

Factors Influencing the Purchase Intention towards Electric Vehicle of Private and Public Vehicle Drivers and Owners in NCR

Anne Kathlyn A. Estalilla

anne_kathlyn_estalilla@dlsl.edu.ph

De La Salle Lipa, 1962 J.P. Laurel National Highway, Mataas na Lupa, Lipa City 4217, Philippines

Abstract

The electric vehicle era has already started and has been slowly gaining attention to the public through advertisements, localized policies and incentives given to owners of fuel-powered vehicles. While existing literatures may have explored the factors influencing the purchase of electric vehicles globally, there is lack of research focused specifically for the Philippines' electric vehicle market and if there is a significant difference in the purchasing intention between private and public vehicle users. This lays the foundation in identifying and addressing this gap which can provide valuable insights that is specific for the National Capital Region to facilitate more effective strategies in promoting the use of electric vehicles. It analysed the factors that influence the consumer's green intention to purchase electric vehicles. Such factors include consumer attitude, environment knowledge, environment concern, green consumption value, price and social influence. A survey was administered among 180 respondents who are vehicle drivers and/ or owners grouped equally according to the use of their current vehicle (public or private) from the National Capital Region. A structured survey instrument with 4-point Likert scale was used to gather data using the snowball method. Multiple regression analysis was used to test the effect of the six independent variables to green purchase intention. Consumer attitude, price and social influence were statistically significant to the purchasing intention of electric vehicle while environment knowledge, environment concern and green consumption values are not. Further, there is no significant difference in the green purchase intention when respondents were grouped according to age, gender and the use of their current vehicle. To help in the fast adoption of electric vehicle, results of this study proposed to have more public awareness campaigns, establish trade in/ upgrade programs and have an EV User's recognition program that would increase awareness and encourage more people to switch to electric vehicles.

Keywords: electric vehicle; consumer attitude; environment knowledge; environment concern; green consumption value; price; social influence; green purchase intention

1. Introduction

1.1. Background of the Study

With the growing concern over the impact of air pollution in the human health and environment, one of the identified significant sources of carbon dioxide (CO₂) emission is the transportation industry (Statista, 2020). The International Energy Agency reported that transport emissions grew at an annual average rate of 1.7% from 1990 to 2022, faster than any other end-use sector. Technological advancements that have been introduced to mankind and the production and consumption of innovative products have an impact to the degradation of the ecosystem (Tu and Yang, 2019).

Fuel-powered car is the widely-used transport service in the industry. Immense use of fuel-powered cars and the harmful carbon emissions have adverse effects not only to the environment but also to health and safety of human beings. However, a transformative era for the automotive industry has come. Vehicle manufacturers have gone all in to develop a more innovative approach to reduce harmful vehicle emissions and lessen the fossil fuel consumption (Kelecsenyi et al., 2022). Electric vehicles have been conceptualized as a promising solution to address environmental concerns in the transport sector. Being powered by electricity stored in batteries, it produces zero tailpipe emission that helps to improve the air quality and is now becoming more popular due to reduced fuel costs and incentives given to reduce the transportation sectors' carbon footprint, switching to electric vehicles is the most straightforward approach.

A recent study by Liu et al. (2019) demonstrated that electric vehicles can bring about a decrease of 30-50% in CO₂ emission and a considerable reduction in fossil fuel consumption. Large companies are now expediting the change towards electric mobility by converting the current fleet to electric vehicles and installing more charging infrastructure. The International Energy Agency states that emissions from the transport sector can be controlled to meet the Net Zero Emissions by 2050 Scenario if the growth and popularity of electric vehicles continue.

The shift to sustainable energy requires the support of both individuals and the government. It necessitates proactive measures to champion cleaner energy solution. This thrust aligns with the United Nations Sustainable Development Goals (SDGs) specifically in achieving universal energy access by 2030 and improving air quality. However, this paradigm shift remains to be hindered by complex challenges (Lakshika and Hemamali, 2021). The citizens and the government leaders are the key individuals to respond and make it happen. Each person has the responsibility to act in order to protect the planet and achieve peace and prosperity by the year 2030. Government practices and mandates should be aimed to successfully transitioning towards sustainable living.

Metro Manila, the National Capital Region of the Philippines is the most densely populated region and the 3rd most populous urban area in the world as per Department of Trade and Industry. This has been supported by the Land Transportation Office where Metro Manila has been reported to be the center of trade and financial center for economic opportunities where it was designed to be a global power city in the country. This paved the way to have a well- developed transport sector that caters accessible mobility by means of private car or public transport transfers. This contributed to the resource strain where high population density leads to resource shortages and continuous environmental degradation (Monorim et. al, 2020). According to Gatarin (2022), this regime of road congestion has been acknowledged by the local leaders and advocates to act, find alternatives to create a safe space and sustainable solutions to mankind.

If people have been accustomed with using the fuel-powered cars, what then are the factors that will facilitate adoption, consumption and use of sustainable alternatives to reduce carbon emissions from the transportation sector? In this study, it will explore the following predictors that may influence the respondent's intention to purchase electric vehicles such as consumer attitude, environment knowledge, environment concern, green consumption value, price and social influence as anchored from the study of Lakshika and Hemamali (2021). The respondents will be equally grouped according to the use of their vehicle: private or public to see if there is a significant difference in purchase intention between the two groups where in reference to the study of Kim et al. (2021), a comparative analysis of current private car and public transportation users helped to assess the consumer preferences.

By determining the influence of the abovementioned factors in green purchase intention of the consumers, both vehicle manufacturers and the government may be enlightened on crafting programs to hasten the adoption of these environmentally friendly type of vehicles and it is imperative therefore that the local government be provided with valuable insights on what would shape the people's intention to purchase electric vehicles.

1.2. Literature Review

1.2.1. The Effect of Consumer's Attitude on Green Purchase Intention

Consumer attitude is a person's general assessment regarding a brand, product or service and the same can be influenced by various factors such as beliefs, values, experiences and social norms (Lashari, 2021). The extent of the consumer's attitude may give positive or negative insights towards the opinion on electric vehicles where in the study of Kelecsenyi et.al. (2022), the electric vehicle's contribution to a sustainable future and value for money in relation to their attitude to purchase electric vehicles is statistically significant. In a study of Dutta et al. (2021), it was viewed that having a positive attitude towards environment friendly products is a contributing factor for the adoption of electric vehicles. And among other factors such as perceived behavioral control, cognitive status, product perception and monetary incentive policy, it has been concluded that consumer attitude was among the important factors (Chen et al., 2024). This is in agreement with Lakshika and Hemamali's (2020) research where according to the study, a consumer's purchase intention of electric vehicles is significantly influenced by their behavior towards green products. The physical designs of electric vehicles are not the only variables being considered by consumers but also their behavioral intention and attitude towards this (Tu and Yang, 2019). A research conducted in Germany where it is the second-largest market for electric vehicles in the EU, it was found out that consumers with a degree of more favorableness to an electric vehicle are more positively inclined to purchase it (Engels, 2022). However, in some studies, results show that consumers perceive electric cars in negative way due to its usability and utility in terms of charging concerns that gives a negative perception on the electric vehicle's usefulness, even if it is known to be environmentally friendly (Zarifnejad & Garmiani, 2021).

1.2.2. The Effect of Environment Knowledge on Green Purchase Intention

In a study conducted by Van Heuveln et al. (2021), the early adopters of EV were influenced by high environment knowledge. Environment knowledge means being aware of environment friendly products, how they are being produced and its effect to the environment (Pagliacci et al., 2019). Having a deeper understanding of the environmental issues, it is more likely to make purchasing decisions which prioritize sustainability (Gautam, 2020). As people become more educated, the behavioral intention is likely to increase

and consequently become green consumers (Nguyen et al., 2019). The more awareness the people have towards the potential impact of the product in the environment, the more it could help in the conservation and risk mitigation. (Indriani et al., 2019). Results of the same study show that environment knowledge has a direct effect on the attitude towards green products which in turn showed to have a direct effect on green purchase intention.

1.2.3. The Effect of Environment Concern on Green Purchase Intention

Environment concern is another variable that influences the consumer's intention to purchase electric vehicles (Van Heuveln et al., 2021) and has been linked to individual beliefs or general environmental beliefs (Inkpen et al., 2020). According to Aguilar-Luzón et al., it is a personal belief used by consumers as basis in the decision to use eco-friendly products and is a driving force behind a growing positive sentiment towards eco-friendly products. People who feel a stronger sense of duty towards the environment, and a desire to be part of its protection, tend to exhibit higher levels of environmental concern (Gautam, 2020). This heightened concern translates directly into their choices - they are more likely to embrace green products like electric vehicles. It is based on the study of Yeğin, et al. (2022) from Turkey that used Structural Equation Modeling (SEM) to the hypothesis on the research model and confirms that environmental concern has a significant positive effect on consumer's purchase intention. The research of He et al., (2018) and Jaiswal et al., (2021) have consistently shown that environment concern and green purchase intention have strong positive relationship, making it easier to adopt to green products. In a study from Indonesia where the perception of car users was obtained, results show that there is positive and significant influence for environmental concern on purchasing intention (Andrianus, 2023).

1.2.4. The Effect of Green Consumption Value on Green Purchase Intention

Having the ecological awareness on products translates to green consumption and shows a significant impact on the preservation of the environment through waste reduction and healthy habits (Ogiemwonyi et al., 2020). To gain more support on the value of green consumption, companies boost the environmental awareness campaigns to increase public need and demand to switch in green product purchases (Keni et al., 2020). In the study of Lakshika and Hemamali (2020), results show that it has no impact on the purchase of electric vehicles among the Sri Lankan respondents and has been noted that there are only limited studies available on this predictor which created the gap and need to be tested.

1.2.5. The Effect of Price on Green Purchase Intention

In the research of Berneiser et al., (2021), results show that purchasing price of the vehicle was the most significant factor that influences the adoption to electric vehicles. It is a crucial factor in consumer's purchase intentions (Rajper and Albrecht, 2020) whereas elaborated from Zeng et al. (2020), the higher price of electric vehicles was mainly due to extensive battery pack. As the price goes high, it results to a negative effect on the intended adoption of EVs. Lakshika and Hemamali (2020) states that, price has a significant influence on purchase intention of electric vehicles and is consistent with other studies. While study by Danielis et al. (2020) suggest that electric vehicles (EVs) can offer significant cost savings due to lower energy consumption, these benefits are primarily realized by users with long commutes. In a research by Santoso (2023) conducted in Sumbawa with 100 respondents using the Likert scale, it was found out to have a positive and significant influence on the purchasing intention and said to be the most decisive factor.

1.2.6. The Effect of Social Influence on Green Purchase Intention

Lakshika and Hemamali (2020) research shows that social influence has the most significant effect on the purchasing intention of consumers toward electric vehicle. Having a collectivist culture in Sri Lanka where respect to norms is given importance makes this variable to be of great significance. Similarly, in the study of Zhuang et al. (2020), a family, friend, group and even social class influences the interest and decision making of an individual. Findings in the study of Dutta et. al, (2021), it revealed that social and reference groups influence the purchase decision-making process. If consumer's feel an extreme social pressure, they are more like to choose electric vehicles as a viable option (Masur et. al, 2021). In a study from China by Chen et. al (2024), it was perceived that citizens were more willing to purchase the electric vehicles through the influence of their wide social network and friends consisting of individuals who already own electric vehicles.

1.2.7. Green purchase intention towards Electric Vehicles

It is essential to have an understanding of the variables affecting green purchase intention to encourage sustainable practices and consumption (Ozaki, 2020). A consumer's intention is the motivating factor which indicates how much effort they are willing to put into the purchase of something. Intention is an indication of how sincere a person tries to carry out a specific behavior (Panopoulos et al., 2023).

In the research of Zahan et al., (2020), it showed that green purchase intention helps to predict green purchase behavior. People nowadays becoming more conscious and prefer to purchase eco-friendly products more than conventional products (M. Zheng et al., 2023). Research of Truong Trong Hoang (2022) shows that two reasons that could influence a person to buy an electric car is either having an interest to embrace new technology or by having the intention of green consumption. Lakshika and Hemamali's (2020) study states that the variables related to consumer attitude towards green products, environment knowledge, environment concern, green consumption value, price and social influence has a significant effect on the green purchase intention.

1.3. Research Framework

This research was guided by the framework illustrated in Figure 1. It shows the factors that influence consumer's green purchase intention of electric cars from the research study of Lakshika and Hemamali (2020) entitled: "Antecedents of the Green Purchase Intention towards Electric Cars: the Sri Lankan customers' Perspective".

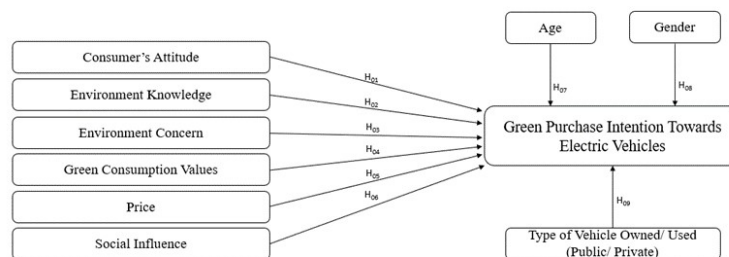


Figure 1: Conceptual Framework

The independent variables as shown in Figure 1 such as consumer's attitude toward green products, environment knowledge, environment concern, green consumption value, price and social influence were tested if they influence the green purchase intention towards electric cars. Lakshika and Hemamali's findings were based on the responses of 215 respondents in Sri Lanka.

Results show that social influence has the most influence on the customer's intention to purchase electric cars among other factors. Consumer's attitude toward green products, environment knowledge and price are significant factors which also influence the consumers. On the other hand, environment concern and green consumption values were reported as insignificant factors.

Further, in the study by Youngseo Kim et. al, (2021) from Korea, it was explored whether and how users' preference to intermodal options transportation was heterogeneous between private car users and public transportation users. The same study suggested that to make the intermodal options attractive to the private car users, the operator should try to minimize the resistance to transfers in the intermodal options. For the public transportation users, it would be important to propose shorter travel time in the intermodal options. Said study showed that there is a difference in intention between private and public car users. In this regard, the current study tested if there is a significant difference in the green purchase intention when respondents were grouped according to the purpose (private or public) of their current vehicle.

The current study used the framework illustrated in Figure 2. This aimed to determine if consumer attitude, environment knowledge, environment concern, green consumption value, price, social influence, age and gender significantly influences the green purchase intention and if there is a significant difference in the purchase intention between private or public vehicle users. Further, in consideration of the above stated study of Youngseo Kim et. al, (2021), the study determined if purchase intention of private vehicle owners significantly vary with the purchase intention of those using their current vehicles for public use.

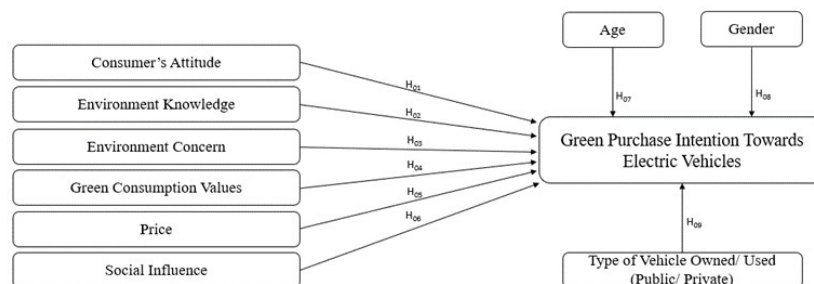


Figure 2: Operational Framework

While the study of Lakshika and Hemamali (2020) concentrated specifically on electric cars, the current study considered all types of electric vehicles. These electric vehicles include a range of types such as electric cars, e-bike, e-jeepneys, e-buses and any other vehicle which is solely operated by batteries charged through an electric source rather than fuel.

Green intention to purchase electric vehicles refers to the probability and willingness of vehicle owners to buy electric vehicles instead of the traditional vehicles and consumer attitude refers to the favorable perception about electric vehicles. Environment knowledge refers to the respondent's awareness of selected environmental-friendly concerns while environment concern refers to the due consideration the respondents have of the state of the environment in the National Capital Region. Additionally, the green consumption value refers to the personal concern of the vehicle owner on the environment and price refers to the intention of the vehicle owners to find low priced electric vehicles. Social influence refers to how friends or relatives of the vehicle owners persuade the person about being environmentally conscious. Age group is the number of people classed together of similar age while gender is the identification of respondents being a male or female. Lastly, the type of ownership refers to whether the respondent is using his current vehicle for private or public use. A private vehicle owner/ driver is one who utilizes his current vehicle for personal use, while the public owner/ driver is one who utilizes his current vehicle as public utility vehicle.

1.4. Significance of the Study

In response to the call of United Nations, on its Sustainable Development goals and to achieve universal energy access by 2030 goals, the study of factors influencing the shift towards electric vehicles is significant. This is crucial in accelerating the transition to a more sustainable transportation system globally that will help to reduce greenhouse gas emissions in the environment. Policy makers and those who are in authority would be able to make decisions with a better understanding of consumer preferences and develop effective strategy as aligned to government policies. The insights would also help automotive developers and companies to create more effective electric vehicle infrastructure needs for enhancement that is essential for the widespread adoption of electric vehicles.

The research will benefit the local government of National Capital Region as it uncovers what factors will facilitate prospective buyers' green intention to buy electric vehicles. As the local government hopes to come up with strategies towards cleaner air- among them the use of electric instead of fuel powered vehicles, policy makers can be guided as what strategies can be put forward to encourage the potential use of electric vehicles.

The essence of evaluating the factors that influence consumer's green purchase intention towards electric vehicle for manufacturers is to be able to make sound business decisions, enhanced marketing strategies, gain a competitive edge and contribute to a more sustainable automotive and transport industry.

The study holds significant importance to the researcher as it aims to have an increased understanding on the factors influencing the consumer's green purchase intention toward EV and contribute to a more sustainable future. With the hopes of having an enhanced knowledge towards sustainability and initiatives to promote it, this could serve as an opportunity to collaborate with local leaders and youth to make a positive influence on the community.

Shaping the future of transportation and building a more environmentally world, it is crucial for future researchers to have a knowledge base where existing studies could be further explored. It is crucial for the ongoing changes and developments to be measured and be able to create new guiding principles that could further enhance the adoption of electric vehicles locally.

The future of transportation is already here and by studying the factors influencing electric vehicle adoption, it will further promote sustainability, environmental, economic and social well-being. This will also

help the people to make a more informed decision towards a more environment friendly, equitable and safer means of transportation for all.

The assessment of the influence of each factor can help to build recommendations as basis for the industry stakeholders and the policy makers to initiate and implement projects that will help boost and increase the adoption rate of transition to sustainable mobility. As such, effective strategies and new industry initiatives that aims to address the key barriers to electric vehicle adoption could help increase the public interest to shift from fuel-powered cars to electric vehicles.

1.5. Hypotheses

The study tested the following hypotheses:

H01: Consumer attitude does not have a significant influence on green purchase intention of electric vehicle.

H02: Environmental knowledge does not have a significant influence on green purchase intention of electric vehicle.

H03: Environmental concern does not have a significant influence on green purchase intention of electric vehicle.

H04: Green consumption values does not have a significant influence on green purchase intention of electric vehicle.

H05: Social influence does not have a significant influence on green purchase intention of electric vehicle.

H06: Price does not have a significant influence on consumers' green purchase intention of electric vehicle.

H07: Green purchase intention of electric vehicle does not significantly vary when respondents are grouped according to their age.

H08: Green purchase intention of electric vehicle does not significantly vary when respondents are grouped according to their gender.

H09: Green purchase intention of electric vehicle does not significantly vary when respondents are grouped according to the purpose of their current vehicle.

2. Methods

2.1. Research Design

The study was descriptive in nature. It described the respondent's profile (gender, age, group according to vehicle use: private/ public), their attitude toward green products, environment knowledge, environment concern, green consumption value, price, social influence and green intention to purchase electric vehicles. The study was also correlational in nature as it aimed to understand the relationship between the variables (consumer attitude, environment knowledge, environment concern, green consumption value, price, social influence, gender, age type of vehicle ownership and green purchase intention).

2.2. Locale of the Study

The study was conducted at the National Capital Region. It is an ideal locale for a study that investigates factors influencing the purchasing intention towards electric vehicles due to its potential for EV adoption.

Having the highest population density in the country, people rely heavily to transportation for mobility (Standard Insights, 2023). NCR has the most number of electric vehicle stores and charging locations as compared to other regions in the country (Barrosa et. al., 2023).

According to Ateneo's Institute of Sustainability, vehicle emissions account for 88% of air pollution in Metro Manila where average daily traffic volume reached about 3.63 million vehicles from 2018-2023 (Statista, 2023). And with the growing population and rapid urbanization, this is leading to increased traffic congestion and air pollution (Monorim et.al., 2020). Understanding the factors affecting the purchase intention towards electric vehicle would be relevant to create opportunities and strategies to promote the adoption of electric vehicle for a cleaner and more sustainable transportation in the future.

2.3. Respondents of the Study

The respondents of this study were the current vehicle driver and/ or owners either residing or working within the National Capital Region and who are at least 18 years old and above that is also in line with LTO guidelines of holding a driver's license. Respondents were segmented according to the use of their vehicle such as for private or public use. They are perceived to provide valuable insights into user perspectives and experiences that could be attributable to how willing they are to purchase electric vehicles.

2.4. Sampling Design

Through G Power analysis, 146 respondents were identified to be the minimum sample size required for the study. Power (effect size= 0.15; α error probability= 0.05; power $[1-\beta] = 0.95$; and number of predictors= 6. Data collection was made online with the use of Google forms where link to the survey questionnaires were made available through social media postings. Another method used was the face to face interview where potential respondents were visited in pre-determined location such as public transport terminals to gather their insights and recommend other vehicle users in place. In here, the snowball method also known as referral sampling was used. Respondents chosen in accordance with certain criteria were asked to recommend other individual to answer the survey questionnaire.

2.5. Research Tools and Instruments

The study adopted the questionnaire used by Lakshika and Hemamali (2020). With the use of four -point Likert Scale, the attitude of consumers, environment knowledge, environment concern, green consumption value, price social influence and green intention to purchase were measured, where 1 means strongly disagree and 4 strongly disagree.

Table 1. Questionnaire Specification

Part	Variable	Item No.
I.	Consumer's Attitude	1 - 6
II.	Environment Knowledge	7 - 11
III.	Environment Concern	12 - 15
IV.	Green Consumption Value	16 - 21
V.	Price	22 - 25
VI.	Social Influence	26 - 30
VII.	Green Purchase Intention	31 - 34

The questionnaire was composed of 34 questions. As seen in Table 1, the variables of interest have the corresponding number of questions: 6 items for consumer's attitude, 5 items for environment knowledge, 4 items for environment concern, 6 items for green consumption value, 4 items for price, 5 items for social influence and 4 items for green purchase intention. It was pre-tested among the 30 individuals who are residents of CALABARZON region. The questionnaires were distributed among current vehicle owner and/or drivers who are 18 years of age and above. The resulting Cronbach Alpha as shown in Table 2 implies a high level of consistency or reliability among the questionnaire items as the coefficients exceed 0.70.

Table 2. Cronbach Alpha of the Variables

Part	Variable	Cronbach Alpha
I.	Consumer's Attitude	0.958
II.	Environment Knowledge	0.864
III.	Environment Concern	0.712
IV.	Green Consumption Value	0.876
V.	Price	0.931
VI.	Social Influence	0.906
VII.	Green Purchase Intention	0.940

2.6. Data Analysis and Interpretation

Mean was used to summarize the respondent's perception on the variables of the study. Table 3 shows how the resulting mean was interpreted.

Table 3. Qualitative Interpretation of 4-Point Likert Scale Measurement

Likert Scale	Item Responses	Interval	Verbal Description
1	Strongly Disagree	1.00 – 1.50	Very Low
2	Disagree	1.51 – 2.50	Low
3	Agree	2.51 – 3.50	High
4	Strongly Agree	3.51 – 4.00	Very High

Multiple regression was used to identify the relationship between the independent variables (consumer attitude, environment knowledge, environment concern, green consumption value, price, social influence) and the dependent variable (green purchase intention). This allows determination of the effect of multiple predictors simultaneously on a single outcome likewise which factors have the most significant impact.

To identify whether purchase intention differs when respondents are grouped according to gender and their use of their vehicles (private or public), T- test was used. Sample size between two groups when grouped according to the use of vehicles (private or public) were equally distributed to generate reliable results where a p-value of $<.05$ signifies that the effect is significant while on the other hand, a p-value of $>.05$ signifies that the effect is not significant. ANOVA and Tukey post hoc was used to identify if there is a significant difference among the different age groups used in this study.

2.7 Ethical Consideration

The respondents were assured of their anonymity and the confidentiality of their answers. They were asked of their voluntary participation in the survey. Relative to the electronic survey form- the participant was given the option to skip a question he was not willing to answer. The respondents were also assured that the data collected will be presented as on average of all the responses. The researcher also sought the review of this from the RMCO/ Ethics Review Committee and has been approved.

3. Results and Discussions

3.1 Demographic Information

Most of the respondents were male (68.3%) while female respondents were 31.7%. The respondents with age range of 34-41 years old (29.4%) comprises the majority and those within the age of 18-25 years old being least represented. Public and private use of vehicles were equally represented by the vehicle owners and/or users in this study as shown in Table 4 below.

Table 4. Descriptive Statistics of the Respondents

	Profile	Frequency	Distribution (%)
Gender	Male	123	68.3%
	Female	57	31.7%
Use of Vehicle	Private	90	50%
	Public	90	50%
Age	18-25	9	5%
	26-33	44	24.4%
	34-41	53	29.4%
	42-49	34	18.9%
	50 and above	40	22.2%
Total Respondents		180	100.0%

3.2 Descriptive Statistics

Table 5 presents the composite mean and standard deviation of each key variable used in the study— consumer attitude, environment knowledge, environment concern, green consumption values, price and social influence. Results revealed that respondents have a high level of agreement on all of the variables (M= 2.23 to 3.72) except for social influence which got a mean of 2.43.

Table 5. Descriptive Statistics of the Variables

	Composite Mean	Std. Deviation	Interpretation
Consumer Attitude	2.85	.75	High
Environment Knowledge	2.92	.60	High
Environment Concern	3.45	.63	High
Green Consumption Values	3.09	.66	High

Price	3.42	.71	High
Social Influence	2.43	.74	Low
Green purchase intention towards electric vehicle	2.69	.83	High

The mean of 2.85 (SD=0.75) on consumer attitude shows that the respondents have positive disposition towards electric vehicles. This shows that there is a high favorable attitude towards electric vehicles on the basis that it is desirable to own, enjoyable to drive and economically wise to use.

With regards to environment knowledge, the mean of 2.92 (SD=.60) show that respondents have a sound understanding of the environmental issues and the impact of their personal habits on product selection, recycling and waste reduction. It implies that there is high consciousness on the existing environmental issues and to take proactive and preventive actions to minimize the environmental impact of their daily life practices.

High level of environment concern in the National Capital Region has been shown in the results with the mean of 3.45 (SD=0.63) which indicates that respondents show a very strong emotional concern on the worsening quality of the environment and actively engages or think of ideas to address these problems which reflect the respondents' desires on environmental protection and see improvements.

Results show that green consumption values of the respondents have a high mean score of 3.09 (SD= 0.66) which implies that the respondents have strong values and decision-making practices related to environmental responsibility. This can be attributed to the respondent's awareness on the potential environmental impact of their purchasing decisions and being committed to be environmentally responsible that they are even willing to be inconvenienced or make extra effort in order to practice being more environment friendly.

The mean of 3.42 (SD= 0.71) for Price shows that it is a highly influencing factor to the respondent's purchasing intention towards electric vehicle with the strong emphasis on actively seeking lower prices of electric vehicles even if it needs an extra effort to visit more than one store. This implies the openness to purchase electric vehicles if the prices were competitive as compared to fuel powered cars to get good value for money to be spent relative to the features and benefits being offered.

Social influence with mean results of 2.43 (SD=0.74), shows that the social circle (friends, family, etc.) of the respondents have low influence and not a major driver on the purchasing decision. Even with the shared information or recommendation that may bring social pressure, to choose electric vehicles, this influence is not perceived as overwhelmingly strong.

Lastly, the respondents' green purchase intention towards electric vehicles show a mean result of 2.69 (SD=0.83) which implies a high level of intent towards electric vehicles to be bought in the near future for themselves and even to their family members. However, there may be limitations up to how much they are willing to spend where some respondents might still have reservations that prevent a very high purchase intention.

3.2 The effect of consumer attitude, environment knowledge, environment concern, green consumption values, price and social influence on Green Purchase Intention

Table 6. Multiple Linear Regression

	Unstandardized B Coefficients	Standardized B Coefficients	t	p-value	Interpretation
(Constant)	-.803		-3.181	.002	
Consumer Attitude	.368	.330	5.756	.000	Significant
Environment Knowledge	-.035	-.026	-.421	.674	Not Significant
Environment Concern	.025	.019	0.332	.740	Not Significant
Green Consumption Values	.078	.062	0.839	.403	Not Significant
Price	.369	.314	5.565	.000	Significant
Social Influence	.394	.350	6.523	.000	Significant

a. R = 0.816; R² = 0.665; F-value = 57.261; P-value = .000

b. Dependent Variable: Green Purchase Intention

Table 6 presents the influence of consumer attitude, environmental knowledge, environment concern, green consumption values, price and social influence on Green Purchase Intention. The R² of 0.665 indicates that the model explains 66.50 percent of variance in Green purchase intention. This means that the independent variables (consumer attitude, environmental knowledge, environment concern, green consumption values, price and social influence) represents a significant portion of the factors influencing the respondents' purchase intention towards electric vehicles. The residual value of 33.50% (100% - 66.50%) signifies the other factors which can influence purchasing intention of consumers that were not included in this study.

Based on the results, Consumer Attitude, Price and Social Influence have significant influence on Green Purchase Intention each with a p-value of 0.000. With $\beta = 0.330$, this means that the more favorable the attitude towards electric vehicle, the higher the intention to purchase electric vehicles. The same holds true for price ($\beta = 0.314$); the more electric vehicles are perceived to be lower in price, the higher the green purchase intention, Social influence having $\beta = 0.350$, indicates that the higher the influence others have on the respondents, the higher the green purchase intention. In summary, consumer attitude, lower pricing and social influence could positively and significantly affect purchase intention of electric vehicles. targeting these variables is crucial for the adoption of electric vehicles.

On the other hand, environment knowledge (p-value = 0.674), environment concern (p-value = 0.740) and green consumption values (p-value = 0.403) do not significantly influence the green purchase intention towards electric vehicle. The null hypothesis cannot be rejected.

Results of the study show that there is a positive correlation between the positive attitude towards electric vehicle and the likelihood of purchasing one. This is similar with the outcome of Lakshika and Hemamali's study in 2020 that consumer attitude has a significant impact on green purchasing intention of individuals and

in a recent study conducted in Germany, where the EU's second largest electric vehicle market lies, it revealed that there is a positive correlation between consumer's attitude and their purchasing intention (Engels, 2022).

Another predictor, price shows that it has a significant influence towards purchase intention of electric vehicles which shows the willingness of consumers to purchase electric vehicle given its competitive price which is also aligned to the results of Lakshika and Hemamali (2020). In the research of Berneiser et al., (2021), results show that purchasing price of the vehicle was the most significant factor that influences the adoption to electric vehicles and is a very crucial factor in consumer's purchase intentions (Rajper and Albrecht, 2020).

Social Influence results indicate that the higher the influence others have on the respondents, the higher the green purchase intention which highlights the importance of social network and peer pressure in consumer decision making (Dutta et. al, 2021). In Sri Lanka which has a collectivist culture as per Lakshika and Hemamali 2020, this has the most significant effect on the purchasing intention of consumers where in respect to norms, the needs and goals of the family, extended family, or close-knit community take precedence over individual desires is given importance.

Environment knowledge which was said not to be significant in this study is contrary to the results of Lakshika and Hemamali (2020). Based on the findings, it could be implied that having high consciousness on the existing environmental issues and how to take proactive and preventive actions to minimize the environmental impact of their daily life practices does not influence the purchase intention towards electric vehicle. Just like in the of Lakshika and Hemamali's study, Indriani et.al. (2019) claims that environment knowledge has a direct effect on the attitude towards green products which in turn showed to have a direct effect on green purchase intention.

Another factor, environment concern was said to be not significant as well which is consistent with the result of the study of Lakshika and Hemamali (2020). Present findings are contradicting to the study of Anrdrianus (2023) where results show that there is positive and significant influence for environmental concern on purchasing intention. And lastly, results of the study for green consumption value implies that it has insignificant impact on green purchase intention which is aligned with Lakshika and Hemamali's result.

3.3 Significant difference in Green Purchase Intention when Respondents are grouped according to Age

The respondents within the age bracket of 26- 33 years old with a mean of 2.8466 shows to have the highest purchase intention while the lowest are those between 42- 49 years old with a mean of 2.5735. However, when grouped by age as shown in Table 7, there is no significant difference in the green purchase intention as determined by one-way ANOVA ($F(0.671) = p = 0.787$).

Table 7. Difference in Green Purchase Intention According to Age

Age	Mean					t-value	p-value	Interpretation
	18-25	26-33	34-41	42-49	50 and above			
Green Purchase Intention	2.7222	2.8466	2.6132	2.5735	2.7063	0.671	0.787	<i>Not significant</i>

Research of Brillantes (2023) shows that Filipinos display positive attitude towards electric vehicles as a top choice for transportation, especially with the younger generation. A study in Vietnam conducted by Thanh et. Al (2023) shows that respondents of different age have differences in relation to purchase orientation where those at the age bracket of 31 to 35 years old have the highest purchase intention.

3.4 Significant difference in Green Purchase Intention when Respondents are grouped according to Gender

With the mean of 2.5833 for male and 2.9167 for female; results show that when respondents are grouped according to gender, females have higher purchase intention as compared to males. Table 8 shows there is no significant difference in the green purchase intention when respondents are grouped according to their gender. The p-value of 0.061 attests that green purchase intention does not significantly vary between the two groups of respondents.

Table 8. Difference in Green Purchase Intention According to Gender

Gender	Mean		t-value	p-value	Interpretation
	Male	Female			
Green Purchase Intention	2.5833	2.9167	3.558	0.061	<i>Not significant</i>

In a study conducted in Nepal by Manadhar et. Al. (2021), it shows that gender classification has no impact on pre-purchasing behavior of customers on electric vehicles. Both male and female had similar practice of seeking the information before taking purchase decision. This is supported by the study of Thanh et. Al (2023) where results show that different genders among millennials do not have an effect on purchase behavior.

3.5 Significant difference in Green Purchase Intention when Respondents are grouped according to the purpose of current vehicle

Table 9 shows the significant difference in the green purchase intention of vehicle drivers and/ or owners when grouped according to the use of their vehicles (private or public). With mean purchase intention of 2.7750 for private vehicle owners and 2.6028 for public vehicle users, the p value of 0.214 attests that green purchase intention does not significantly vary between the two groups of respondents.

Table 9. Difference in the green purchase intention of vehicle drivers and/ or owners

	Mean		t-value	p-value	Interpretation
	Private	Public			
<i>Green Purchase Intention</i>	2.7750	2.6028	1.553	0.214	Not significant

Above results is contrary to the findings of Youngseo Kim et. al, (2021) in Korea where it was explored whether and how users' preference to intermodal options transportation was heterogeneous between private car users and public transportation. Said study showed that there is a significant difference in intention between private and public car users.

4. Conclusion

In developing countries like the Philippines, electric vehicles have been gradually capturing the public attention through the public campaigns, localized policies and incentives being offered. This study provides insights to the factors influencing the purchase intention among the drivers and/or owners of public/ private vehicles in NCR. The researcher tested the predictors such as consumer attitude, environment knowledge, environment concern, green consumption values, price, social influence, age, gender and type of vehicle ownership/ use (private and public). Data was collected from 180 respondents who are currently residing or working within the vicinity of the National Capital Region. Using the multiple regression, results show that consumer attitude, social influence and price significantly influence the green purchase intention towards electric vehicle. Therefore, the study rejects H01, H05 and H06.

On the other hand, environment knowledge, environment concern and green consumption values does not have significant influence on green purchase intention. Therefore, the study failed to reject H02, H03 and H04. Likewise, when respondents are grouped according to age and gender, results show that the purchasing intention does not have significant difference, thus, the study failed to reject H07 and H08. It has also been tested if there is a significant difference when the respondents are grouped according to the use or purpose of their current vehicle and results indicate that there is no significant difference between private and public vehicle driver and/or owners. Therefore, the study failed to reject H09. Overall, these findings aim to address improving the consumer attitudes, social influences and pricing incentives to accelerate the adoption of electric vehicles in the Philippines, particularly in NCR. Additionally, efforts to raise environmental awareness and promote sustainable transportation practices should be complemented by strategies that address other influential factors tested and identified in the study.

5. Recommendations

It has been proven in this study that consumer attitude, social influence and price have significant influence towards the purchasing intention of consumers of electric vehicle. The non-profit organization and consumer advocacy groups can play a key role in helping to promote the adoption of sustainable transportation alternative to reduce the dependence on fossil fuels. It is hereby recommended to establish the following initiatives:

“Sustainable Mobility in Transition: Promoting the shift towards Electric Vehicles”

5.1. Public Awareness Campaigns

This recommendation matches the finding that Consumer Attitude is a significant predictor. With different media channels, spread of infographics would help to reach more consumers in the market and be able to educate them about the environmental, financial and economic benefits of the electric vehicles. Study shows that electric vehicles were said be cheaper in cost as electricity is essentially lower in price than gasoline or diesel. If these savings would be added up, it can offset the higher initial price of the vehicle including the maintenance cost due to lesser need for oil change or parts replacement (Klinar, 2023). This is supported by the research of Harto (2020) where it shows that the lifetime savings in the ownership cost of EV as compared to fuel-powered cars would have an estimate value of \$6,000 and \$10,000. It is also important not only to

show the technological advancements what these vehicles may have but there is a need to highlight the need for the switch from fuel-powered cars to these electric operated vehicles as a cleaner energy solution. Facilitating events, educational workshops and forums would help individuals to learn more about this and the overall ownership experience in partnership with brands and environmental NGOs. Offering test drive opportunities and increased unit displays in public places could capture the attention and interest of the people. If more people would know more about the environmental benefits and functionality of these EVs, it would create a greater influence to switch in this mode of transport.

5.2 Trade in and Upgrade Program

This recommendation matches the findings about price as a significant predictor. The government can take a proactive role in implementing financial incentives and subsidy programs to make EVs more affordable compared to traditional vehicles. This would also create opportunity for car manufacturers to increase sales through increased demands. By targeting old vehicle models which were run by gasoline and considered to be high pollutants due to emissions, offering purchase subsidy where amount could be fix or a specific percentage of value and other financial reward could encourage people to switch in electric vehicles. There could be a challenge in terms of funding to cover the program cost however, re-allocation of funds from existing programs can be done to give priority in this initiative particularly those related to environmental protection projects.

5.3 Electric Vehicle Recognition Program

This recommendation matches the finding that Social Influence is a significant predictor. Promotion by word of mouth and first-hand experience by leveraging social networks and EV community would help to bring more awareness and interest in electric vehicles. Recognizing current electric vehicle owners who actively promotes the use of electric vehicles through features in government websites and social media channels in collaboration with car manufacturers/ dealers would help to showcase positive reviews and testimonials in the benefits of having an electric vehicle. Awards or other incentives such as exclusive benefits like priority access to EV charging stations and discounts to car maintenance can be given for being the steward and ambassadors of environmental awareness.

Future researchers may explore other and bigger geographical locations to have a better understanding of the situation as consumer preferences and market condition could vary in different regions of the Philippines. Comparative studies of the intention to purchase electric cars may be done among different regions so that the government can decide which areas need to prioritize in its campaign on the adoption of electric cars. Focused group discussion may be done likewise among who at this time expressed low level of intention to purchase electric vehicles.

6. Limitations of the Study

Although the required minimum sample size (146) was met, the actual number of survey respondents (180) was achieved in consideration of the available time the researcher has for the purpose. Likewise, the survey gathered self-reported data about the variables and the same cannot be independently verified and may contain several potential bias sources. Results cannot be generalized due to the sampling design used.

The current research investigated the green purchase intention for electric vehicles among private and public vehicle users in the National Capital Region only. While it revealed that there is no significant difference between the two consumer groups, it is important to note that the respondents' in this study is specific in one geographical location only and a different insight could be generated if it is expanded to other location in the Philippines which would also useful for further research to consider to be able to have a better understanding of the situation among the different groups. Consumer preferences and market condition could vary in other regions of the Philippines.

Secondly, the variables in the survey instrument may have shown a high level of consistency or reliability among the predictors (consumer attitude, environment knowledge, environment concern, green consumption values, price and social) but this can be further developed by incorporating additional predictors such as electric vehicle performance, charging infrastructure, government incentives, financial incentives, perceived risk maintenance and battery costs which could also have an influence towards purchasing intention (Dutta et.al, 2021 and Cong, et.al., 2023).

By acknowledging these limitations, this may be useful for future studies to aim a better understanding of how the other different factors could influence the green purchase intention of individuals and create more specific strategies in the aspect of green purchase intention towards electric vehicles in the Philippines.

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