

Chapter 14

Sensory Perception and Cognitive Responses: Unveiling Consumer Psychology in EV Adoption

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ABSTRACT

To achieve net zero emission and decarbonization, the electrification of the transportation sector is necessary. Electric vehicles are extensively advocated as a sustainable option of transportation, due to their benefits and growing awareness among public towards environmental pollution, climate change, and country's dependence on oil imports. For most of the countries, including India, road transportation sectors are centres of focus to reduce emission of greenhouse gases. Though there is an increase in year-on-year sale of electric vehicles (EV) in India, their market share is still on the lower side compared to the overall sale of vehicles. This study focuses on consumer perceptions, knowledge about electric vehicles, experience in driving, and intention to purchase an electric vehicle in the near future. The study is empirical in nature and quantitative methods are employed. The respondents go through pre-drive and post-drive surveys. The findings will provide detailed insights into consumer perceptions towards electric vehicles and barriers to adoption of electric vehicles in India.

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INTRODUCTION

Electrification of transport sector is very important for reduction of emissions. In order to achieve net zero emission and decarbonization of environment, electrification of transport sector is advocated as a prime solution. Electric Vehicles (EV) come out as an assuring solution for the purpose of reducing carbon footprints which are associated with convention fuel powered combustion engine vehicles. Admix of financial benefits, regulatory policies and increase in consumer's awareness towards issues related with environment such as air pollution, climate change, accelerate the adoption of electric vehicles (IEA, 2020). There is also a dire need to strategically reduce dependence on oil imports. Various governments are also increasing their focus on the road transport's future, to reduce emission of greenhouse gases.

Importance of Electrification in Transportation

Electrification of transport sector is advocated as a key strategy to control climate change. Transport sector has a significant contribution to greenhouse gases emissions globally, and it accounts for approximately 24% of total global co2 emission (IEA, 2020). These emissions can be substantially reduced by transitioning to electric vehicles. Electric vehicles have zero tailpipe emissions, which improves air quality (Transport & Environment, 2018). Further, use of renewable sources of energy for charging Electric Vehicles can further increase their benefits towards environment. The study of Ellingsen, Singh, and Strømman (2016) highlights the life cycle greenhouse gas emissions of EVs. Study shows that life cycle greenhouse gas emissions of EVs are considerably lower as compared to conventional vehicles, specifically when EVs are charged with electricity generated from renewable sources.

Global Trends in Adoption of Electric Vehicles

The adoption of electric vehicle is supported by wide array incentives and policies globally. One of them is financial incentives, such as rebate in taxes and direct subsidies, which make an electric vehicle more accessible by lowering the upfront cost of vehicle. For example, in United States of America, federal tax credits of \$7500 were offered for Ev buyers. And countries like Norway and China provide many financial incentives which resulted in higher Electric Vehicle adoption rates (U.S. Department of Energy, 2021; IEA, 2020). Another area of consideration is Infrastructure Development, with notable investment aiming at alleviation of range anxiety and supporting widespread use of EV. To achieve it, European Union has made commitment to deploy at least 1million public recharging stations by 2025 (European Commission, 2020). Additionally, government regulations and mandates

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