

# An Application of Electric Car Transactions: Consumers Interest for Green Technology

Dr. Hamsa S

Department of Electronics and Communication Engineering, Faculty of Engineering and Technology Jain (Deemed-to-be University) Bengaluru, India

Email: s.hamsa@jainuniversity.ac.in

**ABSTRACT:** *The aim of this paper is to use consumer motivation to encourage the adoption of cleaner technologies. Consumers vary in their motivations, which may be inherent or extrinsic. Though awareness provision techniques could be operative in persuading some buyers to purchase electric vehicles. Extrinsically motivated customers could often be more persuaded by cash incentive schemes such as discounts or penalties. This paper suggests a complex concept of ecological innovation adoption where information-delivery techniques are accompanied by financial incentives. The various surveys have been done to find out the policies for encouraging consumers to minimize the adverse effects of transportation system on environment. The forecast of electric vehicles sales by 2030 is analyzed. Finally, the various factors driving growth of electric vehicles are discussed in detail. The findings of this paper would be of special concern to politicians who want to steer customers toward cleaner technology.*

**KEYWORDS:** *Consumers, COVID-19, Electric Vehicles, Environment, Vehicles.*

## 1. INTRODUCTION

The use of industrial processes made possible by technological innovation is largely to blame for the current climate change problems. However, it is commonly assumed that technical advances will contribute to meeting the burden of environmental sustainability. In this paper, the author looks at the mechanisms by which individual customers implement pro-environmental technologies. Adopting fuel-efficient vehicles not only minimizes one's personal fuel bill but also contributes less pollution to the environment. Environmental protection, on the other hand, is a shared goal, and not any agent would want to help by comprehending the externalities associated with the utilization of fossil fuels. Thus, management action must command to participate in the implementation of environmentally friendly automobiles. However, it is unclear which strategy will be the most successful. Currently, the European Union (EU) Commission's "three pillar policy" comprises of a collection of voluntary vendor agreements, information-sharing strategies, budgetary incentives, and legal and financial tools. How information-provision policies as well as policies of legal and financial incentives concentrated on consumers can have some drawbacks and advantages, and that usefulness of these policies is expected to be influenced by how these strategies are combined.

Data provision policies provide consumers with data about the condition of the ecosystem and how to render their habits less environmentally damaging. Sight of a question, understanding of good solutions, a sense of obligation, and the belief that one's own intentions can change the situation are all reasons that can be expected to make a significant impact for customers to take a lot of pro-environmental action. Consumers, on the other hand, appear to vary significantly in these dimensions; individuals experience different levels of responsibility, and they have different motivations in reaction to shifting environments. Customers may be categorised as either theoretically or empirically driven to work in a green manner. Participating in an event for its own sake has been connected to unselfish incentives in customer behavior [1].

The conventional economic recipe, namely implementing monetary benefits that are supposed to contribute to optimum resource distributions, has some flaws. Financial benefits alone do not change people's minds about the issue, and they deter people from taking voluntary action. Indeed, through "price-tagging" the environment and incorporating a commercial relationship, The theory of flooding out inherent opportunity was already empirically validated, increasing the prospect of consumers' collaborative ambitions diminishing. To be sure, both intrinsic and extrinsic incentives must be seen as motivating forces in consumer behavior by policymakers.

### 1.1 Consumer Motivation to Purchase Green Cars:

Several studies have been undertaken to explore customer motivations for reducing passenger transportation's environmental impact. In the Netherlands, the effect of energy efficient labelling and incentives on car purchase

decisions is studied, with a focus on hybrid cars. They discover that enacting a tax incentive has a significant effect on Toyota Prius rates, a finding backed up by de Haan et al. [2]. Profits dropped after the subsidy was reduced. According to the researchers, a car's environmental impact does not seem to be a priority for buyers; if a car is fuel effective that is something of a perk. Similar conclusions, nevertheless, do not mean that perhaps the tax incentive becomes solely a financial benefit. For drivers of electric cars, symbolic values outweigh merely monetary cost benefits due to reduced gasoline bills, according to M.A Delmas et al., and the Prius model has the highest symbolic values. De Haan et al. investigate the possibility of rebound effects in hybrid cars. According to a report conducted by R. According to Olawoyin et al., There is no indication of these rebound impacts, meaning that the main reason for buying a hybrid vehicle is to obtain philosophical values rather than just to preserve capital. Lower fuel expenses are often done with more costly modern technologies, such as hybrid cars, as a consequence of better fuel efficiency; lesser revenue will also serve as a barrier, resulting in pre-selection routine.

Teisl et al. presented a framework for the connection between people product specifications and information policy content [3]. The fundamental behavioral factors, according to the researchers, are critical and therefore should be taken into account for information policies to elicit behavioral changes in consumption behavior. They stress the importance of well-crafted awareness policies (such as eco-labeling) in influencing public understanding of environmental friendliness. As a result, whether a particular customer may exhibit intrinsic or extrinsic motivation can be determined by the specifics of the knowledge or reward program in question. M. Wolinetz et al. [4] look at this as well, speculating about the impact of a fee-bate system on consumer incentives to switch to a more energy-efficient car. Customers may change their car preference in return for monetary prizes, according to the writers.

Person actors are assumed to be ethical in their decision-making in mainstream economic models. Individual actors, on the other hand, often behave within a system of 'bounded rationality'. This is generally acknowledged, especially in the case for automobile transactions, in which a task or decision process can be identified. Few rational elements help in the choosing of a limited range of car designs to be carefully tested in the first phase; car buyers have their last decision in the second phase using unboundedly reasoned multi-attribute making decision criteria.

### *1.2 Electric Vehicles:*

Hybrid vehicles were steadily gaining ground until the COVID-19 epidemic outbreak rocked the auto industry, as well as every other industry. The EV market has advanced significantly, and not only in terms of revenue. Original equipment manufacturers (OEMs) also spent billions of dollars on R&D and factory overhaul to get new electrified vehicles to market. Consumer perceptions have changed and government interventions have advanced and receded [5].

They developed theories on how the industry will develop over the next decade through analyzing the current status of the global electric vehicle industry and noting the diverse factors driving growth in different directions. Traditional OEMs, innovative OEMs, captive financing firms, and dealerships all face the same challenges. The significant growth of EVs in the years leading up to 2030 will present significant opportunities and challenges. In a volatile competitive climate, traditional OEMs will find lessons in this study that will help them re-prioritize their customers and strategies. Developing a new consumer segmentation approach is the same as seizing opportunities and mitigating risks. We will speed beyond the obstacles faced by the pandemic and into a world in which electric vehicles take center stage if we enable today's findings to drive the journey for the next ten years.

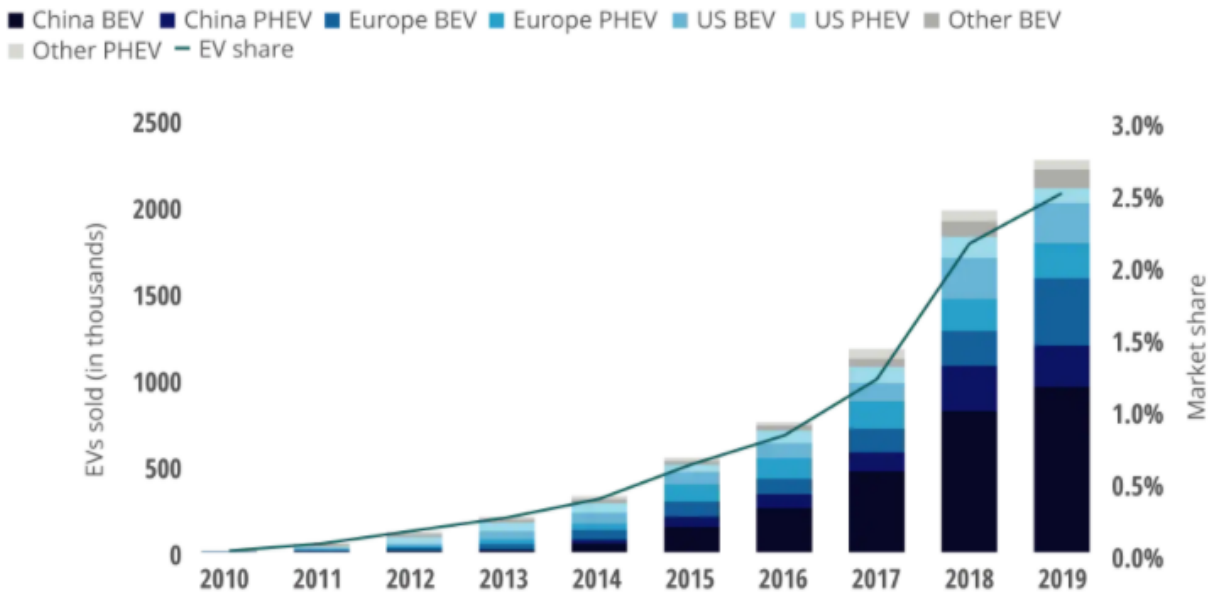


**Figure 1: The interior of an electric vehicle. The EV market has advanced significantly, and not only in terms of revenue [COMPOSITESWORLD/electric vehicles].**

### *1.3 Global Progress and Forecast:*

Despite COVID-19's short-term consequences, the combined accomplishments of the electric vehicle industry during last 2 years offer cause for optimism: a history of steady development that is predicted to continue into the 2020s. Last year, electric vehicles reported for 2.5 percent in total new car sales, with sales of battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV) exceeding two million units. BEVs are expected to account for 74% of overall EV sales in 2019, up six percentage points from 2018. Fresh, stricter European environmental regulations fueled this rise, attempting to persuade automakers to make zero-emission cars a priority of their production and sales. A further reason is that China has a much more mature BEV market than the majority of the countries. In the United States, and Europe BEVs seem to be the dominant common EV technology, although they have restricted accessibility in China. The sale of light-duty vehicles and annual passenger cars in major regions is shown in figure 2.



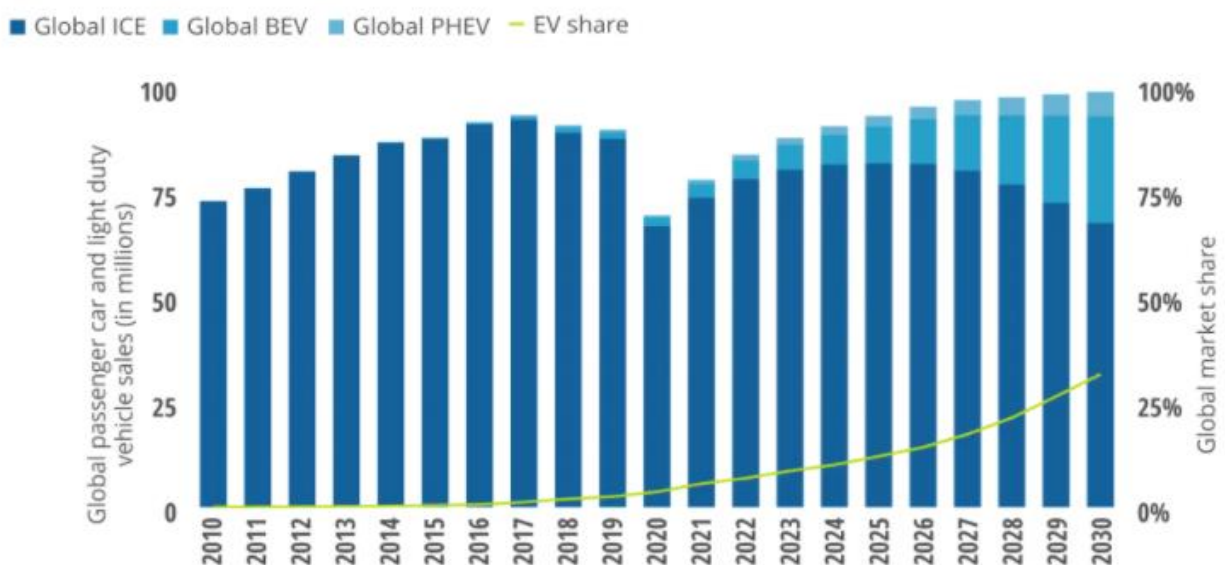


**Figure 2: The sale of light-duty vehicles and annual passenger cars in major regions [Electric vehicles/Deloitte Insights].**

#### 1.4 The Forecast of Sales by 2030:

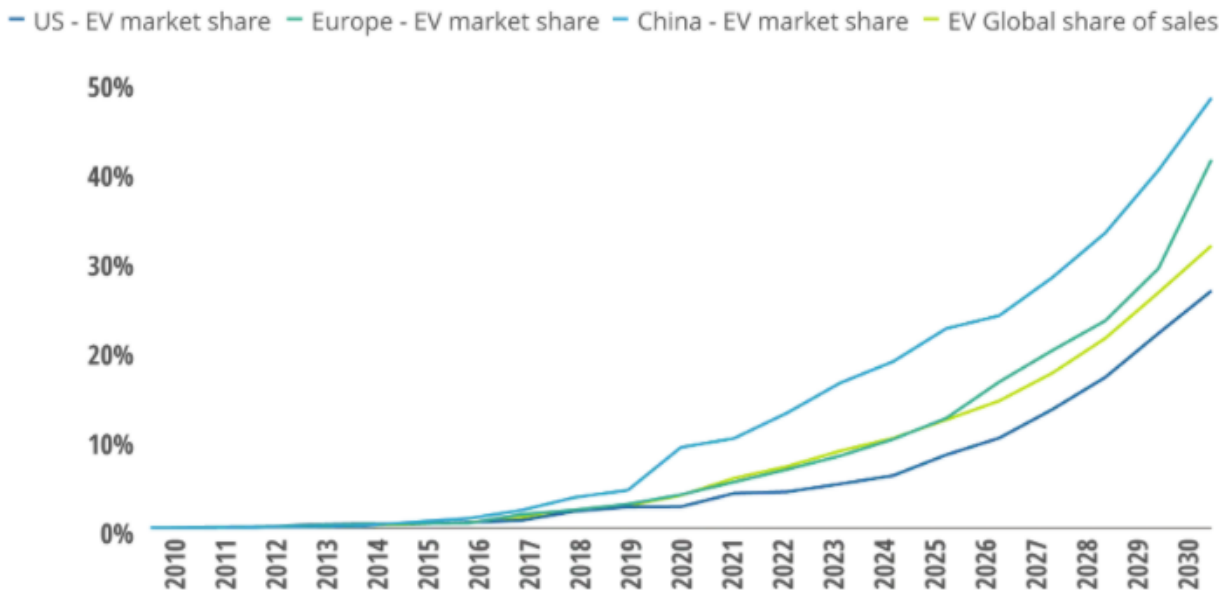
Deloitte has studied the most recent metrics to establish an up-to-date forecast of the electric vehicle industry for the next ten years, with one view on growth. We also know that BEVs outshine PHEVs on a global scale. By 2030, deliveries of plug-in hybrid electric vehicles are expected to hit 5.8 million. Internal combustion engine (ICE) vehicle volumes will rise until 2025 (81.7 million), after which they will decrease in market saturation [6].

Their global EV forecast predicts a 29 percent compound annual growth trend in the next ten years, with total EV sales increasing from 2.5 million by 2021 to 11.2 million by 2025, as well as 31.1 million by 2030. In standings of new car purchase, EVs will account for around 32% of the global demand (Figure 2). After 2024, annual vehicle purchase is doubtful to return towards pre-COVID-19 points. Nevertheless, due to a drop in ICE sales, the pace of recovery is likely to be slowed; EVs are expected to have a bright future mostly during COVID-19 transition phase, and may usually take a substantial portion of demand all through the short term. China is expected to dominate 49 percent of the global EV market by 2030, followed by Europe with 27 percent and the United States with 14 percent.



**Figure 2: An outlook of sales of light-duty vehicles and annual passenger cars by 2030 [Electric vehicles/Deloitte Insights].**

EVs will account for a different percentage of new vehicle sales in different markets (Figure 3). By 2030, China is projected to get a global market share of about 48 percent, almost twice about the United States, while Europe would have a 42 percent market share. Northern as well as Western Europe's growth is projected to outperform that of Eastern and Southern Europe, as richer countries spend more in technology and have more cash as well as tax benefits to encourage developmental stages.



**Figure 3: The outlook of an electric vehicle market share considering major regions [Electric vehicles/Deloitte Insights].**

### 1.5 The New Approach:

In China, for example, 486 licensed EV producers have earned more than \$18 billion in spending since 2011, but even though all fair revenue predictions are taken into account, their collective production potential is unsustainable. As a result, we expect industry expansion, the failure of certain new entrants, and an increase in the number of joint ventures and collaborations between Chinese and Western OEMs. Several established OEMs are funding in start-ups from outside China to expand on the skills they've developed. While the risk to new entrants and start-ups has decreased somewhat, incumbent OEMs have not regularly responded to and reported for the upsurge of EVs.

### 1.6 Segmenting the Market:

All automobile industry members, Present OEMs, potential entrants, captive banking houses, as well as dealerships can all think about how they can persuade customers to buy an electric vehicle in today's highly competitive environment. New customers can be switched to an EV brand or commodity. A refreshed customer segmentation approach: engaging customers based on their behavior and desires, is a valuable exercise for achieving one (or both) of these targets. Although there are significant differences in the structure of the car industry, automotive industries, EV adoption readiness, and consumer tastes and habits around the world, the segmentation principles illustrated herein can be applied to a wide range of international markets.

## 2. DISCUSSION

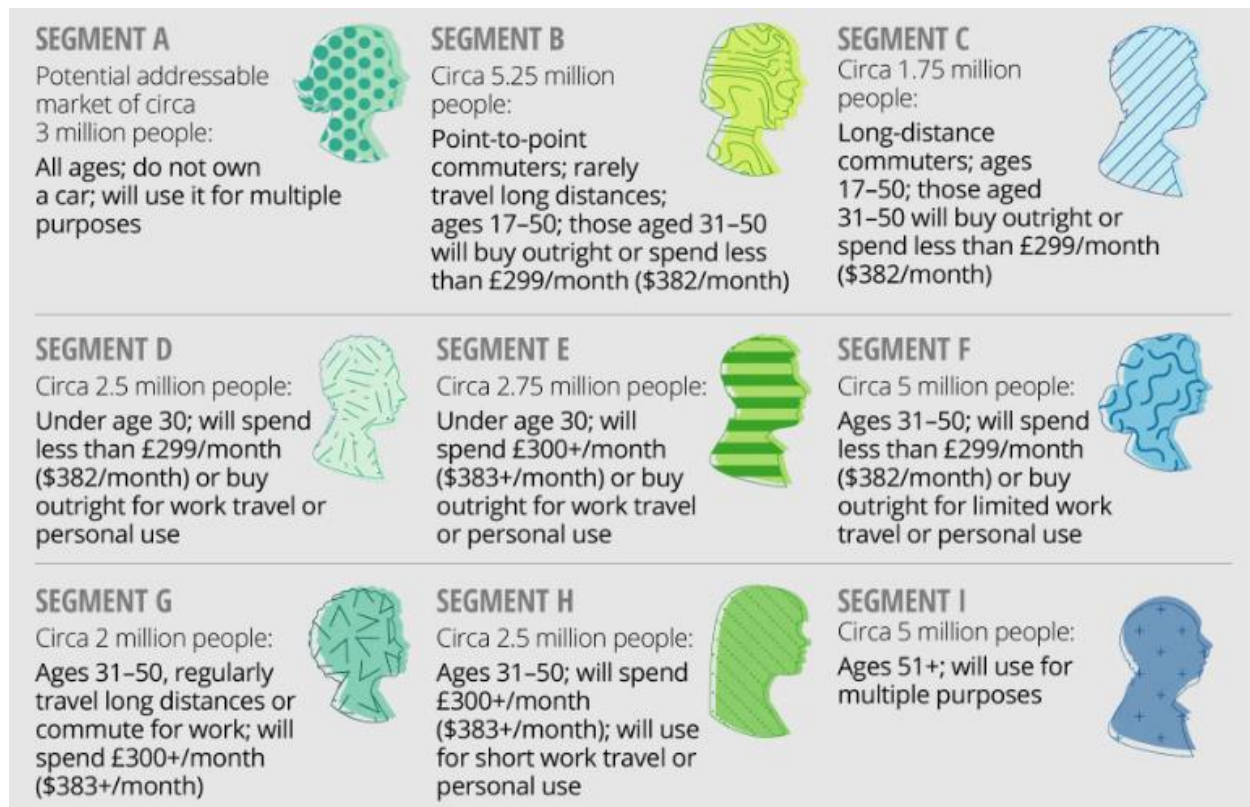
### 2.1 The Various Factors Driving Growth:

Market mood, policy and legislation, OEM planning, and corporate corporations' positions all play a role in the substantial change in projected amount of BEVs and PHEVs by 2030. All of these factors experienced significant changes in trend in the year leading up to the COVID-19 epidemic, and have since been affected even further by the global pandemic.

### 2.1.1 Varying Consumer Sentimentality:

Consumer preference would fuel EV adoption, but there are a variety of explanations why customers haven't migrated from ICE to comparable EVs yet. EVs, on the other hand, are becoming a more realistic and competitive choice as adoption hurdles are gradually removed. Figure 4 depicts the car industry in the United Kingdom by consumer group.

Consumer views toward EVs changed significantly between 2018 and 2020. Concerns regarding the cost/price premium have declined in all countries except China (+2 percentage points), that has dropped EV grants. Regardless of the reality that it has become listed by fewer customers in both countries, mileage has remained the top consideration in Germany and it has already surpassed it in France. To put it another way, the scarcity of charging facilities has climbed to the forefront of customers' priorities, showing that they are starting to see electric vehicles as a realistic option and are considering the pros and cons of buying one [7].



**Figure 4: Consumer segment depiction of automotive market in the United Kingdom [Electric vehicles/Deloitte Insights].**

In coming days, it is anticipated that these roadblocks will be fully removed. EVs now have the same driving range as ICE vehicles; their prices have now hit equilibrium. Designers expect personal memories to outweigh challenges as EV sales rise and customers see many of these on the street or ride in EVs purchased by friends or relatives. Commercial EVs are predicted to flourish, as well as the expansion of mass-transit alternatives, could add to the sense of security. Government actions taken as part of the COVID-19 recovery initiative may have an effect on investor mawkishness. This is a noteworthy variation in an situation where customers face two major challenges: insufficient driving space and a scarcity of charging stations.

### 2.1.2 Policy and Legislation:

Government policy continues to play a significant role in driving EV rates, as evidenced by Norway's achievements, changing revenues in the Netherlands, as well as the Chinese EV market's changing fortunes. Countries that shift to electric cars would benefit economically, but the positive ecological effect has made widespread implementation of EVs a critical step toward meeting climate-change targets like those described within Paris Accord in 2015.

### 2.1.3 Corporate Companies Role:

Taking advantage of the three reasons mentioned above, corporations are playing an increasingly significant role in assisting the transition to electric vehicles. New car sales to businesses account for a significant part of all vehicle sales. Since travel is a major source of emissions avoidance for firms, a growing number of companies are looking at how they can make the switch to EVs easier [8].

Traditional business car architectures are ripe for transformation: Businesses see improved mobility opportunities as beneficial not only in terms of pollution emissions, but also in terms of cost savings and employee satisfaction. Government tax breaks for corporate cars put the onus squarely on businesses to drive the charge toward electric vehicles. Corporate spending in fleets has slowed dramatically as a result of COVID-19, as companies slash costs and prioritize other projects. Until a full transition to electric vehicles will take place, market interest must be restored and funds made accessible again. Corporates must therefore understand how structural shifts in how and where work is performed can impact the nature of their agility programs.

## 3. CONCLUSION

The legitimacy of monetary environmental policies can be used as assistance for knowledge provision strategies. Citizens are provided the ability to make their own decisions before being constrained by regulation by presenting information about ecological problems and recommendations for how to alleviate the problem. This is a very "democratic" solution to environmental protection because consumers are given the opportunity to make their own choices before even being restricted by legislation. A second rationale for intelligence policy comes from understanding the diversity of people's environmental motives. Unlike financial resources, information provision should not have the ability to drown out underlying pro-environmental incentive. Supporters of one of the interventions were often less critical of the other. Despite the fact that the two policies were not seen as compatible, they appealed to multiple survey respondents in different ways.

In addition, multivariate regressions showed a correlation between customer preferences for specific policies and particular consumer features. It is often assumed that policy programs are welcomed by certain segments of the society but not by others. We leave the study of individuals' existing awareness of environmental problems to potential studies. It will be useful to investigate why consumers who have a better understanding of environmental problems respond appropriately, as well as how they view the usefulness of information-provision policies. Although several studies have been carried out in this field during last decade but there is a vast scope of more research in this sector.

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