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A Mini Project Report

ON

"EVALUATING RENTAL ELECTRIC BIKE AS AN ALTERNATIVE TO PUBLIC TRANSPORT IN BANGALORE CITY"

MASTER OF BUSINESS ADMINISTRATION (MBA)

OF

BENGALURU CITY UNIVERSITY

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BENGALURU CITY UNIVERSITY
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BE BOUNDLESS

BY

ABDUL AZHARUDDIN

(REG NO: MB206203)

UNDER THE GUIDANCE OF

Prof .B A RAVISH

FACULTY OF MANAGEMENT

LORD GIVE UNTO ME MORE KNOWLEDGE
AL-AMEEN

AL-AMEEN INSTITUTE OF MANAGEMENT STUDIES

HOSUR ROAD, LALBAGH MAIN GATE,

BENGALURU-560027

2021-2022

DECLARATION BY THE STUDENT

I hereby declare that the project report entitled "**Evaluating Rental Electric Bike As An Alternative To Public Transport In Bangalore City"** has been prepared by me under the supervision and guidance of **Prof .B A Ravishh,** during the year 2021-2022 in a partial fulfilment of the university regulations for the award of **"Master Of Business Administration"** by **"Bengaluru City University".**

I further declare that this project is based on the original study undertaken by me and has not been submitted at any time to any university or institution for the award of any other degree or diploma.

Place: Bangalore ABDUL AZHARUDDIN

Date:28-Dec-2021 Reg No. MB206203

CERTIFICATE OF GUIDE

This is to certify that the Project Report title "**Evaluating Rental Electric Bike As An Alternative To Public Transport In Bangalore City"** Submitted by **Abdul Azharuddin** bearing of Reg No. **MB206203** is an original work of the student and is being submitted in partial fulfilment of the requirement for the award of degree of **"Master Of Business Administration"** by **"Bengaluru City University"** of **"Bengaluru City University"** under the guidance of **Prof .B A Ravish** this report has not submitted earlier either to this university/institution for the fulfilment of the requirement of a course of study.

Place: Bangalore

Prof .B A Ravish

Date: 28-Dec-2021

Guides's Signature

CERTIFICATE BY EXTERNAL MENTOR

This to certify that **Mr. Abdul Azharuddin** of Al Ameen Institute of Management studies Has undertaken project on the topic "**Evaluating Rental Electric Bike As An Alternative To Public Transport In Bangalore City"** between and under my membership.

Signature:

Seal:

ACKNOWLEDGMENT

I take this opportunity to sincerely to thank all those who have encouraged me either directly or indirectly in completing the dissertation.

I am thankful to **Dr. B.A ANURADHA** principal of AL- AMEEN INSTITUE OF MANAGEMENT STUDIES, Bangalore for giving this opportunity to undergo the dissertation.

I am deeply thankful to **Prof. DEEPAK SINGH M.C** Associate Prof. & HOD, MBA department for his constant support throughout the dissertation.

I am also thankful to **BANGALORE CENTRAL UNIVERSITY** for making this dissertation a part of our curriculum. It has been a wonderful experience which has helped me gain knowledge and practical exposure in the process of the dissertation.

PLACE: BANGALORE **ABDUL AZHARUDDIN**

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CHAPTER 1

INTRODUCTION

CHAPTER 1

INTRODUCTION

Bangalore is one of India's most beautiful cities, and it's also known as Silicon City. As we all know, it's a busy city with a lot of IT business, and because every corner of Bangalore is crammed with people, public transportation has always been an issue. Introducing rental electric bikes as a means of replacing public transit has proven to be a highly effective alternative, especially in the midst of this pandemic.

Most cities' transportation systems have been plagued by a slew of issues stemming from issues with Use of petroleum-based fuels.The further the advancement of smart and electric mobility is possible. help to alleviate issues that come with using public transportation, such as traffic congestion, pollution, urban noise, and diseases.

Rental electric bikes are environmentally friendly because they run on rechargeable batteries and do not emit harmful gases, which helps to keep our environment healthy. Electric bikes also reduce noise pollution, which is a major issue in Bengaluru because the roads are densely packed with automobiles.

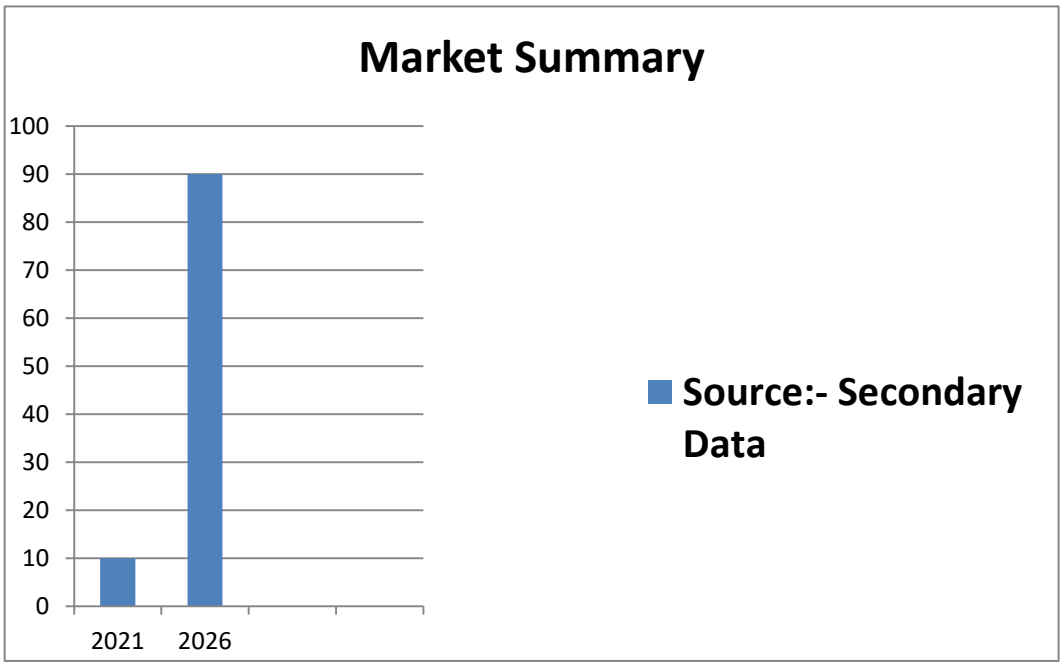
Tourists would benefit from rental electric bikes because they would not have to spend a fortune on public transportation; rental bikes are readily available in Bangalore at a convenient location, allowing travellers to avoid searching for public transportation and becoming confused about which mode of transportation to use; rental electric bikes in and around Bengaluru can be booked in a matter of minutes without the need for a licence or helmet; and travellers can use rental electric bikes in and around Bengaluru.

Supporting rental e-bikes and controlling basic infrastructure that assures safety are two solutions to these concerns. The third option is to provide rental e-bike sharing networks, which can improve electric bike accessibility. Various sorts of rental electric bike sharing systems have been adopted in many regions of the world, namely in many cities, in recent years. Electric scooters, electric bikes (e-bikes), and even electric cargo bikes are becoming increasingly popular. Electric bikes for rent are an important feature of city transportation networks.

Electric-assisted bikes are more cost-effective than public transportation.

Renting e-bikes instead of taking public transportation can help to minimise air pollution, noise pollution, and energy usage.

As a result, employing rental bikes as an alternative to public transportation could be an effective way to accelerate the transition of passengers' travel modes and ensure long-term accessibility. The project's goal is to look at the consequences of adopting a rental e-bike system in Bangalore, one of the world's most populous cities. In light of the metropolitan authorities' transportation strategies, we investigate its effects on citizens' choices. The basis of renting an e-bike system would allow for a more significant shift toward more environmentally friendly modes of transportation.



MARKET OVERVIEW ON E-BIKE:-

India's e-bike rental sector is booming estimated to be worth USD 5 million in 2020 and USD 10 million , with cagr of more than 10% projected over the forecast period.

Covid-19 outbreaks and consequent lockdowns have impacted bike rentals in a number of nations. The pandemic's effects can be seen in the decrease in bike rentals. As a result, the market's growth in 2020 was hampered by a drop in revenue due to pandemic related

disruption. However, after epidemic, market is projected to improve as most individuals focus on avoiding public transportations & maintaining social distancing from others.

Because of the increasing global needs to cut emission most of the countries are replacing conventional fuel based transportations with an electric mobility. India which is still in the early phases of Ebikes adoption, has the potential to have massive market for E bike companies. The more become conscious of traffic congestion and pollution India is looking for a more environmentally friendly means of transportation to address the problem.

Government initiatives such as the reduction of EV taxes and the creation of charging stations are attracting investments in e mobility.

e Bike rental firms in India, such as vogo and yulu are currently aggressively investing in r&d and charging infrastructure in order to provide bike rental services in a greater number of Indian cities. They provide services in over 150 Indian cities and towns, with plans to expand to 450 cities and towns by the end of 2020.

Scope of the Report On Rental Of E-Bike:-

The Indian e bike rental market contains the recent trend and technical developments, as well as information on key area of marketing demand by the Vehicle Type. Application Type & Marketing Share of Major Indian e bike Rental Company. The study provides market size for the India e Bike market terms of value for all of the above mentioned categories.

Key Market Trends:-

E-bikes are ecologically beneficial since they rely heavily on Li-ion rechargeable batteries. It has a more range of 99.5 miles on a single charge of the e bike. It also gives a choice for the consumer based on their utility, with battery type possibilities of 8, 12, or 18-amp hour batteries.

The COVID-19 epidemic pushed individuals to acquire their own e-bikes instead of relying on congested public transportation. In 2020, e-bike sales skyrocketed with makers trying to control the demands. Bounce, a e bike rental company plans to add 4,000 additional electric two-wheelers in 2021 as it works toward being a hundred percent e vehicle fleet by the quarter of the next year.

The present infrastructure is insufficient to fulfil the demands of every town and lane due to the growing number of cars. People's productivity is hampered by traffic congestion since they waste. The govt is now pushing a sale of e bike since take up less area in fewer bottlenecks to a lower carbon imprint on the environment.

Major Players Currently Available In Bangalore:-

1) ***YULU***

2) ***BOUNCE***

3) ***ZYPP***

4) ***VOGO***

1. YULU MIRACLE

ABOUT YULU MIRACLE:-

Yulu now operates in Bengaluru. It is currently intends to expand its fleet to 100,000 electric two-wheelers by December 2021.

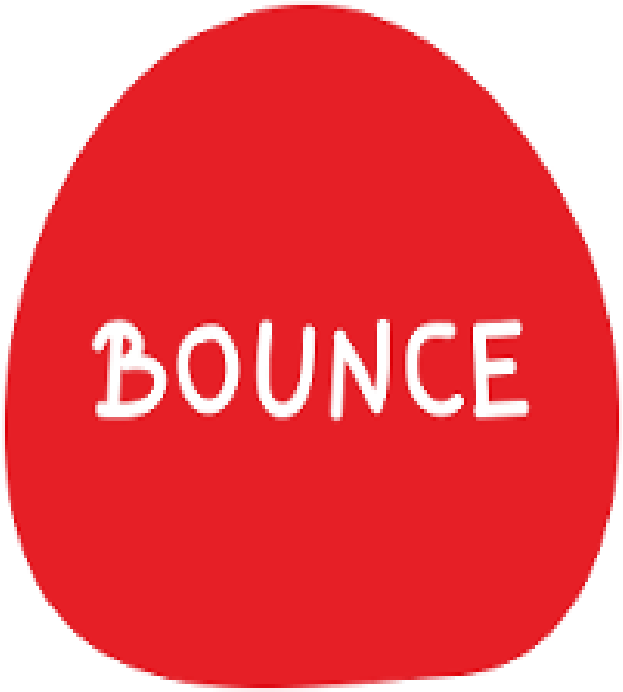
Yulu has 2.5 million customers, 2500 Yulu Zones, and 18,000 electric two-wheelers in six cities: Delhi, Mumbai, Ahmedabad, Bengaluru, Pune, and Bhubaneswar.

It has created a unique driven and scalable battery swapping facility as well as in house vehicle design to expedite country's adoption of e mobility. According to firm, Yulu riders have travelled 27 million kilometres and avoided 2.3 billion grammes of carbon emissions during the previous three years.

Yulu has formed strategic collaborations with local authorities, business/tech parks, public transit companies such as Delhi and Bengaluru Metro, and Bajaj Auto Limited throughout its term in India to supply and promote efficient mobility solutions.

Yulu has improved its service over the last three years with the launch of Yulu Miracles – e-bikes with a bag carrier and a revised suspension configuration for improved user comfort. On the app, a 24/7 chat support system was added, as well as capabilities such as destination search, car battery %, and closest Yulu zone.

Yulu is grateful to the millions of its customers who have enthusiastically embraced e-mobility as a viable daily commute choice. The continuing corona(virus) epidemic has given us the chance to provide sanitised travel choices to consumers who were stranded due to a lack of other modes of public transportation. Yulu is dedicated to changing the way people commute in India, collaborating closely with cities, corporations, and residents.



2. **BOUNCE**

ABOUT BOUNCE:-

Bounce is India's first smart mobility solution, designed to make daily trips less stressful, time-saving, dependable, and easy. Here's an illustration of how simple it is to bounce: You may book a ride using the app. Pick up the bike, input your OTP, ride to your destination, and then leave! Our cutting-edge technology Keyless bikes have not only eliminated the need for keys, but the whole process of renting a bike has become devoid of any physical or human interaction, owing to groundbreaking technology that allows users to access the bike with simply an OTP.

Bounce, a Bengaluru based start-up that began as e bike rental firm is now entirely focusing on e scooter manufacture as well as battery retrofitting in current petrol scooters, with a goal of turning over $1 billion in the next two years.

Our primary goal is to make million scooters as quickly as feasible. Following that, the goal is to deliver a million scooters at the run rate will be $100 million, and at one lakh scooters, the run rate would be close to $1 billion.

3. **ZYPP**

ABOUT ZYPP:-

Zypp Electric has launched its services in Bengaluru and Pune. In each of the two locations, the firm began operations with 100 EV bikers. As a result, Pune would be the first city in Western India where Zypp Electric will commence operations. Zypp Electric presently has operations in nine cities throughout India, including New Delhi, Noida, Ghaziabad, Jaipur, Gurugram, Faridabad, Hyderabad, Bengaluru, and Pune.

To electrify last-mile delivery in both cities, it has partnered with groceries, e-commerce, and food tech behemoths such as Bigbasket, Biddano, Grofers, and Flipkart. Electric scooters with API connection will do all deliveries in the two cities. In addition, to guarantee that the cars work correctly, the firm will first deploy 20 battery swapping and charging stations.

Zypp hired a team of trained riders for their delivery, with women riders accounting for 10% of all trained riders. To guarantee their safety, all of the riders wear masks, gloves, and face shields in accordance with Covid-19 protocol. This ensures that items are delivered safely without requiring interaction with clients.

Rapido will add more than 100 riders and electric two-wheelers from Zypp to its Captain fleet in order to minimise its carbon footprint and boost the usage of environmentally friendly vehicles.

Rapido stated that it is trying to bring on additional similar EV partners in order to develop this business model across the country's Tier I markets.

"With the introduction of Rapido EV rides, we hope to provide a one-of-a-kind experience for our carbon footprint." It has a robust battery-swapping network that will be tested with Rapido's bike taxi services; we hope to strengthen the EV proposition with this partnership and would like to scale it nationally.Making sure that passengers get pollution-free taxi trips."

Rapido EV Rides will be available through the app's Ride section and will be charged at the Rapido Ride cost plus a convenience fee. Customers must use their iOS/Android phones to download the app, log in to their account, and book a Rapido Ride.

4. VOGO

ABOUT VOGO:-

A tech-enabled self-ride two-wheeler rental service is betting big on e-mobility. In 2021, VOGO plans to expand its service in Bengaluru and Hyderabad with a larger fleet of electric scooters. The platform, which has over 500 docking stations in both cities, has also launched 'VOGO Keep.'

Customers can retain the car for a minimum of 12 hours and a maximum of 60 days with VOGO Keep. "Since Covid, there has been a lot of demand for this service since customers don't want to share the car with anybody."

The platform operates a fleet of over 20,000 cars in the two cities, with 70% based in Bengaluru. In terms of journeys, the service has returned to 75% of its pre-lockdown levels.

VOGO, on the other hand, hopes to make a significant impression in the Electric Vehicle (EV) category. The platform now holds 350 EVs. "We will mostly purchase EVs next year." The plan is to take advantage of the growing network of charging infrastructure and make the switch to green. To combat the 'range anxiety' of EV customers, who frequently question how long the battery will survive, VOGO has advocated acquiring vehicles with varying ranges for various use cases. The platform is also in discussions with firms who provide charging and battery exchange infrastructure.

STATEMENT OF THE PROBLEM

COVID- A total of 19 outbreaks and more lockdowns have harmed E bike rentals in a number of countrie. The consequences of the lockdown may be observed in the decline in E bike rentals. However, following the pandemic, the market is expected to improve as most people focus on avoiding public transportation and keeping a social distance from others.

As a consequence of the rising want to decrease pollution beyond the city, most businesses are updating traditional fuel based transportation with E mobility. Bangalore, which is still adopting electric cars, might be a lucrative market for E-bike rental providers. As more people become aware of the traffic congestions and pollutions they seek a cleaner mode of transportation facility to alleviate the issue.

Government measures such as EV tax breaks and the construction of charging infrastructure are attracting investments in E transportation and related serviceses.

Emerging E-Bike rental companies in India, such as VOGO and Yulu, are currently aggressively investing in research and development and charging places in order to expand bike rental service to other Indian cities, notably Bengaluru. They presently provide service in over 150 Indian cities and villages, with ambitions to expand to 450 by the end of 2020.

Due to the COVID-19 epidemic, people were compelled to have their own e-bikes for commuting rather than riding congested public transit. In 2020, e-bike sales skyrocketed, and manufacturers battled to keep up. Bounce, a bike-rental company, plans to add around 4,000 additional electric two-wheelers in 2021, with the objective of establishing a 100 percent electric vehicle (EV) fleet by the third quarter of the following year.

NEED FOR THE STUDY

Electric bikes are swiftly gaining popularity in Bangalore, owing to increased gasoline prices.

Low-speed bikes with a peak speed of 25 km/hr are popular among teenagers. These bikes do not require a driver's licence, registration, or insurance since they are not considered vehicles. They may be purchased and used just like any other retail item.

Why E-Bikes:-

>> Low cost >> No fuel costs >> Low maintenance >> Light, portable >> Low to no noise level >> Environmentally friendly

Why Not?:-

>> Low speed >> Unsuitable for extended journeys, with a distance of 50-60 km per charge >> Components are difficult to replace because they aren't readily available.

Some Of The Key Points:-

- ✓ Despite the fact that these motorcycles do not need to be registered, they must be authorised and certified by the ARAI (Automotive Research Association of India) in Pune before being marketed. The automobile sector and the government worked together to establish ARAI.
- ✓ Unlike low-speed e-bikes, high-speed e-bikes require a licence and registration. They aren't popular with teens, who prefer faster motorcycles until they get their driver's licence. The highest speed would be 50-55 km/h, which would be unappealing to young people. They are purchased by individuals of various ages, although the elderly and females in general like them.
- ✓ E-bikes have the drawback of having difficult-to-find components and being difficult to repair if they break. Spare components are frequently kept on hand by the company, and normal repair shops may be unable to fix them.
- ✓ It takes 6-8 hours to fully charge the bike's battery, which requires about one or two units of power. The only substantial cost to the customer is the replacement of the battery, which runs out after 18,000 kilometres.
- ✓ There are just a few charging stations in the city, which should be expanded. The most significant consequence of adopting e-bikes is a lack of charging stations in the city.

CHAPTER 2

METHODOLOGY

CHAPTER-2

OBJECTIVES OF THE STUDY

Research Design:-

A research design is a board plan that describes the objectives of the research paper and offers directions on how to attain those objectives. It's a revolutionary method to project execution.

The Objectives set for the study are:-

- To learn more about consumer awareness of electric bikes in Bangalore.
- To discover why consumers use the term "electric bike."
- To determine the factors that influence E bike sales.
- What are consumers'purchase experiences with E bikes?
- To determine the market share for multiple electric bike makers businesses.

Scope of the study on the report:-

- The main goal of the study defines to determine the factors that motivate end users to purchase electric bikes in Bangalore, and to assist companies in improving their services, sales promotions, and so on.
- The study also aims to determine the level of customer satisfaction with regard to E-bikes and their dealers.

METHODOLOGY OF THE RESEARCH

The way an event is executed has a huge influence on its success. This entails ensuring that essential issues are answered, as well as a particular emphasis on limitations. In other words, they may refer to method of bedrock for all researchs. It also includes the study technique.

TOOLS FOR COLLECTION OF DATA

1. Primary data:- This data are which that are collected for the first time and hence are one-of-a-kind.

2. Secondary data:- On the other hand, secondary data refers to material that has already been obtained by someone else, such as from magazines, journals, and newspapers.

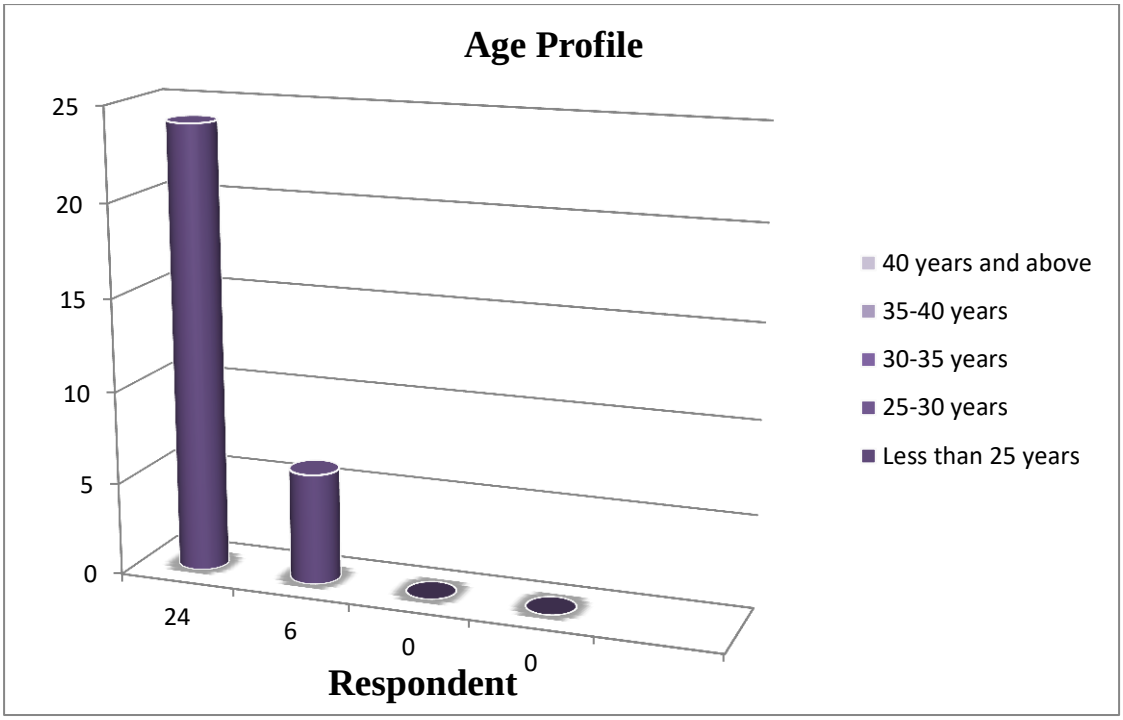
DISCUSSION:-

The data collected is discussed in the view of the topic. **A STUDY ON EVALUATING RENTAL ELECTRIC BIKE AS AN ALTERNATIVE TO PUBLIC TRANSPORT IN BANGALORE CITY**

With the detailed discussion inferences are drawn to address to the objectives.

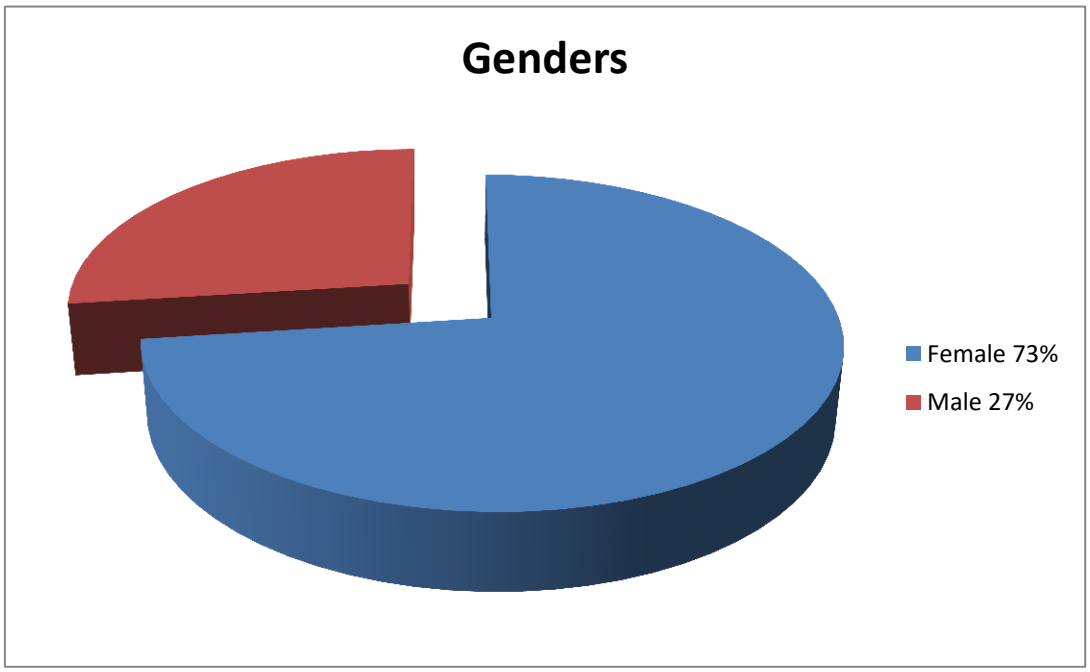
Age group	Respondent	Percentage
Less than 25 year	23	80%
25-30 year	5	20%
30-35 year	0	0
35-40 year	0	0
40 year and above	0	0
Total no of age group	30	100%

ANALYSIS OF AGE PROFILE



Genders:-

Genders	Respondents	Percentage {%}
Males	**8**	**27%**
Females	**22**	**73 %**
Total of Genders	**30**	**100%**



CHAPTER 3

SWOC ANALYSIS

CHAPTER 3

SWOC ANALYSIS

SWOC analysis is an acronym that stands for strengths, weaknesses, opportunities, and challenges. It is a systematic planning process that assesses the four components of a project or commercial initiative. A SWOC can be performed on a product, location, industry, or individual.

SWOC Analysis is a popular business tool that may assist increase future business performance by determining how certain internal and external factors affect business. This strategy is used by both small and large businesses. The classic SWOC analysis can also be beneficial to web companies.

1. ## Strengths:-

   - **Eco-friendly:-**

     Electric bikes are unquestionably excellent for the environment since they use electricity. However, if the battery is charged using green solar power, the electric bike becomes 100 percent environmentally friendly and beneficial to the environment. Riding rental electric e bikes is a win-win scenario for us since we not only get some independence but also help to save the environment by selecting an eco-friendly option.

   - **Silent:-**

     E bikes are completely noise free due to fewer moving parts, which benefits both residential areas and city centres, whereas noise pollution has been a minor concern for many of us as vehicle noise is more than just a nuisance, with many studies indicating that noise pollution causes an increase in depression, anxiety, and blood pressure.

- **Not required license :-**

  Battery-powered e bikes with a power output of less than 250 watts and a peak speed of less than 25 km/h fall into the category of electric bikes, and these vehicles may be ridden without a diving licence.

<u>BELOW IS THE EXAMPLE OF E-BIKE THAT CAN BE RIDDEN WITHOUT VALID DRIVING LICENSE:-</u>

❖ **Yulu:-**

Yulu Miracle is a one-of-a-kind battery-powered light-weight two-wheeler with a peak speed of 25 km/h that does not require a driving licence to operate. The Yulu miracle is reshaping the movement patterns of Indians in Bangalore. It has enabled consumers to move to more efficient transportation options at lower costs and with no carbon imprint without the requirement for a driver's licence.

- **Low cost of ownership:-**

  Over a period of 5 or 6 years, the overall cost of ownership of the vehicle electric scooter is nearly half of the cost of petrol-fueled vehicles, running cost of rental e-bikes per km is just around 10-15 paise, it reduces maintenance cost to almost zero because a petrol-run two wheeler scooter has more than 2000 moving parts, whereas an electric one has 20-25 moving parts, thus maintenance cost reduces.

- **Cheaper to run:-**

  The major reason that e-bikes are so appealing is their incredibly cheap operating costs; the per-kilometer cost of running a rental e-bike is comparable to running a petrol scooter, which may cost 100/- rupees per litre approximately. When we compare maintenance costs for petrol bikes, it has a lot of complex parts and an engine that needs oiling. Most petrol scooters have maintenance costs of Rs.6,000/- per annum, which results in Rs.18,000/- for three years apart from that there is also repair or replacement cost, whereas most e-bikes come with 3 years / 40,000 km battery warranty, so there will be no battery related maintenance for three years.

- **Energy savings-achievable from regenerative braking system:-**

  Moving cars contain a lot of kinetic energy and when brakes are applied to slow vehicle, regenerative braking employs and e-bikes motor as a generator to recycle most of the kinetic energy lost when decelerating back into stored energy in e-bikes battery.

2. ## Weaknesses:-

   - **Needs time to recharge:-**

     Typically, it takes hours to fully charge an e-battery; bike's on average, it takes 2-6 hours. The biggest disadvantage of an electric bike is its limited battery range and inefficiency. Thus, if your battery runs out abruptly, you will have no choice except to wait for it to charge, which will be even more difficult if there is no nearby charging station.

   - **Lack of recharging infrastructure:-**

     As there are no charging booths accessible across the city, it is required for the government to propose rules where most business complexes donate 20% of their parking space to assist e-bike charging and eateries may reserve space for charging kiosks in order to charge the e-bikes.

   - **Batteries change is expensive:-**

     Although li-ion batteries appear to be strong and compact, they are rather expensive, which is why e-bikes can be slightly more expensive due to their batteries.

3. ## Opportunities:-

   - **Governments subsidy for ownership:-**

     If you purchase an EV in Karnataka, you may be eligible for a subsidy through the union government's FAME plan, which may be as much as Rs. 15000/kWh. In 2017, Karnataka became the first state to implement an electric car policy. The

state recently changed its policy to provide investors in the electric car sector with a 15% capital incentive. It has also agreed to convert 50% of state government cars to electric vehicles over the next 2-3 years.

- **Lower taxes:-**

  The government's announcements in the 2019-2020 union budget gave manufacturers of electric two wheelers and potential customers a lot to cheer about. "Provision of additional income tax deduction of upto Rs.1.5 Lakh on purchase of electric vehicles would encourage customers to opt for e-bikes - additionally, bringing down customs duty on lithium-ion cells to nill would further cut down the cost of batteries and help manufacturers to skill up the business," the government said. The government has pushed the G.S.T council to reduce the goods and services tax on e-bikes from 12% to 5%, and the extra income tax reduction is a significant incentive for consumers to acquire electric vehicles.

- **Increasing fossil fuel costs:-**

  The most significant advantage of electric bikes is that they allow you to lessen your reliance on fossil fuels. You can reduce greenhouse gas emissions and your total carbon footprint by buying an e-bike. Global warming is a serious environmental issue that affects people all over the world, mostly because of the excessive use of fossil fuels for transportation, which accounts for one-fifth of global carbon emissions. As a result, many environmentally aware individuals are exploring for long-term alternatives to fossil fuels.

  Here come the electric bikes. They have showed considerable potential as an efficient and environmentally friendly mode of transportation. They are not only inexpensive, but they are also conveniently portable.

- **Right time to invest:-**

4. **Threat:-**

- **Electric hybrids, alternative fuel motorcycles, and hydrogen-powered bikes are all competing:-**

- **Lithium cells can go unbalanced:-**

  Lithium cells can fall out of balance as they age and lose voltage when fully charged, necessitating cell boosting or, in the worst-case scenario, cell replacement, necessitating battery pack maintenance.

- **Rise in cost of electricity:-**
- **Enough spots for recharge:-**

CHAPTER 4

LEARNING OUTCOMES

CHAPTER 4

OUTCOMES OF THE STUDY

The current study is geared towards evaluating rental bikes as an alternative to public transportation in Bangalore city. Below are the results of the outcome of the study, that more has been explained in larger details

1. **Background to Rental bikes as alternative to public transport:-**

   Bengaluru: Karnataka Electric Bike Taxi scheme-2021 in Bengaluru in an effort to create jobs, decrease pollution, and reduce reliance on private automobiles.

   The regulation was unveiled after various attempts were made to prevent the issuance of licences to begin operating two-wheeler taxis in the city.

   According to Yediyurappa, the new policy would promote self-employment, an environmentally pleasant atmosphere, fuel conservation, and the strengthening of public transportation.

   The major goal, according to the chief minister, is to cut travel time for the general people.

   "This programme will allow individuals, partnership businesses, and corporations to participate." The vehicles registered under this scheme will be in the transport category, for which the government has granted several exemptions such as permit, tax, and financial benefits to electric vehicle manufacturers."

2. **Outcome of the study:-**

   City commuters appear to have developed a new passion for rental bikes as a result of poor first- and last-mile connections at Metro stations, inconsistent bus services, and escalating gasoline, parking, and maintenance costs.

   A combination of rental bikes with public transit — Metro, buses, or suburban trains — can also be a more efficient and faster mode of travelling. They are popular among city tourists and food delivery services.

As a consequence of the rising demand, an increasing number of app-based businesses renting out two-wheelers are now receiving licences from the traffic department under the 'Rent a Motor Cycle Scheme.' So far, 28 bike rental companies have gotten permits, according to city data. A rider must own a minimum of five motorcycles in order to receive the permit. These two-wheelers' registration plates will be black with yellow alphanumeric characters.

"Demand for rental bikes has increased, notably with the advent of app-based food delivery services." All of these bikes will be GPS-enabled, and customers will be able to rent them after providing a valid driver's licence and proof of identity."

The city boasts the second-highest number of two-wheelers in the country, with 53.7 lakh. The transportation department, on the other hand, does not keep track of the quantity of rental bikes. Users may hire gearless scooters and motorbikes from specified pick-up spots across the city and drop them off at any other fixed place at the conclusion of the journey using app-based enterprises. Drivezy, ONN Bikes, Bounce (formerly Metro Bikes), Vogo, Fae Bikes, Ontrack, Royal Brothers, Self Ride, Wheelstreet, Bykemania, RentOnGo, Roadpanda, Rentomojo, and Rentrip are famous two-wheeler rental firms in the city.

"We have 4,500 bikes and scooters spread over five cities, 3,000 of which are in Bengaluru." In the following five months, we will add another 25,000 people. People choose two-wheelers for everyday commuting since they are less expensive and more comfortable."

"We've seen a lot of interest in bike rentals from delivery executives who work for logistics, food delivery, and courier firms." We have no official affiliations with any of these companies, although these executives typically rent our vehicles on a weekly or monthly basis. Every month, we serve around 1,000 delivery executives on average."

An electric scooter (new faster scooters) is considerably superior to a gasoline scooter.

Why?

Purchase price, it appears that both are around the same price to buy approximately 70k.

E scooters have a fuel cost of 10–20 paise per kilometre, but petrol scooters have a cost of 1.5 rs/km. As a result, running an E scooter is 7–15 times less expensive. That implies I can commute to work in 4–8 minutes for a total distance of 40 kilometres.

Maintenance costs are reduced since there are no more air filters, fuel filters, or engine oils to replace. Simply continue to use with only a few health checks per year. Furthermore, due to regenerative braking, e-scooters require relatively little brake pad maintenance.

CHAPTER 5

LEARNING EXPERIENCE AND CONCLUSIONS

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LEARNING EXPERIENCE:-

This project has provided me a very nice learning experience about the status of evaluating rental electric bike as an alternative to public transport in Bangalore city. The COVID-19 epidemic pushed individuals to acquire their own e-bikes instead of relying on congested public transportation. In 2020, e-bike sales skyrocketed, from the makers trying to stock up with the demand. Bounce, e-bike rental firms, plans to add 4,000 additional electric two-wheelers in 2021 as it works toward being 100% percent electric vehicle fleet by the third quarter of next year.

In Indian cities, traffic congestion is a major issue. becoming worse by the day. The present infrastructure is insufficient to fulfil the demands of every town and lane due to the growing number of cars. People's productivity is hampered by traffic congestion since they Waiting for a long period is a waste of time. As a result, the government is now encouraging the purchase of E-Bikes since they take up less space, resulting in fewer minor traffic jams and a reduced carbon footprint. The main market for e-bike rental firms will be India, which will overtake the United States.

E-bike firms are cooperating with companies like Bajaj Auto, which is known for creating successful scooter models like the Chetak. With the growing demand for micro-mobility and shared-mobility spaces, numerous well-known 2-wheeler automakers, like as Bajaj, are cooperating with new start-ups, such as 'Yulu,' to provide operational learning based on decades of experience in the Indian 2-wheeler market.

The Indian government is also encouraging people to ride e-bikes. By the end of 2035, the government plans to convert all gasoline-powered vehicles to electric vehicles. E-bikes can reach speeds of up to 25 km/h (15.5 mph) and travel up to 60 km (37.2 miles) on a single charge. Many companies are concentrating their efforts on battery manufacture as well as expanding parking and charging station locations.

Although, considering the heavily populated cities and towns in India, putting up parking stations and charging stations for rental reasons remains an issue. However, sufficient freshly charged batteries can be switched reasonably fast with little money invested in other hurdles

like as transportation and extraction prices, which continue to fluctuate and are no longer economically viable for a nation like India.

The Indian government has also abolished registration fees for battery-powered/electric automobiles, as well as exempting E-Vehicles that operate on ethanol and methanol fuels from permits. It has also made it feasible for persons aged 16 to 18 to obtain e-scooter driving licences. All of this leads to a bright future for electric bicycles in the United States.

CONCLUSION:-

In view of escalating worldwide greenhouse gas emissions, recent improvements in the electric vehicle sector are not only welcome, but also vital. The most fundamental impediment to widespread adoption of electric vehicles is cost, as gasoline and automobiles that run on it are readily available, convenient, and affordable. As indicated in our timetable, we expect that technological advancements and legislative reforms will help in the move away from traditional gasoline-powered vehicles over the next decade. Furthermore, the realisation and success of this company is mostly dependent on the global population, and we anticipate that individuals will be encouraged and empowered to drive an electric car as a result of mass marketing and environmental education campaigns. Everyone has the power to make a difference, so go electric and contribute to the cause!

The purpose of this study was to determine and analyse customer perceptions of various aspects of electric bikes. The findings of this study reveal that that aspect has both a positive and negative impact on customer impression. The cost and mileage are evaluated by the majority of responses.

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