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RESEARCH PROPOSAL:

THE CHALLENGING ISSUES OF ELECTRIC VEHICLES IN HONG KONG

1. Introduction

The objective of this study is to examine the challenging issues of electric vehicles in Hong Kong. Electric vehicle is powered by electricity and sufficient energy is provided from batteries. While conventional vehicles lead to critical problems in environmental pollution, and the electric vehicle produces less carbon emissions, it is expected that electric vehicles may replace conventional vehicles in the future (Jochem et al., 2015; Mora & Lonza, 2018). The global market of the electric vehicle is divided into three types of vehicle, electric vehicle, hybrid electric vehicle, and plug-in hybrid electric vehicle. The electric vehicle can be charged from the charging station or by self-charging devices (Chau et al., 2008; Khaligh & Li, 2010).

The market growth of the electric vehicle is also affected by various factors, such as manufacturing cost, maintenance cost, vehicle performance, demand for green vehicle, and infrastructure facilities. Some external factors may help the market growth, such as government regulations and subsidies, and the improvement of the technology (Todd, et al., 2013). Some studies indicate that Hybrid electric vehicles would be a more favorable alternative than the full electric vehicles (Erdern et al. 2010; Achtnicht 2012). For instance, the new technology is expecting to be the substitution, the marketing problems and challenges should be found to enhance the market growth. In order to establish evidence of what the major problem and challenges affecting the growth of the electric vehicle market are, the quantitative research methodology is being used. A pilot study is designed to analyze the factors influencing consumer behavior, hence affecting the market growth of electric vehicles.

2. Industry Background

The global market for electric vehicles was evaluated as $162.34 billion in 2019 and expected to achieve $802.81 billion by 2027 (Singh, 2020). Due to the increasing concern about the environment, climate problems is a critical issue, there is a perspective that electric vehicles will become the substitute for petroleum vehicles (Kahn, 2007). However, the automobile industry did not attract customers to change over to electric vehicles ideally. In the USA, only about 1% of the cars sold are electric cars (Mims, 2017), and the penetration rate in Hong Kong is only 1.6% (Legislative Council Secretariat, 2020). The global market growth of the electric vehicles is not as good as expected, the industry has to search for the factors that influence the deployment of the electric vehicles market. As environmental issues are a serious problem in the whole world, this

threatens human life, and the behavior of consumers has been influenced incessantly (Jang et al., 2015). While climate problems become more and more critical, there is a perspective that electric vehicles are expected to be the substitute for the conventional vehicles. Some countries plan to phase out the conventional vehicles shortly, such as Norway, the largest electric vehicle market in Europe. The Norway government proposes that only electric vehicles can be sold from the year 2025 (Saele and Petersen, 2018). It is expected that the electric vehicle market will grow rapidly since electric vehicles release less carbon emissions, people with higher concern about the environment will have more intention to buy electric vehicles (Kahn, 2007; Bockarjova and Steg, 2014). Hence, environmental concern becomes one of the significant factors in consumer behavior (Kang and Park, 2011). On the other hand, the consumers' intention towards electric vehicles will be obstructed by the high cost of battery and inadequate charging facilities (Diamond, 2009; Hidrue et al. 2011; Schuitema et al. 2013).

3. Research Objective

As mentioned, the electric vehicles are considered to be the appropriate new technology for a green environment, however, it does not perform well to attract the consumers to switch from traditional energy vehicles to electric vehicles. A survey was conducted and showed that the adoption of electric vehicles in Hong Kong is slow even the consumers think that it can help the environmental issue (Delang and Cheng, 2012). The industry needs to identify the factors that hinder industry growth. Thus, the purpose of this study is to examine the factors affecting the market growth of the electric vehicles industry in Hong Kong. The research question of the proposed study is:

> What are the factors affecting the market growth of the electric vehicle industry in Hong Kong?

Several researchers have employed the Theory of Planned Behavior (TPB) to investigate the consumers' behavior in electric vehicles (Moons and Pelsmacker, 2015; Zhang et al., 2018). Quite a few studies explore that consumers' attitude and purchase intention towards electric vehicles in Hong Kong (Delang and Cheng, 2012; Delang and Cheng, 2013; Ng et al., 2018), however, studying the association between government policy and consumers' behavior towards electric vehicles is insufficient. In this paper, a conceptual model and the questionnaire is to be developed based on the extended theory of planned behavior. Besides the basic elements (consumers' attitude, subjective norm, and perceived behavioral control), extended elements (environmental concern, government policy, and moral consciousness) will be examined simultaneously. The constructs will

be tested to see the degree of association among them. The outcome is expected to show the significance of the association between the constructs.

4. Literature Review

When studying the concept of consumer behavior, most researchers will use the Theory of Planned Behavior (TPB). It is suggested that three basic aspects will influence the consumer behavior, including the attitude towards the behavior, subjective norm, and perceived behavioral control. All of these lead to a Behavior Intention which may eventually turn out into a behavior change (Ajzen, 1991). The Theory of Planned Behavior is extensively used in examining the behavioral intention. Kairser et al. (1999) utilized the Theory of Planned Behavior to analyze the environmental attitude and ecological behavior; Bamberg et al. (2007) and Moons and Pelsmacker (2015) investigate consumers' behavioral intention to hybrid electric vehicles and the use of public transport through TPB model.

In fact, some researchers point out that the Technology Acceptance Model (TAM) is a suitable model when studying consumers' attitude towards electric vehicles because the electric vehicle is a new kind of technology (Yousif and Alsamydai, 2019). Davis (1989) states that TAM explores that consumers' behavioral intention to use a particular technology is determined by the attitude, which is consistent with the Theory of Planned Behavior. There are two determinants from the TAM, perceived usefulness and perceived ease of use. Perceived usefulness indicates that people need to see that technology is useful and it can do what they need. People may have more intention to use the new technology if it is useful at the moment and in the future. Perceived ease of use is people's perception that consumers feel confident to use the kind of technology (Davis, 1989).

While the TAM explains the acceptance of certain new technology by consumers, some studies claim that that TAM is suitable in evaluating the intention towards electric vehicles (Venkatesh, 2000). However, social aspects are not involved in the TAM model, some studies assert which will have an extensive impact on the research result (Bagozzi, 2007). As for the above limitation, this study will be done based on the Theory of Planned Behavior (TPB) with extended elements to be incorporated into the conceptual model.

In the TPB model, attitude represents a person's positive or negative thoughts concerning the performance of the behavior which is influenced by behavioral beliefs and the outcome evaluation. Attitude towards the behavior relates to how people generally think and feels about the

behavior, whether it is a positive or negative contribution to their behavior. While attitude is a factor that may affect the consumers' intention towards electric vehicles, various studies indicated that the attitude is significant in behavioral intention (Kang et al. 2006; Dickinger and Kleijnen 2008). A research was conducted and the result shows that the more positive attitude consumers have a stronger intention to perform certain behavior (Beck and Ajzen, 1991).

Subjective norm is the degree to which the person feels social pressure to perform the behavior, which is predicted by normative beliefs and motivation to comply. Subjective norm mainly focuses on everything around the individual, see how's everyone is doing, such as the social network, cultural norm, group belief, and how the campaign is supported, especially if someone is important to the individual, the degree of social pressure would be higher (Ajzen, 1991). Individuals may think that they should behave that same way as people around them. Previous researches provide evidence that there is a positive relationship between subjective norm and behavioral intention (Abou-Zeid and Ben-Akiva, 2011; Castanier et al., 2013).

Perceived behavior control expresses a person's belief on how easy or hard it is to perform certain behavior or to act in a certain way. (Ajzen, 1991; Pavlou and Fygenson, 2006) In the context of electric cars, various control factors are included, such as perceptions of price, vehicle ability, understanding of the technology, cost of use, and charging infrastructure (Axsen and Kurani, 2013, Moons and Pelsmacker, 2015). Initially, due to the low market share, the electric vehicle is not bulk-produced, therefore, the cost would be higher. The manufacturing cost of electric vehicles is relatively higher than the conventional one, especially the batteries, accounted for approximately 33% of the manufacturing cost of electric vehicles (Lee and Lovellette, 2011). Since the battery will wear out, the battery replacement cost is high, and the vehicle resale values will be in doubt. On the other hand, the relatively lower operating cost of electric vehicles is a comparative advantage towards the conventional vehicle. The battery charging cost is only about 25% of the fuel used for a traditional energy vehicle (Electrification Coalition, 2009). There is every reason to be concerned about cost is one of the major factors affecting the competitiveness of electric vehicles, reducing the manufacturing cost and maintenance cost is expected to influence consumers' behavioral control, and eventually improve the market growth.

Moreover, the basic infrastructure for electric vehicles is the battery charging facilities. Gas stations can be found easily in the community, however, charging infrastructure is not as adequate as the gas stations. Potential drivers will consider the driving range per battery charge, therefore, the market growth will be obstructed if the infrastructure is inadequate (Axsen and Kurani, 2013;

Moons and Pelsmacker, 2015). It needs to be recognized that sufficient charging infrastructure must be available to attract consumers switching from the conventional vehicles towards electric vehicles.

The theory of planned behavior can be applied to other relevant issues such as environmental concerns. Recent studies exhibit that the consumers' environmental attitude and the environmental friendly behavior are significantly related. Consumers with higher environmental concerns will have more tendencies to purchase electric vehicles (Kahn, 2007; Heffner et al., 2007). Some other studies show that environmentalists would happy to pay more for electric vehicles to protect the environment (Ziegler, 2012; Daziano and Bolduc, 2013). Literature also stated that people will tend to adopt electric vehicles if this could help to improve the environmental issues (Bockarjova and Steg, 2014). Therefore, it is worth exploring environmental concern should be incorporated into the conceptual model for analysis.

Some studies indicated that the development of the electric market can be resolved by appropriate government policy (Ahman, 2006; Coad et al., 2009; Gallagher and Muehlegger, 2011; Yong and Park, 2017). Researchers found that policy support on the technical change in manufacturing electric vehicles may affect the market development in Japan (Ahman, 2006). Other researchers suggested that legislative and economic policies are the factors that affect the consumers' purchasing behavior towards electric vehicles in Swiss (Coad et al., 2009). Furthermore, studies also indicated that subsidy policy in the United States speeds up the recognition of the hybrid vehicles (Gallagher and Muehlegger, 2011). Some countries adopted the tax incentives for consumers to buy electric vehicles and show a significant increase in the electric vehicle market share, such as Canada (Chandra et al., 2010). It should be said that there is an association between government policy and the consumers' purchasing behavior towards electric vehicles in Hong Kong.

Morality may affect consumers' behavior directly since the individual feels that there is an obligation to act in a certain way (Beck and Ajzen, 1991). Literature also indicates that social interface affecting the ethical consumption and the consumers will become more consciousness if the members of the social network share the particular information (Cherrier, 2007). It has been concluded that an individual who has a higher level of moral consciousness is more likely to have a positive impact on the intention to adopt electric vehicles (McGregor, 2006; Achtnicht, 2012). Consequently, there is every reason to be concerned about moral consciousness is worth to take into account as an extended element in the conceptual model.

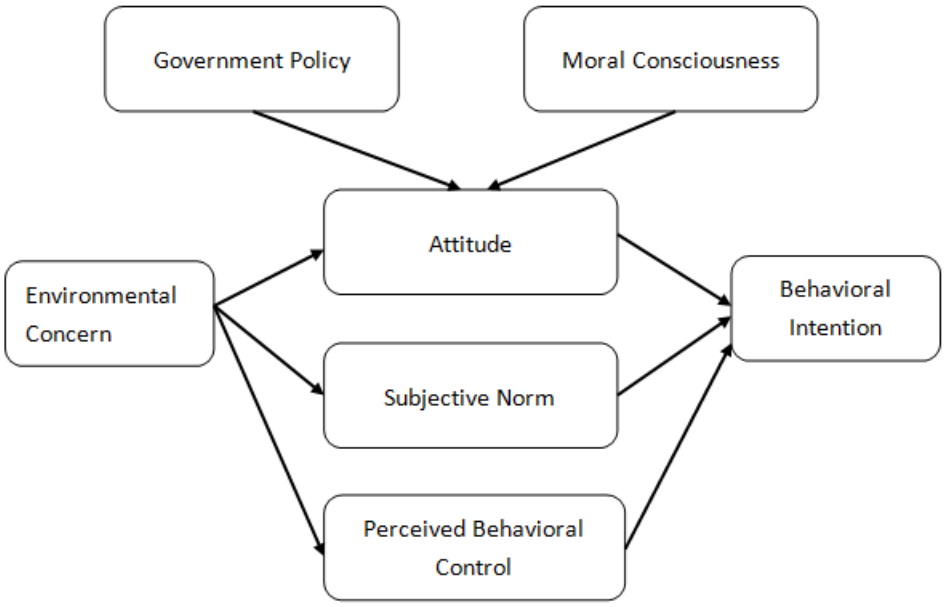

Figure 1: Conceptual Framework

5. Hypotheses Development

This proposed research paper is to examine the significant factors affecting the consumers' purchase intention towards electric vehicles, hence affect the market growth of electric vehicles in Hong Kong. So as to analyze the consumer's intention towards electric vehicles, hypotheses are developed with reference to the literature review in the previous studies. According to the conceptual framework presented in Figure 1, the key factors affecting consumers' behavioral intention towards electric vehicles are consumers' attitudes towards electric vehicles, consumers' subjective norm, and consumers' perceived behavioral control. The hypotheses are proposed:

H1: The association between consumers' attitude and their behavioral intention towards electric vehicles is positive.

H2: The association between consumers' subjective norm and their behavioral intention towards electric vehicles is positive.

H3: The association between consumers' perceived behavioral control and their behavioral intention towards electric vehicles is positive.

Further analysis will be conducted to investigate the extended elements of the conceptual model. It was mentioned that environmental concern affects an individual's behavior indirectly through attitude, subjective norm, perceived behavioral control, and moral consciousness (Ajzen

and Fishbein, 1980; Bamberg, 2003). Besides, it was being argued that there was an impact between the moral consciousness and attitude of the consumers (Cherrier, 2007). Also, other research papers pointed out that government policies, such as tax incentives, will have an effect on consumers' behavior towards electric vehicles significantly (Chandra et al., 2010; Gallagher and Muehlegger, 2011; Peters and Dutschke, 2014). As a result, the hypotheses regarding the extended elements are proposed:

H4: The association between consumers' attitudes towards electric and their environmental concern is positive.

H5: The association between consumers' subjective norm and their environmental concern is positive.

H6: The association between consumers' perceived behavioral control and their environmental concern is positive.

H7: The association between consumers' attitude towards electric vehicles and moral consciousness is positive

H8: The association between governmental policy and consumers' attitude towards electric vehicles is positive

6. Research Design

6.1 Definition of Variables

To find out what are the factors obstructing the market growth, the proposed research will gather data and information from a certain group of participants. The independent variables included age, gender, have a driving licence, ownership of a vehicle, and consumers' attitude and behavior. In analyzing the consumer's intention towards electric vehicles, hypotheses are developed based on the literature review. According to the conceptual framework presented in Figure 1, the key factors affecting consumers' behavioral intention towards electric vehicles are consumers' attitudes towards electric vehicles, consumers' subjective norm, consumers' perceived behavioral control, and government policy. Further analysis was conducted to test the extended elements of the conceptual framework. It was mentioned that environmental concern affects an individual's behavior indirectly through attitude, subjective norm, perceived behavioral control, and government policy (Ajzen and Fishbein, 1980; Bamberg, 2003, Lai, et al., 2015).

6.2 Research Method

To make sure the research is logical and reliable, we assume that the respondents who have a driving licence and/or own a car will have basic knowledge about the electric vehicles. It is suggested to use Quantitative Research methods as statistical techniques will be applied. The

measurement scales were adapted with reference from the previous studies (Wang, et al., 2014; Lai, et al., 2015; Moons, & Pelsmacker, 2015). The questionnaire will consist of two sections. The first section is the general background of the respondents. The second section consists of 24 items for the six constructs, including 5 items for attitude, 4 items for subjective norm, 3 items for behavioral control, 3 items for behavioral intention, 4 items for environmental concern, 3 items for government policy, and 2 items for moral consciousness. A 5-point Likert-Type scale was adopted, scaling from 1 (for strongly agree) to 5 (for strongly disagree).

The construct measurements were adapted from previous studies. The attitude towards electric vehicles was measured by 5-point scale items (Wang, et al., 2014; Moons & Pelsmacker, 2015; Yang, et al., 2018). The items used to measure environmental concerns were validated in previous researches (Weigel, 1983; Ajzen, 1989; Gadenne et al, 2011), including individuals concerned about environmental problems, about air pollution, the seriousness of the environmental problem and the contribution to improving the environment. The items used to measure subject norms were revised from research by Wang, et al. (2014). The items measuring behavioral control is based on the studies by Wang et al. (2014) and Yang, et al. (2018). The behavioral intention measured the possibility that an individual will purchase an electric vehicle in the future. The items used to measure behavioral intention were adapted from a previous study (Zeithaml et al., 1996). It was argued that the behavioral intention may be affected by the general background of and individual, including gender, age, and education level (O'Garra et al., 2005; Achtnicht, 2012), which were included in the first section of the questionnaire. The constructs used to measure government policy are built according to the worldwide review by Rietmann and Lieven (2019), who claimed that appropriate policy lends a hand in promoting electric vehicles around the world, such as tax exemption, subsidies and traffic regulations.

The proposed constructs for this study are shown as the following:

Attitude towards electric vehicles (A)

A1 I have a positive attitude in electric vehicles.

A2 I think using electric vehicles is desirable.

A3 I think the future trend is using electric vehicles.

A4 I think electric vehicles are useful and can satisfy what I need.

A5 I think electric vehicles are simple and confident to use.

Subjective Norm (S)

S1 People who are important to me convince me to use electric vehicles.

S2 People who are important to me influenced me to use electric vehicles.

S3 The media gave me a positive image of electric vehicles.

S4 The media influenced me to use electric vehicles.

Behavioral Control (C)

C1 The purchase price of electric vehicles is important to me.

C2 The maintenance costs of electric vehicles is important to me.

C3 The electric vehicles infrastructure is important to me.

Behavioral Intention (I)

I1 I am happy to use electric vehicles in the future.

I2 I will buy electric vehicles in the future.

I3 I will recommend people to use electric vehicles.

Environmental Concern (E)

E1 I am concerned about the environmental problems.

E2 I am concerned about air pollution.

E3 I think environmental problem is serious at the moment.

E4 I think environmental problems will become more serious.

Government Policy (G)

G1 Tax benefits will encourage me to buy electric vehicles.

G2 Purchase subsidies will encourage me to buy electric vehicles.

G3 Traffic regulations will encourage me to buy electric vehicles.

Moral Consciousness (M)

M1 I have to participate to protect the environment.

M2 Using electric vehicles is an obligation to the environment.

It is essential to pre-check the reliability of the measurement scale, and a test run was conducted before the launch of the survey with 30 valid responded questionnaires. The Cronbach's Alpha reaches 0.87, which indicates a high level of internal consistency for the scale with the test run sample. The questionnaire was delivered to the target group to collect data for further analysis. It is strongly recommended to use the correlation coefficient in research because it can provide objective findings accurately and is not affected by human factors (Reed, 1917). The valid data was then interpreted with SPSS.

6.3 Sampling

Due to the limited time, the researcher uses non-probability sampling for research. Purposive sampling, snowball sampling, and expert sampling is used. An online questionnaire survey was conducted to collect data. The target respondents were between 18 to 70 years old with

a driving licence. It is assumed that people with driving licence may have knowledge about electric vehicles. For the proposed research, the ideal sample size would be over 100 valid respondents. Subsequently, the data analysis was conducted using SPSS Statistics to verify the reliability of the constructs and the correlation between the items.

6.4 Data Collection

In order to gather sufficient and relevant information for the study, we will adopt an online questionnaire survey. The targeted respondents are aged between 18 to 70 years old with a driving licence. It is expected that this target group is mature and has certain driving experience, therefore, in-depth feedback from the participants could be gathered.

6.5 Data Analyses

The data analysis will be conducted using the statistics software SPSS. Before determining the association between the constructs, reliability will be tested. The reliability of the Likert-Typed scale of the questionnaire was measured by the Cronbach's alpha coefficient (α), which provided an overall reliability coefficient for a set of items. Further, the strength of associations of the constructs will be analyzed using the Pearson correlation coefficient or multiple regression analysis, depends on the sample size. It is not appropriate to use the multiple regression if the sample size is too small.

6.6 Pilot Study

The purpose of the pilot study is to evaluate the research protocols, data collection instruments, and the feasibility of the research approach. The same procedure would be performed for the proposed research as well. The questionnaire was sent online and opens to collect data for one week. The demographic data of the respondents include 67.9% males and 32.1% females. The average age was between 41-50 years old. The respondents are relatively high-educated, of which 54.7% have a master degree and 9.4% have a doctoral degree. Over half of the respondents (52.8%) own a vehicle.

The data analysis was conducted using SPSS 26. Firstly, the reliability of the constructs had been tested before determining the association between them. The reliability of the Likert-Typed scale of the questionnaire was measured by the Cronbach's alpha coefficient (α), which provided an overall reliability coefficient for a set of items. In this pilot study, the Cronbach's alpha coefficient of the six constructs are ranged from 0.75 to 0.94, which indicates a high level of internal consistency for the scale ($\alpha > 0.7$). Secondly, the correlation between the constructs will be tested

utilizing the Pearson correlation coefficient (r) or multiple regression analysis. As there were only 53 valid respondents, the sample size is relatively small, therefore, multiple regression does not apply to this pilot study. The Pearson correlation coefficient (r) becomes the major tool to analyses the strength of associations of the constructs. The Pearson correlation coefficient shows that there was a strong positive correlation between consumers' attitude and government policy ($r = 0.842$), environmental concern and perceived behavioral control ($r = 0.826$), environmental concern and consumers' attitude ($r = 0.778$), moral consciousness and attitude ($r = 0.761$), moral consciousness and perceived behavioral control ($r = 0.725$) , consumers' attitude and behavioral intention ($r = 0.717$) and consumers' attitude and perceived behavioral control ($r = 0.701$). A substantial association was found between environmental concern and behavioral intention ($r = 0.65$), behavioral intention and perceived behavioral control ($r = 0.622$), behavioral intention and moral consciousness ($r = 0.589$). All of the associations were statistically significant with $p < 0.05$. The result shows that the correlation between subjective norm and behavioral intention is relatively low at $r = 0.213$. The correlation between subjective norm and environmental concern, and subjective norm and moral consciousness are negligible since $r < 0$.

From a statistical perspective, the correlations between constructs were found to be significant at a level lower than 0.05. A positive attitude towards electric vehicles has a significantly positive correlation on the behavioral intention towards electric vehicles, that means an individual with a positive attitude will consequently show a stronger intention to adopt electric vehicles, H1 is supported. The effect of subjective norm on behavioral intention is low but positive, H2 is marginally supported. The perceived behavioral control has a substantial association with the behavioral intention towards electric vehicles, consumers are more likely to adopt electric vehicles if they have more perceived behavioral control, H3 is supported. The pilot study found that environmental concern has a significant positive impact on consumers' attitudes toward electric vehicles, perceived behavioral control, and moral awareness, that is H4 and H6 are supported. Within these hypotheses, the very strong relationship between consumers' attitudes and government policy shows that people have more encouragement toward electric vehicles if government policy is enforced. Nevertheless, environmental concern and subjective norm has no significant effect, hence, H5 is not supported. Moral consciousness also has a strong association with attitude, and substantial relationship with behavioral intention, it turns out that both H7 is supported. The very strong relationship between consumers' attitude and government policy shows that people have more encouragement toward electric vehicles if government policy is applied, that is H8 is supported.

6.7 Expected Findings

The expected result of the proposed research is to indicate that the factors are correlated with consumers' intention towards electric vehicles, hence affecting the market growth of the electric vehicle industry. The result of this pilot study suggests that the extended TPB model is appropriate in predicting the consumers' behavioral intention towards electric vehicles. While the environmental issues become more and more serious, it is a warning sign to the human society. The adoption of electric vehicles is one of the ways to reduce environmental pollution. For the automobile industry, this proposed research can help the industry to understand consumers' behavior and acceptance of electric vehicles. This can provide the industry with some directions on how to promote electric vehicles. For instance, the automobile industry should develop its product based on environmental concern, such as environmentally friendly and cleanliness. It is suggested the proposed research could be done within a short period so that the factors influencing consumers' intention towards electric vehicles can be identified promptly and opportunities can be sorted out the soonest as possible.

6.8 Research Timeframe

The proposed research is to investigate the factors affecting the market growth of electric vehicles. The research should be carried out within three months as the automobile industry has to react promptly to enhance its market strategies. It is planned for the researcher to finalize the questionnaire and set up the online system for data collection in two weeks. Data will then be collected once the system has been set up until the fourth week. The raw data will be transformed into meaningful information for analysis. It is projected to take one week time to process the data by statistic software SPPS. The final two weeks will draft and finalize the report.

Week	Task
1-2	Review the questionnaire and set up the online survey system
3-4	Data Collection
5-6	Data transformation and analysis
7-8	Draft and finalize report

Table 1: Research Timeframe

7. Conclusion and Limitation

The proposed research is focused on the factors influencing consumers' intention towards the adoption of electric vehicles, which eventually will affect the market growth of the electric vehicle in Hong Kong. Based on the Theory of Planned Behavior, literature has been reviewed and an online questionnaire survey has been conducted. The data has been analyzed to show their statistical significance. The result confirms that consumers' attitudes and perceived behavioral control significantly correlated to the behavioral intention towards electric vehicles. In addition, in the extended theory of planned behavior model, a strong impact on the intention towards electric vehicle adoption is found with the inclusion of environmental concern, government policy, and moral. The effects of environmental concern are positively related to consumer's attitudes, perceived behavioral control, and moral consciousness. The model also confirmed that appropriate government policy and moral consciousness are valuable aspects influencing the attitude towards electric vehicles, consequently, the behavioral intention towards electric vehicles eventually will give positive promotion to the electric vehicle market. The only construct that is not significantly related is the subjective norm. The influence of subjective norm to the behavioral intention towards electric vehicles is rather limited.

Limitations of the pilot study are found. First, the sample size is small due to limited time and resources, the facts may not be reflected thoroughly. Second, some of them responded questionnaire is invalid. It is unavoidable the participants did not respond with their sincerity in the survey. Third, the pilot study assumes respondents have substantial knowledge of electric vehicles, however, electric vehicles still in its initializing phase in Hong Kong, some respondents may not have the basic knowledge in this area, and consequently, the information provided by these respondents may not ideal. Lastly, due to the time constraint, this study examines only six constructs, factors such as ease of usage and perception of new technology should be investigated as well in further study.

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