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E-SCOOTER IN INDIA : A SUSTAINABLE FORM OF TRANSPORT-AN OVERVIEW

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Abstract

Sustainable Marketing is about understanding and managing marketing primitive role in the future of business and society. It helps in creating, upgrading, communicating and delivering value to the consumers, intermediaries and stakeholders. Viewed from different perspectives, e-scooters can be considered an effective solution to a large number of problems faced by almost all countries like India. The purpose of this paper is to emphasize the multi-dimensionality provided by the use of e-scooters, which is why these devices have become widely adopted around Indian context. Basically, the study is based on secondary sources of data i.e websites, e-magazines etc. it reveals that acceptance of e-scooters as a new mode of transportation, that is introduced into an existing multitude of alternate transportation modes. It also suggests that e-scooters have an issue with inclusivity – and if a transport mode is not inclusive, it cannot be truly sustainable.

Key words: e-scooter, sustainable marketing, effective solution, consumers

INTRODUCTION:

In today's environment, air pollution is one of the serious problems faced by the people globally, mainly due to the rapid growth of population and industrialization which is accompanied by growing number of vehicles. Electric stand-up scooters (e-scooters) are introduced in several cities worldwide, providing new means for people to travel around the city. While praised for their flexibility, e-scooters are also met with negative sentiments due to fatal accidents and chaotic parking. Safety is not the only issue, though e-scooters have come under increasing scrutiny for their environmental impact. Although shared models are emission-free at the point of use, the process of manufacturing, moving and managing them results in greenhouse gas emissions – which increase if they have a short lifespan.

Most shared e-scooters need to be collected, charged and redistributed regularly, often using fossil-fuelled vehicles. The largest percentage of daily movements is realized with the purpose of going to/from work, school, university, etc. The remaining daily movements usually include reasons such as going shopping, recreation, leisure, etc. The defined purpose of travel, distance, journey time, area of the city, and demographic

characteristics of the population or individuals will impact the choice of the mode of transport. In most cities, the dominant mode of transport is still a car or public transport, with a smaller number of travellers walking and cycling. A significant percentage of cars in the overall modal share makes cities less sustainable and less liveable.

Due to the current circumstances, the unfavourable situation at a global level, caused by the appearance of the COVID-19 virus, also led to drastic changes in the traffic system. So far, the mass-use public transport subsystem has become the most unsafe form of travel. People were more focused on individual modes of transport and walking, which gave additional space for a greater use of e-scooters. In fact, the decline in the use of micro mobility during May was significantly smaller compared to the decline in car and public transport usage, while the use of e-scooters is expected to increase.

REVIEW OF LITERATURE:

Since literature about e-scooters is scarce and predominantly covers the situation and development in China, where vehicles of this type are popular among city dwellers, here a general overview over existing literature.

The e-scooter expansion in **America,** with over 38.5 million trips in **2018** . quickly spread throughout the world. Just two years after breaking into the market, e-scooter services were available in over 630 cities in 53 countries, with over 300 million trips recorded world wide . The reason for such a rapid acceptance of this new type of transport can be primarily found in its characteristics, which made e-scooters extremely attractive and interesting. This is supported by a survey in Portland, in which as many as 28% of the respondents said that they used e-scooters solely for visual appeal, entertainment and recreation. It can be assumed that the attractiveness of this type of transport was one of the triggers for its global expansion. Consequently, this led to the successful promotion of e-scooters.

For example, a survey conducted in several major US cities at the very beginning of the introduction of e-scooters in traffic showed that as many as 70% of respondents had a positive opinion about this type of transport.

It is important to note that it was only after more intensive use of e-scooters that users were able to get acquainted with the real advantages and disadvantages that this mode of transport provides.

A study **(2019**) at **North Carolina State University**, taking into account emissions produced by making and moving e-scooters, suggested they typically produce more emissions per passenger mile than a standard bus with high ridership, an electric moped, an e-bike or a regular bicycle. Such findings are echoed by from the Lufthansa Innovation Hub ranking estimated carbon emissions of various transport types, which suggests average emissions of dock less e-scooters are higher than those of trains, buses, e-bikes, electric and hybrid cars and even petrol-powered scooters.

Marion Lagadic, a project manager at 6t, which conducted the French e-scooter surveys, agrees. “One could hypothesise that e-scooters not only make the first-mile or last-mile possible for those users who live far from stations, they also offer that little bit of fun that makes an intermodal trip attractive,”

Results were obtained in a survey conducted in Santa Monica, where 49% of the respondents said that car travel was replaced by some form of shared micro mobility. In an analysis of the attitudes of users in **Arlington,** 52% of the respondents said that they had been using cars, taxi services, Ubers, etc. less frequently since they had started using e-scooters.

According to **Mr. Sohinder Gill,** Chief Executive Officer, Hero Electric, the operating cost of battery-run-two-wheelers is one tenth of the gasoline-powered variants. He also expressed that everywhere in the world the electric vehicle has grown with government subsidy. In India, Delhi is the only State offering subsidy for electric two wheelers. In this context, the potential for increasing the volume of the electric vehicles in India can be assessed.

Hasselqvist et al. found that one of the most echoed concerns of choosing small electric vehicles over cars was how other people characterized it as odd or extreme. Participants found that it can be unpleasant to break with social norms and expectations, and carefully chose how they explicated motivations of swapping their car with electric vehicles to non-participants. Similarly, the clash of user and non-user perspectives demonstrated in our findings suggest that e-scooters are not yet fully socially accepted as a mobility mode.

OBJECTIVES OF THE STUDY:

i. To discuss the concepts and terms of e-scooters.
ii. To highlight an array of benefits of e-scooters, including their potential as a cost-effective and rapidly scalable solution to social, environmental and economic challenges.
iii. To emphasize the different dimensions by use of e-scooters.

RESEARCH PROBLEM:

A Study report says that India has the second highest two-wheeler fleet in the world and it is expected that the country's two-wheeler population shall exceed China before 2020.

The high growth is mainly due to robust economic activity, infrastructure development, growing middle class population, rising income, easy availability of finance etc. However, the dynamics of two-wheeler market is changing with the changing preferences.

SIGNIFICANCE OF THE STUDY:

Automobile industry, being one of the fastest growing sectors in the world, helps for the economic growth of the country. It plays a catalytic role in developing not only transport sector but also industrial sector thereby generating a significant employment opportunities both directly and indirectly. It helps in earning foreign exchange too. After globalization, Asia especially India has become the major consumer as well as supplier of automobiles and is termed as global automotive hub. Moreover, the exports by automobile including automotive are increasing by leaps and bounds. But a recent report of Inter-Governmental Panel on Climate Change (IPCC) says global emissions of CO2 must be reduced by 50 to 80 per cent by 2050 in order to avoid

global warming (UNFCC 2011)9 and two of the main contributions of CO2 emissions are energy conversion and transport activities. Compared to conventional vehicles Electric vehicles are relatively efficient and emit near zero emissions at the point of use. Moreover, considering the environmental issues and fluctuating oil prices consumers move towards alternatives and electric vehicles is the right choice on it offers both safety and convenience. The study if all about sustainable marketing of e-scooters which is very much vital for the stakeholders.

SOURCES OF DATA: The study is purely based on different websites, journals both at national and international level.

LIMITATIONS: I have studied e-scooters in the context of India already well-known for its biking culture, results will not be readily transferable to other countries.

BENEFITS AND CHALLENGES OF E-SCOOTERS:

- With the growing environmental problems at the global level and as the number of fuel vehicles is multiplying every day, it has become a major concern to address this issue with a smart approach. Renting an electric scooter lets you travel in the city freely with no harmful gas emission. Thus, contributing a countable part towards a safer planet.
- The major role to run the Electric Vehicle in India is power generation. Without electricity, we cannot imagine Electric Vehicle future.
- Potential benefits of e-scooters will only be realised by cities if there is a rapid and deep transformation of private city vehicle fleets, triggered by a change in policy.
- While emissions from other major economic sectors have fallen in recent decades, impacts from mobility have increased. Mobility emissions are currently responsible for roughly 23 per cent of global CO2 emissions and are a key contributor to air pollution in our cities.
- Electric vehicles (EVs) are increasingly considered the most viable solution to eliminate mobility emissions and improve air quality.
- The benefits of e-scooters and other EVs, noting that replacing 80 per cent of vehicles on the road with EVs by 2050 would cut emissions of NOx, PM, and SO2 by more than 80 per cent in comparison with 2010 levels.
- one of the major challenges in EV sector is the lack of knowledge in these sectors or subjects in the curriculum of the Indian Education system to support EV industries.
- India is facing a critical fuel crisis which influences the consumers to buy e-scooters.
- Lack of charging infrastructure.
- Availability and accessibility of charging stations.

DIFFERENT DIMENSIONS:

INFRASTRUCTURE DIMENSION

The basic precondition for the efficient functioning of e-scooters is an adequate infrastructure.

Currently, this is one of the most important issues that micro mobility is facing. The physical limitations of the street network and road profile, the different structures and characteristics of the base surfaces, and the existing separation represent obstacles for the safe usage of e-scooters. Traffic experts worldwide agree that streets with a surface made of cobblestones or slabs, as well as streets with tramway tracks, are not safe for e-scooter riding. The characteristics of these vehicles, primarily their small wheel circumference and radius, limit their use on the abovementioned surfaces. Although a large number of countries have started introducing amendments to the law in order to properly handle this transportation mode, insufficient attention is still paid to infrastructure development and modification.

TAFFIC SAFETY DIMENSION

The main opponents of this transportation mode are usually cyclists and pedestrians, who are placed under pressure due to the need for sharing the infrastructure and the fact that their safety is jeopardized. Pedestrians are generally the most vulnerable category of road users, since in most countries riding e-scooters on sidewalks has not yet been regulated by law. As a consequence, traffic accidents involving pedestrians are very frequent. It was the endangerment of pedestrians that led cities, in which the use of e-scooters is regulated, to prohibit their movement on the sidewalks.

For example, in 2018, approximately 1500 recorded injuries were caused by the use of e-scooters, and eight people were killed in 47 American cities [51]. The main problem is that this number is constantly rising.

COVID-19 DIMENSION

The outbreak of COVID-19, which has spread throughout the world, has greatly changed the way we have lived, worked, travelled and behaved until now. The specificity of this situation is reflected in the fact that not only the modal share but also the safety of certain modes of transport has completely changed. For example, public transport, which is being developed with the aim of establishing a sustainable and efficient transport system, is most affected, especially bearing in mind the impossibility of adequate physical distancing in public vehicles. Various aspects, including the COVID-19 impact trend, do not promise the secure recovery of the public transport subsystem as it is now.

On the other hand, individual modes of transport, such as bicycles, electric bicycles, electric scooters and cars, have emerged to be safety-efficient in this situation. Therefore, e-scooters are given another important advantage, and that is the possibility of realizing the trip while maintaining physical distance.

ECONOMIC DIMENSION

The e-scooter market has shown enormous growth in an extremely short time. For example, the global electric scooter market size has recently been valued at US$17.43 billion and is expected to have a compound annual growth rate of 8.5% over the next 10 years. When it comes to the economic benefits of using an e-scooter, two characteristic aspects can be distinguished: the benefits realized by users, and the benefits realized by operators. Given the e-scooter market growth, the benefits of the operator are clear. The costs and benefits

incurred by users differ depending on the ownership and the way the e-scooter is used. It is interesting to note that in some cities, the use of e-scooters per ride is more expensive than public transport, walking or cycling.

One of the significant advantages of this type of transport is the price range of e-scooters, which makes them affordable for different income categories. Moreover, the additional maintenance does not require significant costs, especially considering the charging

of the e-scooter, which can be done at any location that meets the basic requirements for charging mobile phones. This advantage, for example, is significant when compared to electric vehicles, which usually require a special charging infrastructure.

SOME CASES:

OKAYA ELECTRIC

Okaya has been a battery manufacturing industry pioneer for the last 29 years. It is an Indian company delivering the most reliable batteries to different customer segments. Recently, the company has joined the two-wheeler electric business by launching a range of affordable electric scooters in India. Moreover, the company is building a large manufacturing plant in Neemrana, Rajasthan, that will likely be complete in 2023-2025.

SIMPLE ENERGY: Simple Energy two-wheeler electric scooter company is also an **Indian electric vehicle company** based in Bengaluru. The start up was founded by Suhas Rajkumar and incorporated in 2019.The company launched its first electric scooter, Simple One in India on August 15, 2021. In the first phase of the launch, it will be available in 13 states. The company said that these electric scooters are manufactured in India and will bring high-quality made-in-India products to the people.

Besides, the company also shared details for the charger – A simple loop. It will be deployed pan India to offer better-charging infrastructure. The company has plans to deploy 300+ charging stations in the country in the coming months. To make the charging station more convenient and easier to access, Simple Energy is partnering with shopping malls, restaurants, hotels, etc.

HERO ELECTRIC:

Mr. OP Munjal and his brother founded Hero Electric in 1956 in Ludhiana, Punjab. Hero Electric is on number 3 based on the April'22 sales volumes. Hero initially started making bicycles and became the largest bicycle maker in the world.

Gradually, it started Hero MotoCorp – which ruled over India with its bike and scooters. It is the largest bike manufacturer in India. In 2000, Hero started producing **electric two-wheelers,** and in **2007, it established Hero Electric** as a separate company. The company has unveiled many two-wheelers – bikes and scooters in India to date.

OKINAWA:

Okinawa electric two-wheeler company is no.2 based on recent sales numbers. They have a manufacturing plant in Bhiwadi, Haryana. It was a start-up that came into existence in 2015, and the founder is Mr. Jeetender Sharma. It operates 74 dealerships and aims to open 450 over the next three years. The company manufactures electric scooters and bikes. It launched six scooters and planning to reveal seven new models in India soon.

Some known Okinawa bikes are – Okinawa Praise, Ridge Plus, Lite, Dual, R30, and i-Praise.

OLA ELECTRIC:

Ola Electric is the number 1 electric two-wheeler company in India currently. It is located in Tamil Nadu and headquartered in Bangalore. It was founded in March 2019 by Bhavish Aggarwal by buying the parent company's stake in Ola electric. The manufacturing setup is located in the Pochampalli town in Krishnagiri district of Tamil Nadu whose construction began in February 2021. There will be two models available in 10 elegant colors – **S1 and S1 Pro**. The launch price is close to Rs. 1 lakh and there is a strong interest shown by early adopters and enthusiasts for the OLA scooter.

CONCLUDING REMARK:

The paper found that e-scooter turn out be the most community-focused, people-friendly, easy to fit the customer's budget and one of the safest modes of transportation. It is worth noting that the average cost of electric vehicles is higher than the average cost of conventional ICE-powered vehicles. Majority of the experts mention that the upfront cost involved in the purchase of an electric vehicle is their barrier to adoption. Apart from the policy and infrastructure related issues, technology plays an important role in market penetration of electric vehicles. The results clearly demonstrate how improvement in the performance of the vehicle over a period of time along with improved battery can drastically increase penetration, overcoming the impacts of withdrawal of incentives. Battery cost is another important parameter and technology can play an important role in reducing cost of the battery and other components, many of which are presently imported. Making the environment clean and green is not only good for the planet and enjoyment of our time spent on it but having clean air also means having healthy people. Healthier people mean happier people, happier people mean safer people.

REFERENCES :

- Litman, T. Evaluating Accessibility for Transportation Planning: Measuring People's Ability to Reach Desired Goods and Activities; Victoria Transport Policy Institute: Victoria, BC, Canada, 2012.
- Department for Transport. Future of Mobility: Urban Strategy; Department for Transport: London, UK, 2019.
- Colorado Department of Transportation. Mobility Choice Blueprint; Colorado Department of Transportation: Denver, CO, USA, 2019.
- Hardt, C.; Bogenberger, K. Usage of e-Scooters in Urban Environments. Transp. Res. Procedia **2019**, 37, 155–162. [CrossRef]
- Smith, S.; Schwieterman, J. E-Scooter Scenarios: Evaluating the Potential Mobility Benefits of Shared Dockless Scooters in Chicago.In Proceedings of the Transportation Research Board,Washington, DC, USA, 7–11 January 2018; p. 32.
- United Nations Department of Economic and Social Affairs/Population Division. World Urbanization Prospects; United Nations Department of Economic and Social Affairs/Population Division: New York, NY, USA, 2018; Volume 12, ISBN 9789211483192