The Growing Preference for Electric Vehicles from a Political and Economic Point of View

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Abstract. This paper examines the political and economic views of the benefits of electric vehicles, through government funding and consumer taste, the preference for electric vehicles has been growing as the years progress. The current problem of global warming caused world leaders to fund and subsidize more and more electrical vehicle components and research on these components. The funding and subsidizing results in Consumer able to buy these electric vehicles for cheaper. The electric vehicles are also cheaper for consumers to maintain as of the gradual rise in oil prices becoming harder to maintain traditional gasoline powered cars. The finical crisis and the plummet of the stock market, especially during COVID 19 also contributed to consumers favoring electric vehicles. Consumer favoring SUVs also contributed to the growing preference for electric vehicles, as consumers see SUV as a type of status symbol, but as SUVs are low fuel economy cars, meaning they contribute a lot to carbon emissions, and are hard to maintain as they need too much oil, drove consumers to purchase electrical SUVs, as it can fulfill the sense of status and be cheaper to maintain at the same time. The future of the electrical car market seems to be on the positive side, as more and more funding by the environmentally-conscious governments allows for more research and time spent on finding cheaper and better ways of producing the components these electrical cars need, making it more accessible for a even wider range of consumers.

Keywords: *e*lectric vehicles, oil prices, stock market, car market, European Union.

1. Introduction

Greenhouse gases and carbon emission are threatening the atmosphere like no previous times. The first world countries are enjoying more luxuries than ever, and the developing second world countries' citizens are starting to mass consume the newfound items and luxuries that have started to become a reality in their countries. The most important of which is cars. Cars are crucial for transportation, and as American is often coined as "The country ran on four wheels", it is important for Americans to own cars to drive their kids to school or drive to work. In China, more and more working-class people are able to afford cars, and with the newfound freedom the cars bring, these working-class people could get to work easier, and travel to nearby places where their car would take them. The same applies for the countries in Europe and the European Union. The result was a drastic increase in CO2 emissions per capita. In the peak of the 21st century, America's CO2 emission per capita was reaching as high as 20 tons per capita [1]. The mass adaptation and the growing awareness of electric vehicles grown in 2020. The governments of these aforementioned countries wanted to slow down, or lessen the effects of the greenhouse and carbon emissions that had been brought to their country, as to lessen the pollutions and the negative health effects and the health risks associated with the ever-increasing greenhouse and carbon emissions, so they began to promote electrical car companies and promote consumers to buy the electrical cars by subsidizing and funding the research necessary to produce these electrical cars at a cheaper price for the consumers.

Another aspect of the demand for electrical cars came in the form of economic factors. The mass consumer market wanted cheaper and more efficient cars, and cars that could save them money in the long run. The oil crisis that hit the hardest was during the peak of several economic downturns and also during the political downturns of the centuries. Tapia stated that the peaks of oil prices were in the years 1980, 1990, 2000, and 2008, which meant that oil prices were rising in the period previous

to each of the five crises [2]. The trend of the oil prices had been in an upward rising slope, and because of each upward spike in oil prices, it meant less, and less people were able to afford oil as time progresses. The government also cares about the positive impact of electric vehicles. According to a cast study in Scotland done by Milev, it shows the total amount of greenhouse gases from the electricity grid will decrease by approximately 33.7% if all cars in Scotland are electrified. This shows the significant effect that electrification brings, both from a political and economic point of view. The effect of switching electric not only benefits consumers at their spendings, but also it helps the government achieve their goal of less greenhouse gas [3, 4]. The success of Tesla illustrated the demand of growing preference for electric vehicles. Tesla emerged from a few Silicon Valley entrepreneurs, among which was Elon Musk, who funded Tesla with the money he had acquired from selling Paypal. The success of Tesla was also a result of Musk's knowledge of the car consumer market at the time of establishment. Musk compared the prices spent for oil and the prices spent to maintain a car ran by gas versus a fully electrified car and came to the conclusion that the maintenance cost was 35% less for an electrified car than it was for a gas-powered car. In addition, a gasoline powered car will cost an average of $6957 on gasoline, while an electric powered car will only need to cost $540 on electricity [5, 6]. It illustrated the growing needs of consumers to buy cars that will be economically efficient to take care of. The success of Tesla also saturated the car market with newly emerged electrified-car brands that targeted audiences in other countries, spreading the electrification of cars to almost every part of the world. In China, BYD emerged as the biggest electric car brand. The Chinese government, aware of the benefits of electrified cars on the environment, subsidizes consumers and also the producers (BYD) [7]. The productivity of Chinese car markets and also the fairly low cost of producing BYD cars made BYD cars really popular among the Chinese population, and BYD made its way to success among the middle-class population.

2. The Growing Market of Electric Vehicles

The diversification of the car market in the consumer sector had led to major brand loyalty. Brand loyalty is a term coined to show consumer's dedication towards a particular brand. Consumer's brand loyalty of the automobile market towards the American automobile industry have faded as interest and loyalty have shifted to Japanese car [5]. Japanese cars are cheaper, more fuel efficient, and also had better aesthetic. It would be hard for newly established car firms to enter the ever so competitive market. The oligopolistic market was known for its competition, and the barriers of entry only required certain finically capable entrepreneurs to turn an idea into reality.

The European Union is one of the biggest supporters of the electrification of cars. By 2035, The European Union would require all cars to be electric cars with zero emissions. As of right now, the European Union is encouraging electric cars, incentivizing smart charging of cars and supporting research on battery development [8]. The government-sponsored research allows for cheaper ways to produce cars that are better, meaning electrified cars are going to be cheaper but better for the variety of consumers.

The devastation and the aftermath resulting in after COVID-19 also contributed to consumers seeking alternatives because of the recession that had bought along as an effect of COVID-19. Ever since 2019, at the start of COVID-19, the GDP and PPP exchange rates had dropped to an all-time low, with a sudden plummet. From the average of 48% in both manufacturing and services sectors, a steady line was formed ever since 2014, but in 2019, both manufacturing and services line about 50 to nearly 38% and 34%, respectively [9]. The stock market was many people's income, as they relied on the stock market for extra funds, by following the devastation of the economic recession during COVID-19, the stock market took a similar turn. The March 2020 stock crash, triggered by COVID-19, is evident from the S&P 1500 and Dow Jones Industrial Average. The S&P 1500 is the stock market index of all of the Standard & Poor's US stocks, including the major stocks like the S&P500, S&P400, and also the S&P600. The S&P 1500 accounts for 90% of the US stocks. The Dow Jones Industrial Average plummeted by 6,400 points, or roughly 26%. Following the March 2020 stock

crash, the stock market yielded negative returns, meaning the people putting their money in the stocks were losing the money, and as a result of that, panic selling ensued [10]. In the aftermath, people lost the money they could spend on cars and houses, as gasoline-powered cars had become harder to afford. They were looking for alternatives, and that was EVs. As Ajanovic indicated, car sales of the conventional ICE vehicles were about 17% lower than in 2019, but the sale of EVs was about 45% higher than in previous year. Furthermore, she pointed out that in Europe, electric car sales in 2020 increased by about 130% [11].

The increase in electric vehicle purchases could be explained for a variety of reasons during the time of COVID 19. As of pre COVID 19 situations, governments, like the aforementioned ones, are in favor of supporting the research of electric vehicles as a way to cut down on carbon and greenhouse emission, and all the funding the government provided contributed to lower battery cost over the years [11]. The lower battery cost meant it was lower to produce an electric vehicle, further meaning that it would be cheaper for consumers to be able to afford one.

3. The Benefits of Electric Vehicles

The Another aspect of the growing preference for electric vehicles comes in form of the consumer's perception towards SUVs. The SUV market had grown from 17% of the car market in 2010 to 39% of the car market in 2018. Consumers saw SUVs as superior to small passenger cars because of their style, handling, safety, and the experience of the SUVs. SUVs were seen as a status symbol, as of the owner of the SUVs being "successful" [12]. the one major drawback of SUVs is their low fuel economy and their effects to the environment. As Karaaslan et.al stated, sport utility vehicles have lower fuel economy due to their potential to cause serious environmental impacts and also uses a lot of oil. Cars with low fuel economy means that it requires more cost to maintain the car and the car is also more harmful to the environment [13]. This poses as a dilemma for consumers. Consumers would like to own an SUV as of the sense of being "successful" and the status symbol that comes along with owning an SUV, but because of the low fuel economy that SUVs have, they needed to find an alternative to SUVs [12]. This is why electric SUVs developed. As aforementioned, electric vehicles in general cost less than gasoline-powered cars to run, and the same applies for electric SUVs [6]. electric SUVs allow the consumers to enjoy the status symbol that comes with owning an SUV all while spending less to maintain their electric SUVs [12].

The increase in Uber and other commercial car services also had preference over electric vehicles. As Cowley indicated, Uber is now the world's most valuable start-up by far, and Lyft is seeing massive growth over the years [14]. This growth in Uber and Lyft means that more and more personal drivers are going to sign up to be Uber and Lyft drivers. These people are going to choose electric vehicles for a variety of reasons. First, it comes with the environmental benefits. Studies found that environmental and emission reduction benefits are about three times higher for electric vehicles being used in car services than used by regular gasoline-powered cars [15]. With the increase of Uber and Lyft drivers using electric vehicles, carbon emission would lower by a lot and contribute to the environmental standards that the government and politicians wanted to make better.

The economic benefits of electric vehicles on Uber and Lyft drivers are important, too. As aforementioned, the cost of maintaining an electric vehicle is much less than would the cost of maintaining a gasoline-powered car [6]. Uber and Lyft drivers need to pick up and drop off dozens of clients over the course of a day, and gasoline-powered cars would need to fill the gas frequently because of the long distances these Uber and Lyft drivers need to run, but electric vehicles could be able to charge at really low prices and run the same distances as to pick up and drop off the clients of these drivers. As a bonus of the vehicle to grid integration of electric vehicles, electric vehicles could generate incomes even when they are not being driven [16]. Which acts as a protection for the Uber and Lyft drivers.

4. Limitations and Future Direction

The essay conducted only took account of the major countries' consumers and also their corresponding government's action towards the case of electric vehicles. The countries in this essay mainly focused on the United States (America), China, and the European Union, among which are the largest economical countries in the world. It did not take account of the consumers and governments of other countries, as which are, but not limited to, countries in Africa, countries in the middle east, which all are in political turmoil and the instability of the government means that they would not have been able to fund research on electric vehicle technology as they are dealing with problems within their country [17]. The consumers, more or less, or not able to afford even basic necessities in some parts of the Middle East and Africa, meaning they would not spend money on cars in general. The limitations of the third-world countries as mentioned are excluded from the mass market that the aforementioned economic-prospering countries can enjoy.

The future of electric vehicles remains a bright and prospering aspect. As the global climate is getting hotter, and carbon emission levels are getting higher and higher, political leaders from countries and environmental agencies are trying to promote fuel-alternative and efficient ways to deal with climate change. As Ajanovic stated, politicians in countries have recognized EVs as a good technological alternative to gasoline powered cars in reducing global warming [18]. The consumer sector and demand for electric vehicles also has a promising future, as shown in the trend of buying electric vehicles during COVID-19 consumers remained optimistic about electric cars, even in the midst of an economic crisis [11]. This further shows that consumers believe electric vehicles are the better alternative for gasoline-powered cars, as gasoline-powered cars cost more and more to maintain. With the continued subsidies and government funding on research on various components of electrical cars, electrical cars will gradually go down in price and become even more accessible for the wide range of consumers.

5. Conclusion

The economic and political effects contribute greatly to the growing preference of electrical vehicles. The funding that government are willing to fund on research and development of electrical vehicles shows the government's concern over the world's climate and the ever-increasing carbon emissions of today's society. With the devastating effects of COVID 19 on the economy and stock market, consumers were looking for better alternatives to gasoline-powered vehicles, as these vehicles became harder and harder to maintain because of the increase in oil prices. The recessions, as shown by the five recessions of 1980,1990,2000 and 2008 followed by the increased oil prices associated with it pushed the market and accelerated the development of electric vehicles. The consumer's preference for SUV as a symbol of status and reliability along with their preference for the safety, the styling and experience also contributed to the development and the preference of electrical SUVs as normal gasoline-powered SUVs are considered low fuel economic cars, meaning normal gasoline-powered SUVs are harder to maintain as they require a lot of oil, and they contribute a lot to the process of greenhouse and carbon gas emission. Electrical SUVs offer consumers to enjoy the same sense of status, reliability, safety, styling and experience as a normal gasoline-powered SUV and provides the consumer a cheaper maintenance fee for these electrical SUVs, and at the benefit of low carbon emissions. The gradual rise of commercial car services like Uber and Lyft caused a preference in electrical vehicles as these vehicles are better sustainable for the long-distance Uber and Lyft drivers, and also makes it cheaper for the Uber and Lyft driver to maintain while providing income even when the Uber and Lyft drivers are not using their vehicles. The limitations, however, was that it only took account of the economic prosperous countries like the United States (of America), European Union, and China while it did not take account of countries that are in the midst of political instability, like the Middle East and Africa. The Future of Electrical Vehicles, however, has a bright side as more and more funding from the environmental-aware governments had been put on the

research of more efficient and effective ways of the electrical vehicle's development, providing better affordability for an even wider range of consumers.

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