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A Study on Usage of E- Vehicles in Urban Environments.

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ABSTRACT

In today's world electric vehicles are the future of transportation, they possess many advantages over conventional fuel driven vehicles. In densely populated urban environments especially in countries like India where scooters are a very usual and go to form of transport the introduction and usage of e-scooters can be detrimental to solve many problems born out of use of fuel vehicles like road congestion, accidents, air pollution, noise pollution and many more. This research paper emphasizes how e- vehicles can bring about a huge development in modern mobility in any environment but mainly in urban settings. There are also field tests conducted to determine the advantage of Electric Vehicles over the conventional fuel driven vehicles, from the data collected it clearly shows that electric powered vehicles are better for the environment and for city dweller as they are faster and provide a smoother ride. E-vehicles will help us solve many problems being forced upon us due to mass usage of transportation in urban environments.

Keywords:

- E-scooter
- Electric powered vehicles
- Transportation
- Air and noise pollution
- Field Test
- Data Analysis

INTRODUCTION

Transportation is one of the basic human needs. Transportation does not have any major drawbacks in less populated environments but kin urban environments with millions of people using multiple forms of transport on a daily it gives rise to many root problems such as pollution, road congestions, traffic which branch out to further problems like an increase in number of accidents and many more. To eliminate these problems without imposing severe restrictions on personal mobility, engineers have spent years designing and building vehicles, prominently cars and scooters, to run on an all-electric motor which will produce zero emissions at the tailpipe.

Apart from zero emissions e-vehicles which utilize batteries, and an electric powered train are in all ways better than a combustion scooter running on petrol these ways include:

There is practically no exhaust sound so we can say bye to the noise pollution produced by vehicles, faster engines, more modern features, less break and body wear and tear which means less servicing required, improved economy as electricity is way cheaper than petrol.

Due to all these favorable properties possessed by e-vehicles they will help completely reshape the current transportation setting and solve many branch problems like road congestion, climbing petrol prices and traffic by directly eliminating the root problems like air pollution and noise pollution being faced in all urban environments when it comes to mass transportation usage.

LITERATURE REVIEW

With transport being the fundamental requirement of humans since the dawn of time the constant evolution and never-ending development of different kinds of transportation modes is inevitable. With the traditional internal combustion engine becoming a thing of the past the highly polluting vehicles running on petrol and diesel are being replaced fully electric vehicles which have zero tailpipe emission and produce practically zero air or noise pollution and are far better for the environment.

The great potential of electric vehicles is reflected in their possibility of being healthy of environment and still being better in every form when compared to a normal car like speed, acceleration driving comfort and technology.

Many field tests conducted in multiple countries showed that electric vehicles helped save a lot of money when compared to a car which runs on petrol or diesel over the lifespan of vehicle which was considered as 15 years.

For example, a person living in the US pays around 10 USD for a gallon of petrol while he can travel the same distance in an electric vehicle for 1.22 USD of electricity which is 10% the cost along with zero noise and air pollution. The margin remains this huge in all countries where electric vehicles are made available.

Electric vehicles provide many benefits to its owner some of them are:

- *Low running costs:* Electric vehicles make use of electricity to charge the batteries on which they run unlike tradition cars which run on fossil fuels, I.e., petrol and diesel and cost way more than electricity required to charge the battery which run the electric car.
- *Low maintenance cost:* The yearly maintenance fee is much less compared to petrol or diesel driven vehicles. The major reason for this is due to petrol or diesel vehicles having many more moving parts than seen in an EV.
- *Zero tailpipe emissions:* Since there is no tailpipe pollution emitted from an EV driving one helps in reducing carbon footprints.
- *Tax and financial benefits:* EV help in keeping the environment clean. So, to make more people switch to electric vehicles. The government provides tax benefits on purchase of EVs, and the RTO charged on EVs are also heavily reduced.

There are many more benefits like no noise pollution and the convenience of charging your car at your home. As of right now the price of EVs and lack of charging infrastructure is what makes people hesitant when it comes to purchasing an EV, but these problems will all be gone in time. It is predicted that by 2030 most of the vehicles will be EVs and so far, the prediction seems to be true with the rise of EVs being visible in once daily life.

RESEARCH METHODOLOGY

The Research methodology of any research paper allows the reader to critically evaluate the topic's overall validity and reliability by providing social proof to justify the topic of the research.

Since the biggest hurdle in electric vehicles way is to actually get people to change from petrol and diesel vehicles to vehicles that fully run on electricity because people are not fond of change of this size and seem to have trust issues with the reliability part of electric vehicles.

According to a questionnaire handed out in India regarding the intention of buying an electric scooter with the data collected and analyzed along with existing secondary data the following finding were found:

The questionnaire consisted of carefully curated and drafted questions and answers to determine the estimated amount of people who are willing to switch to electric vehicle and if they can or not along with age groups and income.

When asked people about the weight of the scooter more than 80% of the respondents found them lighter and are more fun and relaxing to ride than traditional scooters.

80% of respondents found electric scooters more affordable. Even though the initial cost price may be on the pricey side but with petrol prices continuously increasing day by day e-vehicles are the economic choice.

When asked if the people were satisfied with the current charging station, almost all of respondents strongly disagreed.

When asked if they fear being frauded or EVs having malfunction 60% of people agreed. Which goes to show the trust issues people have when it comes to EV which is fair considering buying a car and or scooter is an investment and people do not want to take risk when it comes to heavy purchases.

CONCLUSION

This research paper goes to show the bare potential of e-vehicles and how they can truly reshape the current transportation sector and not just decrease but eliminate many major problems caused by mass usage of transportation while also throwing light on the disadvantages of e-scooters which are minor compared to the advantages but they do exist like the rapid proliferation of e-vehicles in cities has raised concerns about their impact on urban infrastructure, including the availability of parking spaces and the potential for cluttered sidewalks.

The factors that have the greatest positive impact are environmental protection, avoidance of congestion and savings in transportation costs. On the other hand, the factors that

have the highest negative impact are primarily related to the regulation of the use of e-vehicles, the non-existence of adequate infrastructure, and the safety of traffic participants. The positive and negative factors mentioned are of great importance in the decision- making process for the regulation and introduction of e-vehicles in traffic systems.

In conclusion, the usage of e-vehicles in urban environments has its advantages and disadvantages. While they can be a convenient and sustainable mode of transportation, it is important to ensure that safety measures are in place. The government also needs to promote switch to EVs. They can do that by investing more into the infrastructure that supports EVs like charging stations at petrol pumps, spreading awareness about them and advertising the tax and financial benefit EVs provide.

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