

A STUDY ON TWO WHEELED MOTOR VEHICLE TECHNOLOGY IN VIJAYAWADA

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ABSTRACT

Electric two-wheelers, often referred to as e-bikes or electric motorcycles/scooters, represent a transformative shift in urban mobility. These vehicles utilise electric motors powered by rechargeable batteries, offering a cleaner, quieter, and more sustainable alternative to traditional gasoline-powered counterparts. With advancements in battery technology and increasing concerns about environmental sustainability, electric two-wheelers have gained immense popularity as efficient and eco-friendly modes of transportation for commuting and leisure activities. They contribute to reducing air pollution and dependence on fossil fuels, while also providing riders with convenient and cost-effective mobility solutions in densely populated urban areas. Both primary and secondary sources are used to collect the data. Through questionnaire methods collected the data from 15 responses and by using simple percentage method and pie charts analysed the data to give the conclusions.

Keywords: Electric, Two-wheeler, Electric scooter, Battery-powered, Environmentally friendly.

I. INTRODUCTION

Electric two-wheelers (e-2Ws) have emerged as a promising solution to address urban mobility challenges, reduce environmental pollution, and mitigate dependence on fossil fuels. This abstract provides a comprehensive overview of the advancements and prospects of electric two-wheelers, focusing on technological developments, market trends, and environmental impacts. Technological Advancements: Recent years have witnessed significant advancements in electric two-wheeler technology, including improvements in battery efficiency, motor performance, and vehicle design. Lithium-ion battery technology has revolutionised the e-2W industry by offering higher energy density, longer lifespan, and faster charging capabilities. Moreover, the integration of smart connectivity features, such as GPS navigation and smartphone integration, has enhanced the user experience and safety of electric two-wheelers.

Market Trends: The global market for electric two-wheelers has experienced rapid growth, driven by increasing consumer awareness of environmental issues, government incentives, and advancements in e-2W technology. Countries like China, India, and European nations have emerged as key markets for electric two-wheelers, with manufacturers introducing a wide range of models catering to diverse consumer needs and preferences. Furthermore, the rise of electric scooter-sharing services and rental platforms has contributed to the mainstream adoption of electric two-wheelers in urban areas. Environmental Impacts: Electric two-wheelers offer numerous environmental benefits compared to their gasoline-powered counterparts, including zero tailpipe emissions, reduced noise pollution, and lower greenhouse gas emissions. By transitioning from conventional motorcycles and scooters to electric two-wheelers, cities can significantly improve air quality and public health outcomes, thereby fostering sustainable urban development.

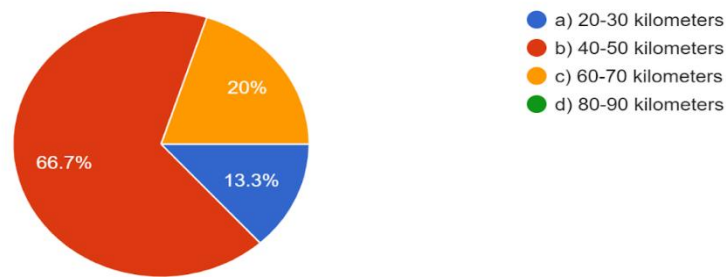
The future of electric two-wheelers appears promising, with ongoing research and development efforts aimed at further enhancing performance, reducing costs, and expanding charging infrastructure. Technological innovations, such as swappable battery systems and lightweight materials, hold the potential to overcome existing barriers to widespread e-2W adoption, making electric mobility more accessible and affordable for urban commuters. Additionally, policy support and collaborative initiatives between governments, industry stakeholders, and urban planners will be crucial in accelerating the transition towards a greener and more sustainable transportation ecosystem. In conclusion, electric two-wheelers represent a transformative solution

to urban mobility challenges, offering a clean, efficient, and cost-effective alternative to conventional gasoline-powered vehicles. With continued innovation and strategic interventions, electric two-wheelers are poised to play a pivotal role in shaping the future of urban transportation, contributing to a more sustainable and environmentally friendly mobility landscape.

II. RESEARCH ANALYSIS

1. What is the average range of an electric scooty on a single charge?

15 responses

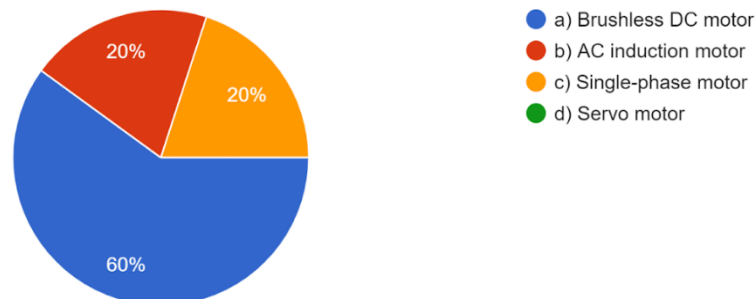


INTERPRETATION:

The average of an electric scooty on a single charge is 40-50 kilometers. However, on average, an electric scooter is expected to cover a distance of up to 64km with maximum battery power. Some high-end models with larger battery capacities and engines can even travel 70 km or more on a single charge.

2. Which of the following is a common type of electric scooty motor?

15 responses

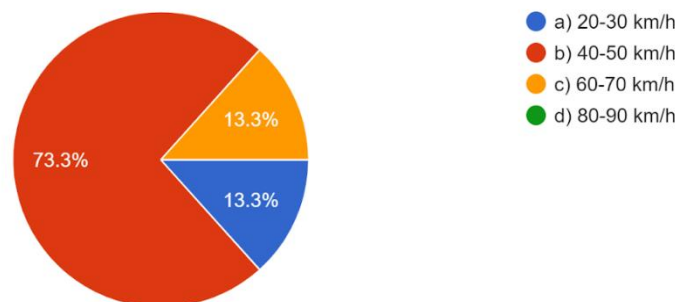


INTERPRETATION:

The common type of electric scooty motor is Brushless DC motor. motors are the most common type of electric scooter motors. They're quiet, compact, and offer a smooth riding experience.

3. What is the typical top speed of an electric scooty?

15 responses

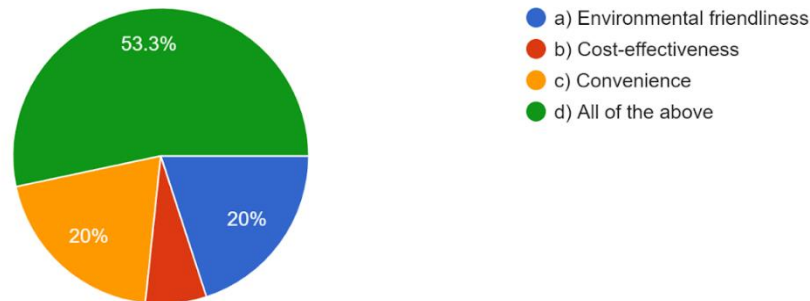


INTERPRETATION:

The top speed of an electric scooter is 40-50 km/h. But they can be much faster. The fastest e-scooter currently on sale at fluid freeride is the Wolf King GT Pro which does a whopping 62 mph (100 kph).

4. What are the primary benefits of using an electric scooty?

15 responses

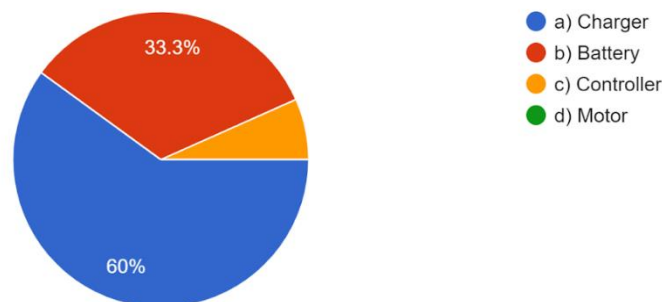


INTERPRETATION:

The benefits of using an electric scooter, Environmental friendliness, Cost effectiveness, Convenience and safety, Low operating costs, Easy repair and maintenance, Perfect for short distances, Can skip traffic jams, Less noise pollution.

5. Which of the following components is essential for charging an electric scooty?

15 responses

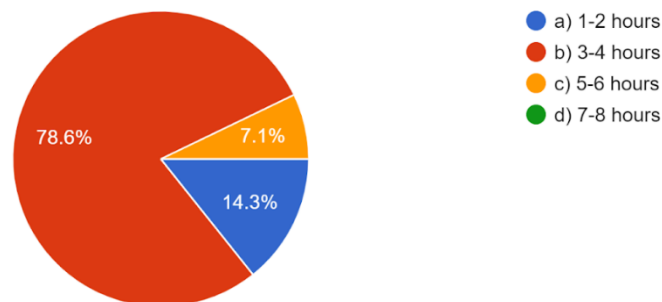


INTERPRETATION:

The EV charger is the power source of an EV that supplies and completes the energy requirement of an electric vehicle for functioning. It is the equivalent of a gas pump for an EV, and instead of using gasoline to power the car's engine, you use a charger. EV chargers—often also called EVSE which stands for Electric Vehicle Supply Equipment— come in different shapes and sizes.

6. What is the approximate charging time for most electric scooty batteries?

14 responses

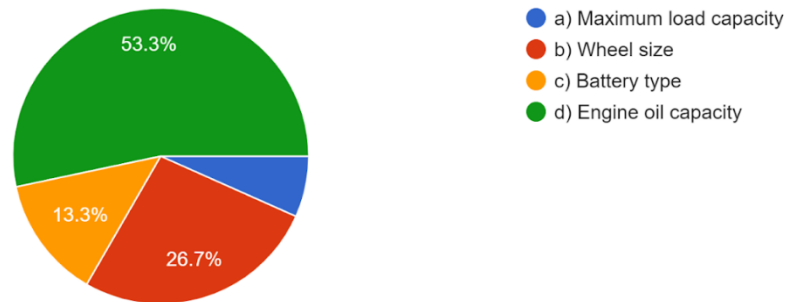


INTERPRETATION:

Charging an electric scooter battery typically takes anywhere from 3-4 hours. Larger capacity batteries in higher-end models can take closer to 8 hours, while smaller batteries under the 50km range may charge in under 4 hours.

7. Which of the following is NOT a factor to consider when purchasing an electric scooter?

15 responses

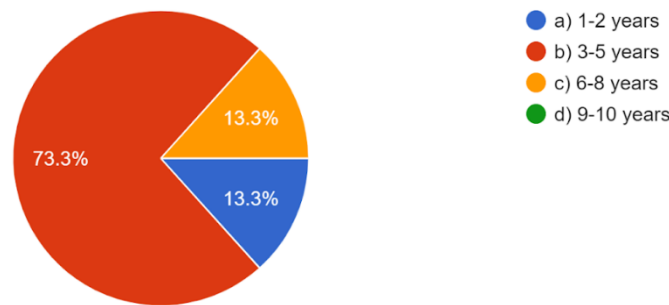


INTERPRETATION:

Engine oil capacity is not a factor to consider when purchasing an electric scooter.

8. What is the average lifespan of an electric scooter battery?

15 responses

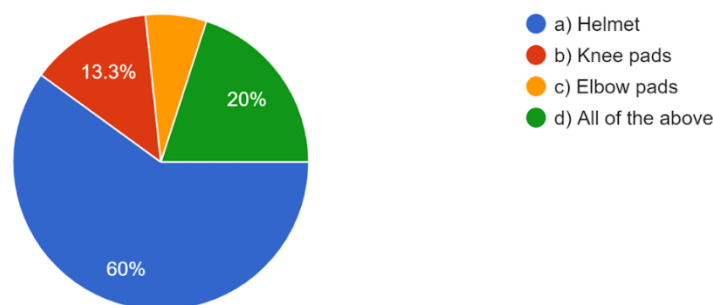


INTERPRETATION:

In vijayawada, electric scooter batteries typically last 3 to 5 years, depending on factors like the battery type, charging habits, maintenance, and environmental conditions. Lithium-ion batteries, commonly used in modern e-scooters, can last closer to 5 years with proper care.

9. Which safety gear is essential for riding an electric scooter?

15 responses

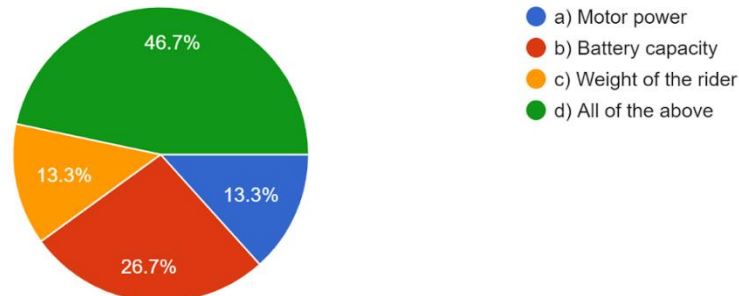


INTERPRETATION:

By wearing a helmet, eye protection, gloves, reflective gear, appropriate footwear, and weather-resistant clothing, you can significantly reduce the risk of serious injury.

10. Which factor affects the acceleration of an electric scooty?

15 responses



INTERPRETATION:

Factors affecting electric scooter range, Battery size or capacity, Motor power and efficiency, Travelling speed, Rider weight, Terrain, External conditions.

III. CONCLUSION

The electric two-wheeler market is rapidly growing due to increased environmental awareness, government incentives, and technological advancements. With zero emissions, lower maintenance costs, and improved battery technology, electric scooters and motorcycles offer a sustainable and efficient alternative to traditional combustion engine vehicles. As infrastructure continues to develop and consumer preferences shift towards eco-friendly transportation options, the future of electric two-wheelers appears promising for both urban commuting and leisure riding.

IV. REFERENCES

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