An Empirical Study on Attitude of Consumer Towards Purchase of Zero Emission Vehicle in India

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Abstract--- The gap between domestic crude oil production and consumption is widening. This, coupled with hardening of the crude prices, is leading to increase in the trade deficit. This poses a serious challenge to environment. Keeping this in mind a research is designed to study the perception of consumers towards buying of zero-emission vehicles in India. The study also considers the barriers to buying decision of consumers towards zero-emission vehicles. The study found that, the major barriers are lack of proper infrastructure, high prices, battery problems and limited range of variety in the products.

Keywords--- Consumer perception, buying behavior, automobile industry, electric vehicle

I. INTRODUCTION

The Indian automobile manufacturing sector is one of the largest employers because of its profound backward and forward chain integration with other industries. According to the report of the society of Indian automobile manufacture Indian automobile production has now taken 4th place globally reaching 26 million units in 2020 of which 4.7 million are exported by India this makes India the 7th biggest producer of commercial automobiles. A major impetus was provided by the liberalization of the Indian vehicle manufacturing in the year 1991, since then there has been the significant increase in the manufacturing facilities in terms of the number of players and size.

1.1 Need for Zero-emission vehicles:

Globally, automotive industry is passing through an paradigm shift. The past century has been the era of internal combustion engine (ICE) primarily account of increase in fuel consumption, availability and low-cost of fossil fuels. The shift to a electric immobility has become a necessity due to depletion of fossil fuels, rapid increase in energy costs, impact of transportation on the environment and concerns over climate change.

For emerging economies like India, the urgency to find viable alternatives for unsustainable immobility is also accentuated by rapid economic development which is accelerating the demand for transportation. As a result of sustained high GDP growth, primary energy consumption is expected to increase by 70% in the next ten years.

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II. LITERATURE REVIEW

Campbell iet al. (2012) used survey data from Birmingham in 2001 to discover prospective EV owners in a metropolitan area. They working and leisure idustry is the profile of a vehicle driver. Contemporary environmental concerns are thrusting the manufacturing and sales.

According to Bhalla Pretty iet al. (2018) combination of Indian skilled and semiskilled technological base, a platform of large customer base, and relatively cheaper production and labor costs, has fascinated international tall global electric vehicle manufacturers and component suppliers, to start operations from India into Bosch, AVL and Cummins. To study Commercial success and ipurchase intention of electric vehicle by Indians, there is a need to study the factors influencing the consumer acceptance of these vehicles. Various factors that influence the purchase decision of car buyers are...
individual perception on dimensions like environmental issues, cost, trust, technology advancement, infrastructure, and society acceptance. The results show that environmental concerns and consumer trust in technology advancement, infrastructure development, societal acceptance, and interest in electric/hybrid vehicle adoption is crucial.

Thus, it is important to understand the factors influencing consumer perception about electric/hybrid vehicles. The government has taken steps to promote electric vehicles by creating environmental policies, infrastructure development, and subsidizing costs. Indeed, according to Bigerna et al. (2018), sustainable mobility has received increasing attention in recent years. The transport sector contributes to almost a quarter of Europe's greenhouse gas emissions. The development of electric/hybrid vehicles (EVs) may help shift toward sustainable mobility, reducing oil vulnerability and greenhouse gas emissions in road transport. Poor penetration of EVs might be explained, in part, by consumer resistance to EVs. Therefore, the aim of our study is to determine consumers' attitude and preferences for EVs, investigating which conditions influence consumer decision-making in purchasing EVs. Using a fuzzy set qualitative comparative analysis of 421 highly-educated individuals, involving students and faculty members, we identify several configurations of conditions affecting the variables which lead to the outcomes, supporting their equivocality and asymmetric nature. Our findings indicate attitudes related to EVs differ across age and groups. Our ipaper offers public decision makers new useful insights for understanding the importance of specific determinants, and for designing ineffective strategies for EVs' development worldwide.

III. RESEARCH METHODOLOGY

3.1 Research Objectives:
1. To examine the need for zero-emission vehicles in India
2. To understand the perception of consumers towards zero-emission vehicles
3. To identify and analyze the factors considered by consumer in preferring zero emission vehicles in India.

3.2 Research Design:
For the purpose of this research, descriptive research design has been used to describe the factors considered by consumers in preferring zero emission vehicles in India.

3.3 Data Collection:
For the purpose of this research, primary data has been collected from two-wheeler and four-wheeler vehicle consumers through structured questionnaire. The secondary data has been collected from the websites, magazines, and journals.

3.4 Sample design and sampling technique:
For the purpose of the research, simple random sampling technique has been used to gather the primary data from 100 two-wheeler and four-wheeler vehicle consumers.

IV. PERCEPTION OF CONSUMER

The preference towards transportation mode is very much affected by its accessibility. The observation from the data highlighted that general vehicle users preferred private vehicles for different mode of transportation. The reason for preference of private vehicle in long-distance travel can be due to the convenience, more secure and privacy, improved highways and recently built high speed and secure expressways. Based on the data collected through questionnaire, figure 1 represents the present ownership of vehicle by the consumers, it is found that 67% of consumers use petrol vehicles, this includes two-wheeler consumers also, 13% consumers use Diesel vehicle, only 6% use CNG/PNG vehicles and remaining 14% consumers use electric/zero emission vehicles.
When asked about the next type of vehicle to be purchased by consumer, majority i.e. 51% preferred petrol vehicle, 8% preferred diesel vehicle, 7% preferred CNG/PNG and the number of customers preferring electric/zero emission vehicle increases to 34%. This shows that, consumer behavior is getting diverted towards zero emission vehicles.

**Challenges ahead of Zero emission vehicle:**

There have been major challenges that electric vehicle developers have had to face through the years. Hence, an attempt is made to study the challenges that needs to solved before consumers make the buying decision.

**REFERENCES**


