmental protection and social well-being.

2. To understand how yulu attracts customers through its services.

3. To investigate how yulu has tried to achieve economic sustainability.

LITERATURE REVIEW
Deepika Upadhyay, Geetanjali Purswani, and Pooja Jain published an article in the South Asian Journal of Management Techno in 2020 discussing the use of MMVs, specifically dockless bike-sharing ventures, as a solution to urban transportation issues such as traffic congestion and

air pollution. The authors discuss the case of Yulu, a dockless bike-sharing company that started in Bangalore and expanded to other cities in India.

The article highlights the potential of MMVs to provide a sustainable and affordable solution to urban transportation challenges, but also notes that there may be challenges in terms of infrastructure and regulations. Further research on the adoption and implementation of MMVs in urban areas could provide more information on the effectiveness of these vehicles in addressing transportation issues and the potential barriers to their widespread use.

Swati Kumari, Jyoti Prabha, and the Centre for Studies in Science Policy at Jawaharlal Nehru University in India published a research paper discussing the importance of adopting a Responsible Innovation approach in managing and guiding technological innovations towards sustainability. The authors argue that the Responsible Innovation approach, with its focus on economic, environmental, and social sustainability, is necessary in order to address negative sentiments towards new technologies and to align with India's commitment to the Sustainable Development Goals.

The paper presents two case studies, one on biofuels for environmental sustainability and another on e-mobility for social sustainability, to illustrate the benefits of adopting a Responsible Innovation approach. Primary data was collected and analysed for these case studies, and both primary and secondary data were used to develop a holistic understanding.

Dr. Sapna Modi, a researcher at ITM Humes Schul in Navi Mumbai, India, published a study on the impact of air pollution on health in India. The author notes that air pollution is a major and growing risk factor for health in India, contributing significantly to premature deaths and disability-adjusted life-years (DALYs). The study also highlights the negative effects of air pollution on children's cognitive development and the increased vulnerability of the elderly to respiratory infections and heart attacks.

The author suggests that improving fuel economy in the transport sector through the use of conventional vehicles is a cost-effective way to reduce carbon emissions and improve air quality in the short term. However, the author also highlights the potential benefits of using environmentally-friendly vehicles, such as cycles, as a long-term solution to reduce air pollution. The author argues that these vehicles can provide a green and better alternative to traditional forms of transportation and are necessary in addressing the negative impacts of vehicular pollution.

RESEARCH METHODOLOGY

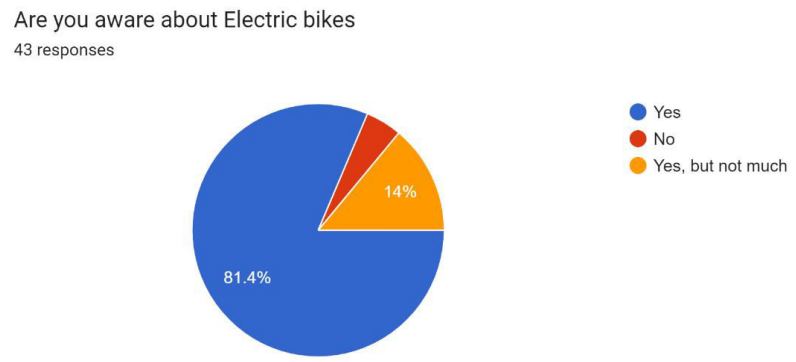
A combination of primary and secondary data has been used in this study. Primary data: distributed to Internet and social media users via a questionnaire method that was created using Google forms. Secondary data has been used to support the study and has taken the form of websites, PDFs, and social media platforms. This research paper explains how consumers' perceptions of organic food brands have changed and how they are developing new, sustainable business models with their support.

Sample Size: The sample size is 43.

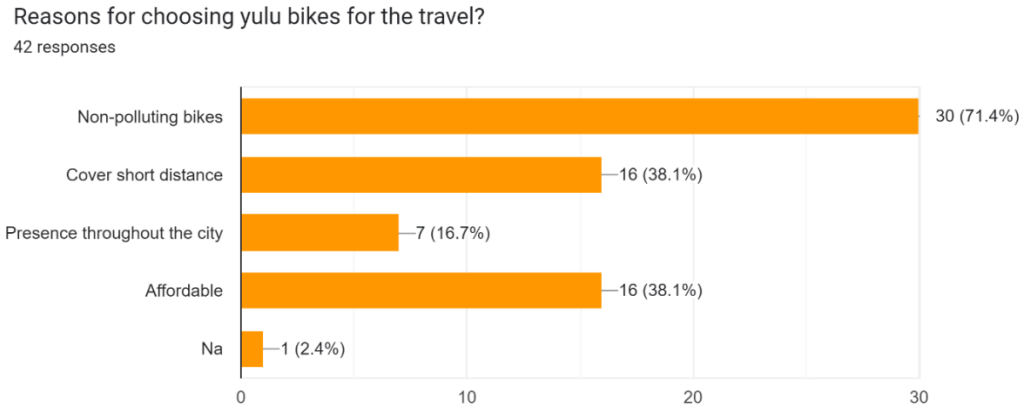
Sample Method: Survey using a Google form was used as the sampling method.

DATA ANALYSIS

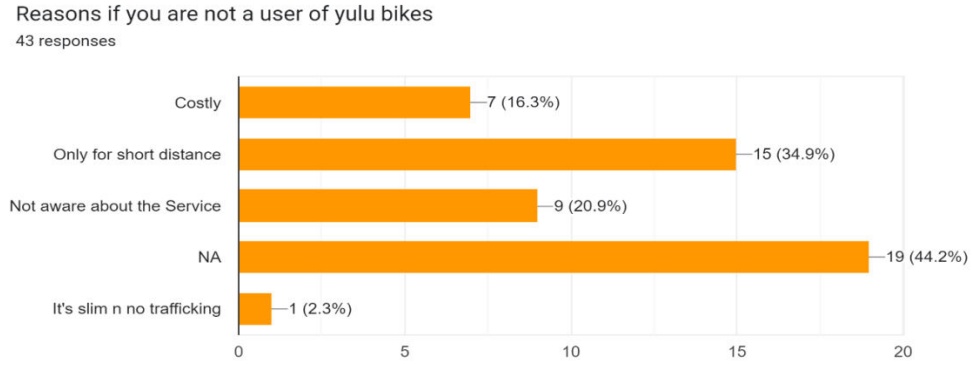
The data received as responses have been collected using Google forms. From that data, 93% has been from the age group of 18-22 and remain 7% from 22-30. Majority of the people are aware of Electric bikes hence recently the usage of electric bikes has been increasing.



To know the respondents' basic knowledge about the electric bike companies, a questionnaire has been created by asking whether 2 company's (Yulu, Vego) or both has known by the people. From that data, the majority of people 55.8% have been aware of Yulu company, 25.6% know both of them, and 14% people are not aware of it



Next data explain the reasons for choosing yulu bikes for travel from respondents. According to the data, 71.4% of respondents say that it is a non-polluting bike so it covers the environmental concern, and 38.1% responses said that it is affordable and at the same time covers all short distances. 16.7% shows yulu bikes services are available throughout the city.



To know about the non-user's behavior towards yulu bikes, responses have been collected according to that, from the data 44.2% of people are not aware of the company, 34.9% responses saying that it is only for short distances that why they are not users of that type of bikes, 20.9% says that they are not aware of the services the company has providing, 16.3% says that it's costly to use and 2.3% says that it has no it's slim and no trafficking.

CONCLUSION

People are considering alternative modes of transportation that are economically feasible, practical, accessible, and of high quality due to deteriorating air quality, increasing traffic congestion, and longer commute times in large cities. The current situation has resulted in the promotion and expansion of Indian micro mobility. As an economical alternative method of transportation for the first mile, last mile connectivity, and short-distance travel, commuters are increasingly accepting it. Yulu promotes economic sustainability by providing trips at a price that is reasonable in comparison to other forms of transportation. By allowing participation from many stakeholders and the use of its vehicles, it provides social sustainability. In addition to this, it supports local job opportunities. By preventing further destruction of natural resources, Yulu encourages environmental sustainability. Its electric bikes and bicycles support the idea of green consumerism because they reduce carbon footprints. These cars are a good alternative for customers because they are affordable to operate and require little maintenance. In Bhubaneswar, there are players like Yana and Hexi. Other than this, there are a few tiny players in various cities, but they fall short of the market's needs. Additionally available on the market are Vogo, which is funded by Ola, and Bounce, which is backed by Accel and Sequoia Capital.

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