

Abstract:

The purpose of this research is to investigate the demand in electric cars versus gasoline cars. The study on creative and innovative contributed on this paper as the report indicates whether electric cars – are they an innovation opportunity or a major threat to big business. This report will briefly outline on the history of electric and gasoline vehicles due to the demand in this day and age. This report will then take a deep dive into the electric and gasoline industry, current market trend, political agenda, and conclude with recommendation.

Introduction:

Electric vehicle was first invented in the early 1800s' by various people which was referred to as carriages, which then evolved into electric wagon. In year 1899, race car driver Camille Jenatzy developed an electric vehicle where he was able to go faster than 100 kilometers per hour ([Bloomberg.com, 2019](#)). In circa 1900s', Thomas Edison built three cars where he was charging along the way from Scotland to London. According to the inventor "*Thomas Edison*", electric car is the future as gasoline has to be pumped from the ground ([The Vintage News, 2019](#)). During that time, Henry Ford and Thomas Edison were working on low cost electric vehicles which was extremely difficult and time consuming, according to the vintage news, 2019. The project was then abandoned; Henry Ford then innovated 4-seater gasoline car – Ford Model T. Prior to Henry Ford innovating the infamous Model T, gasoline cars had strong competition with steam-driven and electric cars. Historically, gasoline car was first created in Germany by Carl Benz. Gasoline cars was then mass produced in circa 1890s' where it was priced modestly, easy maintenance, affordable, able to travel long distance with resources that are easily available in the market ([Autolife.umd.umich.edu, 2019](#)).

Briefly looking back historically, electric cars were created first and was very popular as it was easy to drive, quiet and no pollution to the environment. However, in circa 1920s', the rise in "crude oil" contributed to the decline in electric cars which was then completely vanished in year 1935. Interesting enough in year 1960s', gas prices were extremely expensive, which then created an interest with electric cars again ([Energy.gov, 2019](#)). The interest with electric fluctuated, and finally it picked up a major interest in various countries with the severity of air pollution.

The Evolution of Electric cars:

In year 1990s', due to air pollution, a clean air act was regulated to reduce pollution by many governments around the world ([US EPA, 2019](#)). Majority of the car manufacturers responded and lead was then removed from gasoline which has created cleaner air around the world. After a few failures in developing electric cars, Toyota then launched its first Hybrid Car (Prius) which was a success around the world ([McFadden et al., 2019](#)). Electric Vehicles have now created disruption in the automobile industries by adopting to new technologies.

Presently, Tesla is the most influential electric vehicle in the UK market. Tesla was born in 2003 during the time when GM destroyed EV1 and the company has continued to evolve with each models. The difference between Tesla and gasoline cars is that Tesla cars are operating with electricity. This creates a huge impact to this world as this would minimize air and sound pollution. Electric Vehicles emit less greenhouse gases and far quieter than normal vehicles. However, electric car uses a lot of energy due to the manufacture of lithium ion batteries (rechargeable battery) which are the essential part of an

electric car. Therefore, to build an electric car would use up a large amount of energy and is higher than normal car ([EDF Energy, 2019](#)).

If this model is replicated and used effectively worldwide, this would just solve the environmental problems we are facing with currently. In such, some may argue that Tesla motors are more than an eco-friendly car – it's a revolution. ([Future Energy Forum, 2019](#)).

Recently, the mayor of London has set a target to improve the air quality by cleaning London up by 2050. For this plan to be a success, "transport for London" has partnered with Electric Vehicle infrastructure plan to deliver more charging points in London for Electric Vehicle drivers.

An interesting figure from Society of Motor Manufacturers and Traders (SMMT) shows that there over years, the purchase of electric cars has risen drastically. In 2014, there was only 500 cars being registered each month and this has increased to almost 5,500 cars per month during 2019 ([Lane, 2019](#)). This shows that people have strong awareness when it comes to environment and are keen to participate in the bandwagon. Additionally, there are several benefits of driving an electric vehicle in the UK.

Tesla - Open Innovation Model:

In 2014, with limited competition and sales, this has encouraged Tesla with the decision of using the open innovation model. There are several advantage and limitation with open innovation. Companies like Tesla preferred open innovation as this model reduces cost, increases profit, speeds up time to market and creates new revenue opportunities ([Forbes.com, 2019](#)).

Challenges and Opportunities of Electric Vehicle:

There are few challenges United Kingdom will be facing when it comes to electric cars. This may not necessarily relate to pricing, technology or trend, but these factors are crucial to be considered.

As we all are aware, **change does take time**, especially change that requires evolution. In UK, the statistics around new electric cars being sold in 2019 are only about 1.1% with limited access to used car market. Additionally, people have a mindset to change cars between one to fifteen years without having consideration to purchase an electric car ([BBC News, 2019](#)).

There are also **limited choice** when it comes to purchasing electric vehicles. According to BBC News, the purchase of electric vehicles is targeted for high end market as there are limited varieties costing less than GBP 20,000. In addition, in the UK, it has been reported that there has been a significant increase of small vans, however, the cost to purchase an e-van would be higher than a diesel van.

Another major challenge is with the **development of battery and charging technology**. It is practical for the drivers to be able to drive an e-car with a massive amount of charge, hence acquiring certain materials to build a long lasting battery is expensive. The only way that is considered logical is by increasing level of production which in return would reduce the cost of the electric vehicle. However, in order for the manufacturers to scale up is by ensuring that there is a substantial demand in the electric vehicle. Consumers have gotten used to the "gasoline cars" in where it makes sense to drive up to the nearest petrol station to pay for gas to continue the journey. Additionally, the lack of charging station in UK has also made this situation inconvenient for consumers to switch from gasoline and/or hybrid to electric cars. Consumers that own a landed property can easily charge their vehicle in their garage or

front porch, however consumers that live in a flat (most Londoners) would struggle to charge their electric vehicle overnight (Deaton, 2019). It wouldn't make sense for the consumers to leave their vehicle in a gas station to charge the car, leaving the car unattended.

Whilst performing thorough research on this report, a major factor that was not considered is with **electricity supply and cost**. According to Pigott (an engineer for Kinect Energy Group) has clearly defined the impact of electric vehicle to businesses and the city. With an increase of demand with Electric vehicle, this would imply that many businesses may require to install a large amount of charging points. Businesses may have to absorb the cost of electricity consumption which could be considerably high if and when employees and customers have finally switch over to electric vehicle (Pigott, 2019).

In saying that, there are numerous opportunities when it comes to Electric Vehicle to coincide with UK government's 2040 target to ban fossil-fuel cars and vans. When it comes to the **environment**, Electric cars do not have an exhaust system, therefore they have zero emissions. By participating with the purchase of electric cars, consumers are directly involved in contributing to cleaner air.

Electricity is considerably cheaper than petrol. By installing solar panel at home, consumers can save cost on powering both their residence and electric vehicle. According to British gas, a 100-mile journey would cost around GBP4 to charge an electric vehicle whereas it costs GBP14 on fossil fuel. It is certainly cost effective if consumer charge their vehicle at home or at the public charging station. On a long run, electric vehicle consumer would be saving 25% in comparison with gasoline vehicle (Britishgas, 2019).

An Electric vehicle user would also benefit from road tax exemption. However, insurance costing is staggered to be higher than a gasoline vehicle due to the battery of the electric vehicle. However, as specified above, electric car is considerably cheaper to run in London, with no congestion charge as well. Therefore, in a long run, including all necessary costs, having an electric vehicle is definitely a large savings for the household. Electric Vehicles are also extremely quiet, as well as being able to drive in the carpool lane even when you are driving solo. If a consumer lives in a high traffic area, this would save time with extremely low stress commuting from point A to point B.

On a nutshell, the below table summarizes the pro and cons of owning an electric vehicle which in return is down to the consumer to decide whether initial investment of the electric car would be impacting them financially.

PROS	CONS
Cost Efficient to run	Spike with insurance premiums
Service cost is cheaper	More petrol stations than charging docks
Initial investment to purchase the vehicle can be offset by reduced fuel costs	A full charge in public charge points would take around 30minutes
Less pollution to environment	A full charge covering 235 miles on an average Nissan Leaf. Future promise range up to 350miles on a single charge
Home solar charging to reduce cost and greener environment	
Reduction on purchase costs through government assistance	

Source: Britishgas.co.uk. (2019). Electric V Petrol - British Gas

Conclusion:

By analyzing the current market analysis, UK government's regulation, costing, technologies, environmental factors; it is not a myth that Electric Vehicles are the future for this country and the world itself. The UK government have established several policies to encourage consumers to purchase an electric vehicle. Though it may seem that the initial investment is rather expensive, when consumers consider longevity consumption, it certainly reduces the finance aspect of the household. United Kingdom, especially London is severely polluted causing problems such as health risks, stress and mental health issues to the inhabitants. Recently, an article that was released in the UK government website indicates that poor air quality is the largest environmental risk to community health in the UK ([GOV.UK, 2018](#)). When critically looking into this, it specifies that poor air quality reduces life expectancy for affected population.

In conclusion, whilst conducting research in this subject matter, it is no doubt that Electric cars are an innovation opportunity and at the same time, a major threat to big businesses.

The concluded result is due to various reasons. Electric cars are an innovation opportunity as it creates job opportunities, and with the backing from governments around the world, electric vehicles have major opportunities in the market. When the demand of Electric vehicles flows in, there will be significant changes on the streets, major places and in businesses. There will be an increase with charging plants, along with emerging businesses to innovate and build batteries and charging docks. This would create major price and product competition, and new research and development in technology to coincide with electric vehicles.

With the emerge in electric vehicle, this would automatically create a disruption in the oil market, globally. It is predicted that Electric Vehicles to be 30% of new car sales by 2040, which means, reduction in oil consumption in years ahead. An interesting study from CNBC stated that 40% of the growth in the fuel industry derived from cars. It is predicted that there will be an increase with oil demand by mid-2030's, and expected to slope down in year 2040. The world is yet to witness a spike in battery related technology, and a slope in the oil industry. It would also create an imbalance in the political agenda. It is expected that China has a strong inclination for Electric Vehicle and up to few years ago, China has become the world's largest oil importer ([Domm, 2018](#)).

In U.S, there are several political issues where the oil-backed groups have been challenging the electric companies plans. On top of that, they have been pushing and lobbying campaigns against the proposals of building more charging plants across the shopping centres and rest stops. Certainly, the oil businesses have been planning for the future as they have speculated a major threat for the business ([BADE, 2019](#)).

Recommendation:

Even though a goal has been set for 2040, there are no definitive approach to sell and market the electric vehicles to the consumers. As pricing is known to be a major concern when it comes to electric vehicles, there are numerous activities and plans should be taking in consideration to ensure that the goal is achievable before year 2040. A collaboration with big businesses, such as being able to provide lease to own services could entice executives to switch over from their standard luxury gasoline vehicle to electric vehicles. Additionally, electric vehicles could also collaborate with solar panel companies to market to the rest of the population. Other than that, whilst researching on reducing battery cost by perhaps producing a smaller average electric car could be a potential to average income earners.

When it comes to oil businesses, instead of having major concerns, the senior management can perhaps look into ways to merge with electric vehicle companies to build a strong foundation for the business. Weaknesses are an opportunity for the growth of the business. The future is set in place, therefore, instead of protesting, companies can perhaps invest in building batteries and/or set up companies to build electric vehicles to compete against the rest of the market. A shift in market is necessary for globalization, and to preserve the remaining of this earth. In such, disruption in oil global market can perhaps be converted into a major opportunity.

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