



Electric Rickshaws will improve the Socio Economic status of Auto Rickshaw Drivers

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Abstract:

'Auto Rickshaw' name itself gives different meaning to different people. For some it is used in emergency and for others it is to connect to the destiny. In general the status of auto drivers is not up to the mark or in other sense the standard of living is not pleasant. Electric Vehicles are the future of India since 2020 and after covid to the greatest extent. The major reasons for the growth are Socio economic, psychographic and environmental benefits along with Government support. According to Shantanu Gupta(2021) e-rickshaws have emerged a winner in transition to electric mobility race.

I. Introduction:

India is known for its population and more than that quick adoptability for any crisis. Crisis may be economic, fuel, food scarcity, technological advancement or it may be Covid. Innovations only can make the life easier. Innovation for the better living like fuel based to modern electric based, the benefits will be immense. Auto rickshaws play crucial in reach of destiny. Economic condition of auto rickshaw drivers is not that great compared to white colored job. Their problems are immense. As per the interaction with auto rickshaw drivers, it is found that the fuel price and increased prices of consumer goods is a real challenge faced by them. Electric vehicles not only going to reward drivers but also to the common man directly and indirectly

Objectives of the Study:

- To understand and evaluate the benefits of Electric auto rickshaws

II. Research Methodology

An empirical study is conducted to understand how electric vehicles play crucial role in the life of auto drivers. Interaction with auto drivers and secondary data is extensively used for the study.

E-rickshaws and history

The development of electric rickshaws started in the world market sometime during the World War, but faded over time. These were later introduced in China by the local and Japanese automotive industries and further spread to areas of Asia. In India, the development of electric rickshaws started in the late 1990s with the aim of improving manual rickshaws. Electric rickshaw was developed with motor-assisted pedal rickshaw (MAPRA) by Nimbkar Agricultural Research Institute (NARI). ELECSHA (Electric Rickshaw) 2000 was also developed later, but there were problems with battery performance and quality that prevented them from developing in the market.

Socio-economic benefits:

The initial cost of e-rickshaw is quite low compared to other modes of auto. The running cost of an e-rickshaw is only up to a rupee whereas fuel based autos costs more than Rs 10per km. The maintenance cost is also very low. Electric Rickshaws provide better employment opportunities.

Operating Costs, Revenues and Driver Income

While auto rickshaws across India are primarily gasoline powered, these vehicles are increasingly being powered by CNG (compressed natural gas) and LPG (liquefied petroleum gas) in major cities to reduce air pollution (Shah and Iyer, 2004; Reynolds, Kandlikar and Badami, 2011). CNG is mandatory for public transport in Delhi and used in auto rickshaws in Mumbai (Hakim, 2012).



Since 2008, all new auto rickshaws in Bangalore must be powered by 4-stroke LPG engines; However, the switch to LPG has proved difficult, partly due to a failure to offer drivers adequate compensation. Consequently, up to 25% of auto rickshaws in Bangalore still run on petrol, although exact figures are difficult to ascertain (CISTUP, 2012). Chennai's auto rickshaw fleet is also in the process of converting to LPG following a 2007 court order (Garg et al., 2010), but progress has been moderate due to the lack of LPG infrastructure.

Fuel costs vary based on fuel combination and engine type. CNG is arguably a better fuel for spark ignition (SI) engines than gasoline due to its super-octane rating, and therefore SI-CNG engines can use a higher compression ratio and potentially achieve higher fuel efficiency than their gasoline counterparts. However, since the CNG engines in Delhi's auto rickshaws are mostly retrofits rather than specifically designed and built for the new fuel, they are likely to perform suboptimal. This reason, plus the added weight of the CNG fuel tanks, likely contributed to the lower fuel economy for CNG compared to gasoline auto rickshaws. This deficiency is higher in two-strokes than four-strokes, probably due to higher scavenging losses in two-strokes in the case of CNG. The lower fuel costs for the CNG auto rickshaws, despite their better fuel economy, are due to the remarkably lower unit price of CNG compared to gasoline on an equivalent mass basis (mypetrolprice.com;). For the same reason, even the four-stroke gasoline auto rickshaws, which are the most economical, have much higher fuel costs than the CNG auto rickshaws. Also note that between 2010 and 2012 the price of gasoline and CNG increased by more than 30%.

Such large price fluctuations have a significant impact on the economy of auto rickshaw operation. Engine type affects the magnitude and timing of maintenance costs. Two-strokes have insignificant fuel consumption compared to four-strokes and require daily oil cans, which means higher running costs. While Rs. 26 is the average maintenance cost for these two types of engines that run on gasoline, the maintenance requirements and costs for two-strokes are minimal than four-strokes. The replacement costs are also significantly higher for four-stroke engines; A new four-stroke engine costs about 15,000 rupees (2010 rupees) (US\$237) (Reynolds, Kandlikar and Badami, 2011). Also, two-strokes run without a battery, which can cost several thousand rupees. With higher daily operating

costs but lower maintenance and replacement costs, two-stroke auto rickshaws spread the total cost of ownership more evenly over time than four-strokes. The majority of cities are in the process of phasing out two-stroke auto rickshaws by restricting new permits to four-stroke auto rickshaws, as previously mentioned (CiSTUP, 2012; EPCA, 2004). Maintenance costs also depend on fuel type; it is generally higher for CNG auto rickshaws than for those with petrol engines.

Environmental Benefits:

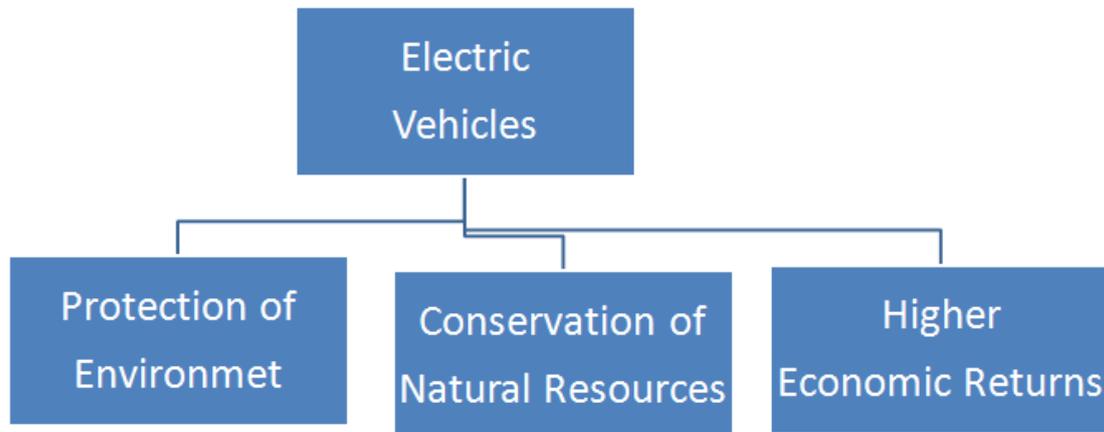
Pollution is the major concern at present in most of the Metropolitan cities. Air pollution has become a major concern for the residents of India. The smoke emanating from vehicles such as buses, trucks, rickshaws, scooters and many automatic vehicles in the nation is increasing day by day. Due to the increase in vehicle, gases are increasing in the atmosphere like sulfur dioxide (SO₂), nitrogen dioxide (NO₂) and carbon monoxide (CO). Apart from this, the carbon material called benzene is also increasing in the atmosphere, which is a major threat for the survival. Due to this harmful fluid the chances of getting diseases like cancer and many other diseases can increase. The harmful particles present in the air are so tiny that they reach the windpipe through the nose, resulting in increased diseases like lung disease, cough and shortness of breath and even results into heart attack..

Here are the 10 most polluted cities in India:

SI.No	City
1	Bhiwadi (Rajasthan)
2	Ghaziabad (Uttar Pradesh),
3	Delhi
4	Jaunpur
5	Noida
6	Baghpat
7	Hisar
8	Faridabad,
9	Greater Noida
10	Kolkata

(source:<https://www.mapsofindia.com/my-india/travel/>)

It is very evident that India as a nation very quickly respond to the changes. For instance Demonitization or it may be impact of Covid, in the same manner Electric Vehicles are going to rule India very soon.



Protection of Environment, Conservation of Natural resources and better economic returns are some of the major benefits along with this there are other benefits

1. Lesser dependence on other countries for crude oil
2. No need of conventional method of storage of petroleum lubricants
3. Price stability for consumer goods
4. Petrol pump space can be used for vehicles parking or for charging points.

Sales of Electric Vehicles (EV) in India are increasing especially after Covid 2020. Their growth can be seen in across passenger vehicles, two and three wheelers; that too in a great extent.

Electric mobility is making rapid strides in the three-wheeler segment, owing to Government pressure on businesses to go green and also to support alternatives to fuel based vehicles.

As per FADA reports three wheeler based vehicles are seeing the changes from internal combustion engines to electric with as much as 45% of EV Market.

III. Conclusion

There is an end for everything; in the same way moving through evolution wheel to electric is the need of the era. Initial period of changes is not easy and challenging too. As there is a saying, 'Survival of the fittest' in the same manner we should conserve, protect and transfer good environment to the next generation. It is very clear that moving towards electric will have lot of benefits directly and indirectly. Slow approach is better than sudden rush towards electric mode of transport. Discarding of fuel based vehicles should be done systematically.

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