Understanding Purchase Intention of Electric Vehicles (EV) among Gen-Z Users in China

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Abstract

Electric Vehicles (EVs) are in high demand in many cities in China. In fact, industry reports show that the Chinese market is one of the largest with huge growth potential for the electric vehicle industry. Despite that, less is known on the impact of the consumer buying decision of EVs in China. Following this, the study aims to understand the key factors which influence the purchase decision of EVs in China. Specifically, this study will bridge the gap between consumers' decision-making process by incorporating the key factors relevant to current purchase of EVs in China from a Stimulus-Response theory perspective. An empirical study using online survey questionnaires approach is proposed which, will be beneficial for both manufacturers and distributors in their sales and distribution strategy.

Keywords: Electric vehicles, SOR theory, Brand trust, Brand loyalty, China

1. Introduction

In today's electric vehicles (EVs) industry, there are more than 5.1 million worldwide electric vehicles which are operated by battery, hybrids or fuel cell. Annually, new EVs were registered causing the number of new registrations on the projector increasing trends as shown in Figure 1 (Bunsen et al., 2019; Deloitte analysis, 2019). Potential opportunities and challenges for economic development are created by EVs. Even though EVs market is still in development, but it has been a focus as it significantly impacts the automobile industry market as a move to create a better environment-friendly vehicle with the increasing population worldwide.

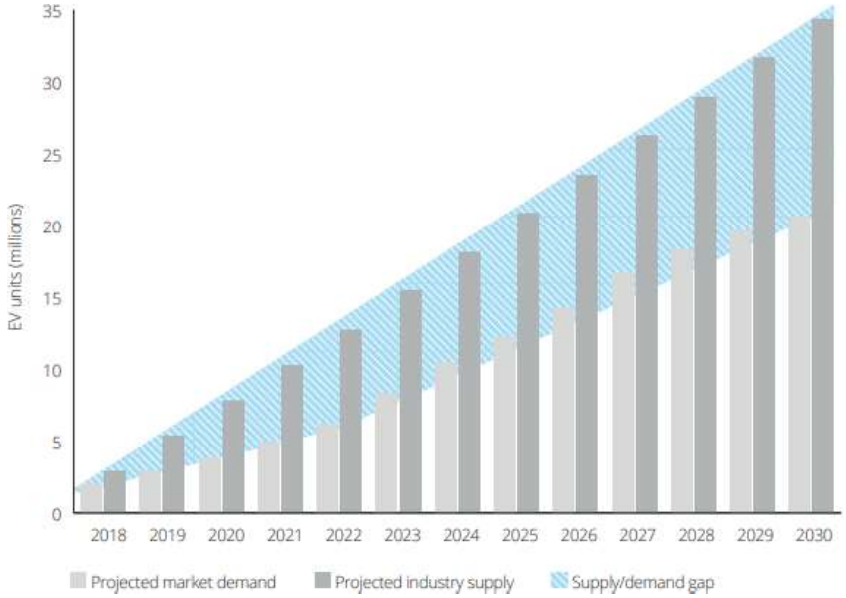
China is the focus for this study given its largest market in the EVs competition arena globally. The insight from the study will be beneficial both in practice and literature for other Asian or western countries to learn the consumer behaviour of the eastern country market towards EVs. While the COVID-19 pandemic drove global car sales down 16% in 2020, EV sales jumped 41% to around 3 million vehicles, with a strong growth in China, Europe and the United States (Reuters, 2021). Western countries' consumers remain vigilant over issues regarding charging infrastructure, price of the technology, components as well as distribution and delivery. However, what remains positive on the future automotive is electric vehicle (McKinsey & Company, 2021).

EVs market rose by 85 percent in China in 2018 versus 2017, which obviously exceeded the global industry average. The

sales amount of EVs of China in 2018 are 1.1 million units and is

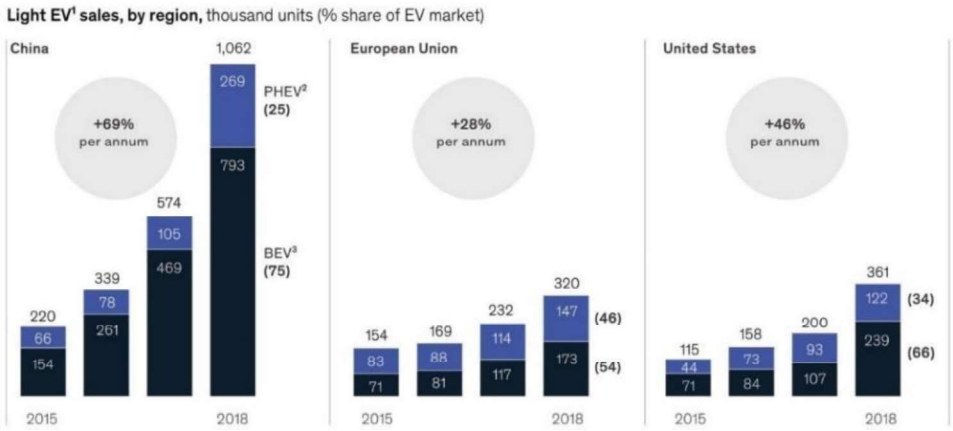
more than half of the global EVs sales (Hertzke, 2019). Currently, the Chinese market is almost treble that of European and America markets each (Figure 2 & Figure 3). More than a hundred EVs manufacturers in China and hundreds of corporations are to supply components for EVs (Rathi, 2019). Accordingly, McKinsey EVs Index has reported China's strong position is performed by Chinese EVs manufacturers and suppliers and good developing environment for EVs in China. Consumers can select from over 74 EVs models that almost surpass in any other country. Many indications expose that China will be in on EVs for the long run (Hertzke, 2017). Based on the evidence discussed, the EVs market in China performed excellently on both the quantity demanded and the supply available.

Figure1: New market, new entrants, new challenges: Battery electric vehicles



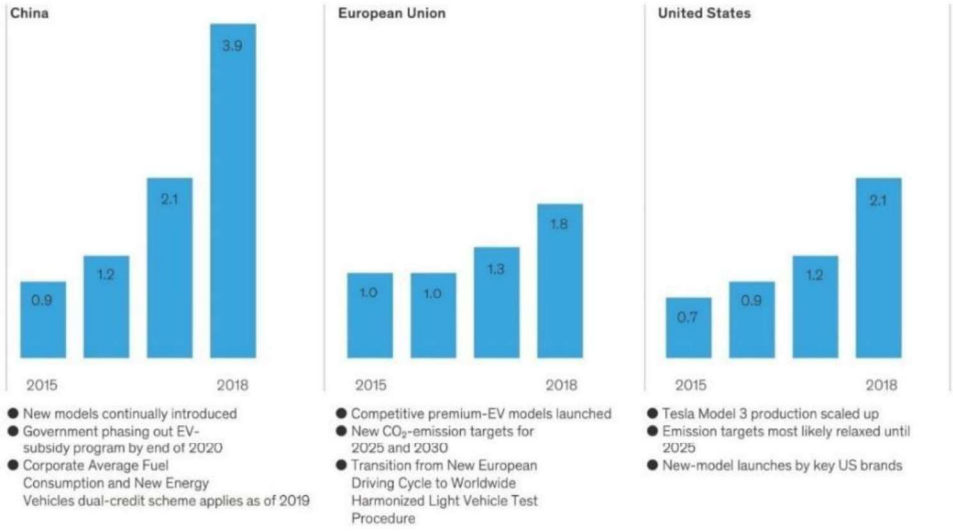
Source: Deloitte analysis (2019).

Figure 2: China's electric-vehicle market is three times the size of that of Europe or the United States**.**



Source: EV-Volumes.com; Mckinsey analysis (2019)

Figure 3: Light electric-vehicle penetration rate among overall light-vehicle sales, by region, %



Source: EV-Volumes.com; Mckinsey analysis (2019)

This study will provide an essential avenue to manufacturers and distributors in China, which will inform the factors that needs to be focused for future market in encouraging consumers to buy EVs. This study will attempt to find out the relationship between six key factors and the EVs consumption of consumers in China. Previous research has concentrated on factors influencing consumer willingness to buy EVs or the factors which significantly or negatively influence their purchase (Hidrue et al., 2011; Peters and Dütschke, 2014;

Lieven et al., 2011; Turrentine & Kurani, 2007; Thomas, 2009; Egnér & Trosvik, 2018; Wang & Zhou, 2019; Tu & Yang, 2019). Manufacturers should focus on improving product's utility, technology, supporting facilities (Xiao, 2019; Kharpal, 2019), and consider many factors consisting of personal values, such as a concern for the environment and a belief that an individual could make a difference (Lai et al., 2015).

China's EVs market is changing, manufacturers and distributers will face higher consumer demand for products. Consequently, the key to this research is to investigate the level of impact the factors influencing consumers to purchase EVs and explore the developmental direction of the manufacturers and distributers in the future. This is to provide a recommendation for development and future customer buying of EVs. Hence, the primary objectives of this study are to investigate the relationship between six key factors and the purchase of EVs in China namely individual environment, government financial incentives, perceived social influences, cost saving, product technology development, and charging infrastructure. These factors are aligned to the Chinese markets to understand the factors which extent significantly affecting the choices and purchase of EVs by Chinese customers, helping EVs manufacturers truly understand the factors that drive consumers buying EVs. Distributers grasp more clearly the characteristics of consumer spending and consumer psychology and finally reach a deal. Due to most researchers focus on technology patent that impact development in the EVs industry (Yang et al., 2013; Ou et al, 2019;

Timmermans, 2014), the result of the study contributes to manufacturers and distributors development, which will be filled in the gap.

2. Literature Review

2.1 Purchase intention

The purchase habits reflect a type of individual intention. Purchase intention is usually used to measure a decision from consumers in the market, forecast and expected future sales and decision on how the actions the sellers will take to attract consumer's purchasing behaviour (Morwitz, 2012). In other words, consumer will high likely buy a product or service after evaluations have been made (Keller, 2001).

It is very common for studies in China referred to measure consumer decision making via purchase intention (Li et al., 2019; Zhang et al., 2018a; Zhang et al., 2018b). Therefore, focusing on purchase intention as our dependent variable is deemed appropriate in the Chinese market.

2.2 Individual Environmental Awareness

Environmental Awareness is focused on environment and environmental issues (Panth, 2015). The study by Stern et. al. (1995) refers to a relationship between environmental awareness and specific individual specific beliefs. Individuals can react favourably or adversely to their environmental attitudes (Uitto, 2004). Environmental awareness is further pointed out as one of the particular beliefs by Hansla (2010). Study of Okada et al.

(2019) also shows that environmental awareness does affect purchase intention of electric vehicles.

2.3 Government financial incentives

Government financial incentives consist of two : mainly beneficiaries which are both consumers and manufacturers (Zhang et al., 2014), and contain currency incentives and non-monetary incentives (Wang and Liu, 2015). The study concentrates on monetary encouragement (financial incentives) policies of the EVs from the government. Governments around the world adopt incentives for promoting and developing EVs (Volkswagen, 2020).

2.4 Perceived social influence

Social influence means individuals who want to target a demand for social environment to change their behaviour. Kelman (1958) highlights that identification and internalization reflect perceived social influence for individuals. Social identity and other people's impressions of themselves are important for Chinese people due to Chinese traditional culture. Therefore, individuals and personal beliefs concern social identity, so consumers make rational selections from social identity beliefs (Aguiar and Francisco, 2009). Zhang (2017) mentioned “face consumption” in China can gain higher social status demands. The behaviour of the face-saving consumption and conspicuous consumption drive purchase intention in China (Brown & Levinson, 1987). Therefore, understanding this factor on purchase intention is deemed appropriate in the Chinese market.

2.5 Cost saving

Cost saving is a long-running and strategical action, which can decline budgets and expected expenses, measures the carrying out of the shrink age expenditures for goods or services. EVs in the market are more expensive than vehicles using gasoline (Turrentine and Kurani, 2007), but the purchase cost of EVs was reduced based on government financial support. Operating costs for EVs are cheaper using gasoline vehicles, such as fuel cost and maintenance cost (ENEL X, 2019; Wardle et al., 2019). In general, costs curtailing can promote consumers to buy EVs.

2.6 Products technological development

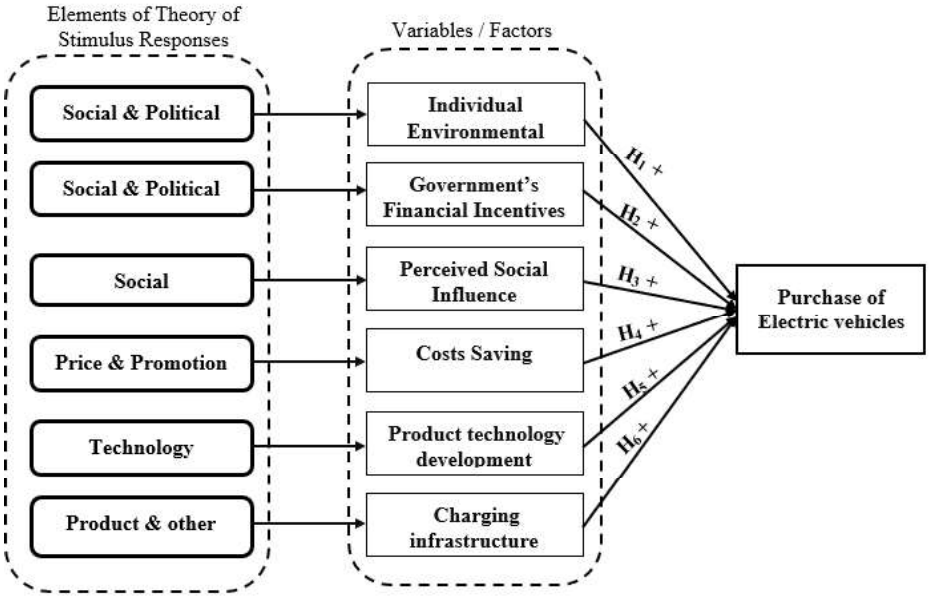
The products and technological development point to the same objective, which is using minimum resources to satisfy customer demands (Tangen, 2005). EVs' technology with the sustained development and renewal, becomes more attractive to users. EVs are considered forward-looking technological products compared to traditional vehicles by consumers. Consumers were reported to preferred electric vehicles with a longer driving range, a shorter charging time, a faster maximum speed, lower pollution emissions, lower fuel cost, and a lower price (Nie et al., 2018).

2.7 Charging infrastructure

Charging infrastructure refers EVs charging station, supplies EVs for recharging. For most drivers of EVs, they want to drive long distance, and travel to further destinations. (Element Energy, 2009; Golob & Gould, 1998). Hence, the

charging infrastructure is provided to support more generally the promotion of individual usage of EVs (Lim et al., 2014; Delang & Cheng, 2013). In contrary, Thananusak et. al. (2017) reported that Thai car buyers opt for performance factors over infrastructure. Despite the opposing results, we believe charging infrastructure is an important influencing factor for the Chinese consumers in their EV purchase.

Figure 3: Proposed model



3. Theory of Stimulus-Response (S-R)

The theory of Stimulus-Response (S-R) is a well-known psychological experimentation, which was conducted by Pavlov (1927). The testing indicated that the behavioral theory was between classical conditioning and stimulus response. The stimulus response model is used to test one of the characterizations in the statistical unit to predict the quantitative response from the corresponding stimulus. Theory of S-R model is applied to several fields, such as psychology, risk assessment

and so on (Greg, 2000; Stephen & Kimberly, 2007; Walter & Bailer, 2005; Geoffrey, 1988; Rus & Rus 1993). In order to understand consumers' behaviour, the S-R model can be used to measure the stimuli of the marketing and environmental influence on the decision process that will lead to a palpable purchase decision. The theory of S-R is the most effective model for interpreting consumer behavior by decoding customer behavior. The S-R uses a combination of the effect and internal linkage of consumers' psychology, characteristics and the buyers' decision-making process. (Kanagal, 2016). In the previous studies, there is hardly any evidence of the use of the theory of S-R to analyze purchasing intention of EVs as a theoretical framework, but many researchers have used the S-R theory to study buyers' behaviour (Oke et al., 2015; Liu et al., 2018; Dawson, 2005; Graa, 2012). Previous research demonstrates theoretical correctness and the ability of the S-R theory to predict consumer behavior, which can be effective to explain and predict the purchasing intention for EVs. Hence, this study would like to fill the gap.

4. Conclusion

The aim of this investigation is to study the intention purchase of EVs in China and examine the influence of the six factors namely individual environment, government financial incentives, perceived social influences, cost saving, product technology development, and charging infrastructure. These factors are aligned to the Chinese markets to understand the factors which extent significantly affecting the choices and purchase of EVs by Chinese customers, helping EV

manufacturers truly understand the factors that drive consumers buying EVs. Distributers grasp more clearly the characteristics of consumer spending and consumer psychology and finally reach a deal. As most researchers focus on technology patent that impact development in the EVs industry (Yang et al., 2013; Ou et al, 2019; Timmermans, 2014), the result of the study contributes to manufacturers and distributors development, which will fill the gap. In order to address the research aim, we propose a quantitative study approach to obtain primary data through survey via proper generation Z (Gen Z)communication channel. Such approach would gain better insight for manufacturers and distributors on consumer purchase intention among Gen Z (Ong et al. 2018, Ong et al., 2015). The findings will also contribute to empirical evidence of the relationships between variables proposed in the EVs context.

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