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Pivotal Interplay of Factors of Electric Vehicle Purchase Intention: A Variance-Based – Structural Equation Modeling Approach

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ABSTRACT: This research aimed to present a model that incorporates attitude variables, normative factors, and self-control to explain consumers' purchase of electric vehicles (EVs), drawing on behavioral studies of environmental concerns. In particular, structuralequation modeling was used to create a model that pinpoints the interconnections between EV buyers' value judgments, environmental stances, social norms, and the satisfaction they get from expressing themselves via their transportation choices. Following the development of various hypotheses based on the available literature, empirical research was conducted to assess the conceptual framework. Data from 234 respondents who are car users were used to validate the model. Purchasing intentions for EVs were shown to be significantly affected by the willingness to pay, perceived value, environmental concern and self-expressive benefits. Decision-makers may use theinformation from this research to plan a better marketing strategy for electric vehicles inthe Philippines. Furthermore, the results will be useful for EV producers since they will make it easier for customers to buy EVs. Finally, possibilities for further study are presented.

KEYWORDS: Normative factors, Electric Vehicles; Theory of Planned Behavior, Partial Least Square-Structural Equation Modelling(PLS-SEM)

I. INTRODUCTION

There has been substantial growth in the number of sustainable products as a result of apparently universal awareness of environmental issues. Since the earlytwentieth century, electric vehicles (EVs) have been created. Due to their expensive price,battery difficulties, and poor performance, gas-powered cars replaced them on the market (Ahmadi et al., 2018; Barnstone and Barnstone, 2018; Li et al., 2019). After yearsof advancements in battery technology, EVs have become more affordable and appealingto drivers concerned with environmental issues (Ninh, 2021). Numerous major automakers are developing EVs and hybrid EVs. In recent years, automakers, governments, and organizations throughout the globe have pursued improved vehicle technology to minimize petroleum usage. The number of battery EVs used worldwide rose tenfold between 2012 and 2016, from 0.11 million to 1.2 million. In the first quarterof 2017, for instance, delivered over 25,000 automobiles globally. Despite the significantincrease in demand for EVs, EVs still represent a tiny fraction of the entire new vehicle market in many nations. Numerous nations have introduced economic incentives to encourage consumer adoption (Khurana et al., 2020). Between 2010 and 2020, 12,965 electric cars were registered in the Philippines. Similar to other nations, the Philippines' rising demand for electric vehicles has been spurred by government incentives. For example, the Philippines government provides EV owners with discounts on motor vehicle users charge (MVUC): 30% off for complete EVs and 15% off for hybrids. This paper examines the key determinants of Filipinos' purchasing intentions for electric vehicles. Environmentally and economically, it is crucial to increasethe knowledge of green consumer behavior. In certain locations, the literature on greenproduct marketing is insufficient. Therefore, this study has both scientific and practical importance. Choi and Johnson (2019) theorized that environmental concern and other human values are the primary motivators of environmentally aware behavior. This viewpoint was backed by Wei et al.

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(2020) research on the customer acceptance of hybridelectric vehicles. Despite this, several researchers contend that the primary predictors ofEV purchases are their market pricing and comparable driving expenses (Cecere et al., 2018; De Rubens, 2019). We agree that many variables influence whether or not people buy electric vehicles(Westin et al., 2018; Liu et al., 2019). To fill this knowledge gap, we concentrate on purchase intent and investigate the impact of economic and psychological variables on customers' propensity to pay. Research like this may help those working to increase EV uptake in the Philippines by providing information on how to better promote and sell electric vehicles to customers.

II. THEORETICAL FRAMEWORK

In this research, we analyze the variables that are most important in predicting future EV purchases. Researchers have used a variety of theoretical explanations to predict environmental behaviors, including the theory of planned actions and the norm-activation model (Rezvani et al., 2018). Attitudes, social norms, and the feeling of beingin control of one's conduct have all been shown to have a role in whether or not someoneplans to buy an electric vehicle. Economic factors, such as purchase price (Scorrano andDanielis, 2021), tax credits (Cecere et al., 2018), and gasoline prices (Ferguson et al., 2018); psychological factors, such as environmental concern and perceived effectivenessof EV; and normative factors, such as subjective norms, were all reviewed by Orlov andKallbekken (2019). (Westin et al., 2018). This study aims to examine how these factors affect Filipino consumers' decisions to buy electric vehicles. Environmental worries, greentrust in EVs, normative factors comprising personal norms, and perceived control, including willingness to pay and perceived value of EVs, were all investigated as they relate to consumers' green views (Orlov and Kallbekken, 2019). This research study adds to the extant literature by examining how two psychological factors—self-expressive advantages and responsive efficacy—influence the decision to acquire an EV.

A. Willingness to pay more

Perceived behavioral control is the level of perceived challenge associated with a certainactivity (Zhang et al., 2018). Consumers are more likely to choose conventional goods ifthey believe an environmentally friendly option would result in a significant financial burden (Testa et al., 2021). Historically, cost has played a significant role in determiningwhich products consumers ultimately decide to buy (Xu et al., 2020). There is a commonmisconception that eco-friendly items are more costly than non-eco options (Anderson &Anderson, 2020). One of the greatest obstacles to customers buying green goods is thehigher price of green items. Buying choices for environmentally friendly products may not be affected by price if consumers are willing to pay a premium for them (Bhutto et al., 2021). Since the EV industry in the Philippines is still maturing, EVs are more expensive to buy and need more expensive upkeep.

B. Perceived value

The product's perceived value was recognized as a crucial determinant of customers' purchase decisions (Sharma, 2019). Consumers will subjectively analyze the product's costs and advantages when purchasing a product. Customers are likely to purchase if they believe the product would improve their lives (Zhang et al., 2020). Consumer functional value significantly influences consumer goods purchases (Chen et al., 2019). Numerous research studies have examined the advantages and disadvantages of adopting EVs (Li et al., 2018). Shetty et al., 2020 suggest that people's attitudes, beliefs,and mentalities about EVs are the primary obstacles to their implementation. In other words, EVs must compete with conventional fuel-powered cars in severalproduct qualities to attract customers. As a consequence of this, the following hypothesesare put forward: Consumers' perceived value of electric vehicles is positively related to their willingness to pay a premium for purchasing electric vehicles coded as H2a, and consumers' perceived value of electric vehicles is positively related to their intention to purchase electric vehicles designated as H2b.

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C. Environmental concern

Consumers' fear, distaste, and sympathy for environmental issues are all examples of environmental concerns (Li et al., 2020; Kumar and Khurana, 2019). Concern for the environment has been the focus of several research studies that have examined the factors influencing people to buy environmentally friendly goods like organic produce andrenewable energy (Irfan et al., 2021). (Massey et al., 2018). Those who know more about the environment are more likely to choose environmentally friendly items (Malik etal., 2019). There is evidence from a few studies indicating that the Chinese public feels an urgent need to conserve the environment and a strong feeling of duty toward it (Huaand Chen, 2019). People's interest in purchasing electric vehicles and other green technology has been sparked by their worry about global warming (Jiao et al., 2022). As a direct consequence, the following hypotheses are proposed: Consumers' compassion for the environment is favorably associated with their willingness to pay a premium (H3a), and consumers' concern for the environment is positively related to theirdesire to purchase electric vehicles (H3b).

D. Perceived trust in EVs

One of the primary reasons people purchase green products is because they trustthe product's ability to solve environmental issues (Wang et al., 2019). According to previous research, consumers often feel green energy items may aid in the fight against environmental challenges (Wang et al., 2020; Ndebele, 2020).

Furthermore, studies on green energy show that exposing consumers to knowledge about the environmental benefits of green goods enhances both their purchase intent and willingness to pay a price premium (Irfan et al., 2021). As a result, we believe that green trust will have a favorable impacton consumers' green buying habits and willingness to pay: consumers' trust in the efficacy of EVs is positively associated with their willingness to purchase a premium andtheir intention to purchase EVs.

E. Personal norms

An additional component of the TPB model, consist of an individual's normative views and expectations about their conduct (Pradhananga and Davenport, 2022). By adopting societal standards as one's own, individuals develop a sense of identity (Nayumand Thgersen, 2022). Individuals' responsibilities to engage in pro-social conduct, such as eco-friendly consumer practices (Nayum and Thgersen, 2022; Ateş, 2020), are sometimes triggered by norms. Ateş and colleagues (2010) found that those with greatersocial concern participated more often in ecologically beneficial practices. Empirical data implies that customers' personal norms influence their decision to acquire electric vehicles (Khurana et al., 2020). This claim is the fifth hypothesis of the researcher, denoted asH5.

F. Self-expressive benefit

High-priced commodities, including vehicles, jewels, and luxury goods, can have significant symbolic meanings (Kapferer and Valette-Florence, 2021). Consumers experience happiness due to the signaling effects associated with the acquisition or consumption of a product because of its symbolic value, which allows them to express themselves (Policarpo and Aguiar, 2020). In most cases, people see eco-friendly actionsas a sign of social and moral superiority (Zhang and Hung, 2020). Consequently, the following theories are put up for consideration: The self-expressive advantages of electric vehicles (EVs) that consumers perceive are positively connected to their willingness to pay a premium for them, indicated as H6a, and the self-expressive benefits of EVs that consumers perceive are positively associatedto their desire to purchase EVs as H6b.

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G. Responsive efficacy

If consumers do not feel they have agency, their environmental worries may not be translated into action. According to the self-efficacy hypothesis, individuals' perspectives on their abilities to achieve their objectives, complete their activities, and overcome their problems influence how they approach these factors (Fuller et al., 2018)."Responsive effectiveness" means the conviction that a single individual can affect change. Consumers are more likely to buy environmentally friendly items if they believedoing so would positively impact the planet (Kahraman and Kazançolu, 2019). Consequent to this claim is the seventh hypothesis that there is a correlation between consumers' perceived receptive effectiveness, also known as responsive efficacy, about electric vehicles (EVs), and their propensity to purchase EVs.

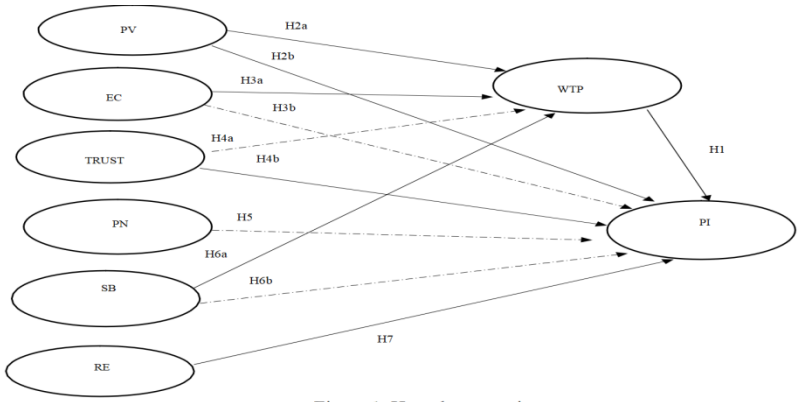

Figure 1. Hypotheses testing

III. RESEARCH METHODS PARTICIPANTS

For the gathering of data, convenience sampling was used. Members of certaincar communities in the Philippines, notably Cebu and Leyte, were sent email, an instant message, and a Facebook message with an embedded link to Google form. The sampleconsisted of 234 respondents.

A. Instrument and measures

This research evaluated the primary factors influencing attitudes toward electric vehicles. Two parts comprised the questionnaire. The objective of the first section was to gather participants' opinions regarding EVs and the primary factors that influence those sentiments. The primary influencers were an environmental concern, the perceivedvalue of EVs, faith in EVs, self-expressive advantages, personal norms, and readiness topay. Measurements for the proposed model's variables were adopted from past research.The measuring items used the 7-point Likert scales where one indicates strongly disagree, and seven stands for strongly agree, with a neutral point in between. The lastsection of the questionnaire inquired about the participants' personal histories.

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B. Data Analysis

Structural Equation Modelling (SEM) was adopted to assess the research model introduced in this study because it can measure all paths simultaneously, not stepwise; it is considered a more comprehensive and effective method than stepwise regression analysis (Jung, 2020). In particular, Partial Least Square (PLS-SEM) path modeling will be used to test the study's hypotheses relying on statistical software WarpPLS 7.0. The PLS path modeling is a variance-based technique recommended in an early stage of theoretical development to test and validate exploratory models (Secondi et al., 2011; Henseler et al., 2009). PLS was selected as it brings together three advantages; first, it is a nonparametric technique and, consequently, does not assume normality of the data and estimates least squares recursively; second, it works well with smaller sample sizes;third, it has a predictive role allowing for planning and future decision making (Afthanorhan, 2016; Falk & Miller, 1992; Ruiz, 2008). PLS sample size requirements are more relaxed compared to covariance-based techniques. Minimal recommendations for PLS analysis range from 30 to 100 cases (Gefen, 1993; Chin, 1991). For a more accurateassessment, conducting a power analysis on the proportion of the model with the largestnumber of predictors (Chin, 1999; Green, 1991) is recommended.

IV. ANALYSIS AND FINDINGS

A. Measurement Model Analysis Results

The following criteria are recommended for evaluating the dependability of a measuring instrument: one is more conservative, while the other two are more flexible. These requirements apply solely to indicators of reflective latent variables. Reliability is aquality indicator for a measuring instrument; the instrument is often composed of a seriesof question statements. A measuring instrument is reliable if the question statements (or other measures) linked with each latent variable are consistently interpreted by diverse respondents. To be conservative, both the composite reliability and Cronbach's alpha coefficients should be larger than or equal to 0.7. (Fornell & Larcker, 1981; Nunnaly, 1978; Nunnally & Bernstein, 1994; Kock, 2014a; Kock & Lynn, 2012). The more flexible form of this criteria, which is often employed, states that one of the two coefficients mustequal or exceed 0.7. (Kock & Lynn, 2012). This criterion is frequently true for the composite reliability coefficient, typically greater than the individual reliability coefficient(Fornell & Larcker, 1981; Kock & Lynn, 2012). A more lenient variant lowers this criterionto 0.6. (Nunnally & Bernstein, 1994; Kock & Lynn, 2012). Therefore, Table 2 indicates that all the factor loadings for the eight (8) constructs are well above the threshold of 0.6 and hence shows that the items of the constructs are valid measures of the individual construct. For the assessment of construct reliability, two coefficients are considered, i.e., CRand Cronbach's alpha α (Bagozzi & Yi, 1988; Chin, 2010; Cohen, 1992). Hair et al. (2014)recommended CR for PLS-SEM. Table 2 shows measurement model results, indicating adequate internal consistency and reliability. The indicators loadings were above 0.60, and both the CR and α ranged from 0.943-0.970 and 0.932–0.966, respectively. These results demonstrate that all the indicators and constructs' reliabilities are acceptable. The convergent and discriminant validity are also considered to validate the reflective measurement model (Hair, Ringle, et al., 2011; Hair, Sarstedt, et al., 2011).

The constructs' average variance extracted (AVE) values must be greater than 0.50 for an accepted convergent validity (Bagozzi & Yi, 1988; Hair, Ringle, et al., 2011; Hair,Sarstedt, et al., 2011). The AVE is only applicable for models with reflective indicators.AVE measures the total variance through its indicators (Chin, 2010). The AVE values for this study ranged between 0.651–0.910 indicating that the convergent validity of themeasurement model is highly acceptable (Davcik, 2014; Hair et al., 2014).

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Table 2. Indicator Loadings, Convergent Validity and Reliability Tests

Constructs	Items	Factor s Loadings	Cronbach's α	CR	AVE
Trust to EV (TEV)	TEV1	(0.821)	0.944	0.954	0.749
	TEV2	(0.871)			
	TEV3	(0.835)			
	TEV4	(0.900)			
	TEV5	(0.857)			
	TEV6	(0.872)			
	TEV7	(0.899)			
Personal Norm (PN)	PN1	(0.723)	0.927	0.943	0.736
	PN2	(0.851)			
	PN3	(0.928)			
	PN4	(0.883)			
	PN5	(0.872)			
	PN6	(0.876)			
Response Efficacy (RE)	RE1	(0.889)	0.925	0.944	0.771
	RE2	(0.906)			
	RE3	(0.903)			
	RE4	(0.867)			
	RE5	(0.822)			
Perceived value of EV (PV)	PV1	(0.843)	0.958	0.966	0.827
	PV2	(0.919)			
	PV3	(0.922)			
	PV4	(0.909)			
	PV5	(0.936)			
	PV6	(0.925)			
Self-expressive Benefits (SEB)	SEB1	(0.903)	0.966	0.973	0.856
	SEB2	(0.903)			
	SEB3	(0.928)			
	SEB4	(0.937)			
	SEB5	(0.941)			
	SEB6	(0.941)			
Willingness To Pay (WOP)	WOP1	(0.933)	0.951	0.968	0.910
Purchase Intention (PI)	PI1	(0.935)	0.959	0.970	0.891
	PI2	(0.953)			
	PI3	(0.950)			
	PI4	(0.938)			
Environmental Concern (EC)	EC2	(0.781)	0.932	0.944	0.651
	EC3	(0.834)			
	EC4	(0.873)			
	EC5	(0.738)			
	EC6	(0.838)			
	EC7	(0.739)			
	EC8	(0.832)			
	EC9	(0.783)			
	EC10	(0.830)			

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The discriminant validity of the measurement model is shown in Table 3. The discriminant validity of a construct is the degree to which it is distinct from other constructs in the model (Chin, 2010; Hair J. F. et al., 2014). This is accomplished by comparing the AVE of each construct to the greatest squared correlation of any otherconstruct in the model, or by comparing the loading of an indicator with its associatedconstruct to that of other constructs (Chin, 2010; Fornell & Larcker, 1981; Hair, Ringle,et al., 2011; Hair, Sarstedt, et al., 2011). Results of the analysis revealed that all of the square roots of the AVEs satisfy the threshold. The findings suggest that the AVE square root for each construct associated with another is an appropriate indicator of the measuring model's discriminant validity.The questionnaires were found to be trustworthy and valid for measuring the eight (8) components in the research. Moreover, the HTMT ratios as presented in Table 4 also id acceptable validity of the construct

Table 3. Discriminant Validity using the Forknell-Larcker Criterion

Constructs	1	2	3	4	5	6	7	8
1. Trust to EV (TEV)	(0.865)	0.721	0.713	0.754	0.691	0.547	0.649	0.581
2. Personal Norm (PN)	0.721	(0.858)	0.800	0.695	0.743	0.617	0.674	0.720
3. Response Efficacy (RE)	0.713	0.800	(0.878)	0.714	0.795	0.599	0.651	0.714
4. Perceived value of EV (PV)	0.754	0.695	0.714	(0.909)	0.808	0.586	0.744	0.629
5. Self-expressive Benefits (SB)	0.691	0.743	0.795	0.808	(0.925)	0.688	0.749	0.646
6. Willingness To Pay (WTP)	0.547	0.617	0.599	0.586	0.688	(0.954)	0.713	0.537
7.Purchase Intention (PI)	0.649	0.674	0.651	0.744	0.749	0.713	(0.944)	0.550
8.Environmental Concern (EC)	0.581	0.720	0.714	0.629	0.646	0.537	0.550	(0.807)

Note: Diagonal values are the square root of AVE.

Table 4. Discriminant Validity using HTMT Ratio of correlations

Constructs	1	2	3	4	5	6	7
2. Personal Norm (PN)	0.773						
3. Response Efficacy (RE)	0.763	0.868					
4. Perceived value of EV (PV)	0.793	0.741	0.758				
5. Self-expressive Benefits (SB)	0.723	0.785	0.841	0.840			
6. Willingness To Pay (WTP)	0.577	0.655	0.640	0.615	0.717		
7. Purchase Intention (PI)	0.681	0.718	0.690	0.777	0.778	0.746	
8. Environmental Concern	0.620	0.777	0.773	0.667	0.683	0.571	0.582

Note: The HTMT ratios are all significant, that is p <0.05 (one-tailed). Thevalues are within the lower and upper limits of the 90% confidence intervals.

B. STRUCTURAL MODEL ANALYSIS RESULTS

Numerous previous studies established fundamental guidelines and recommendations for the information that should be included in any manuscript that makes primary use of confirmatory factor analysis; these indices

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include the Chi- square, the Alaike Information Criteria AIC, the Comparative fit, the Parsimonious fit, and the Goodness-of-fit index, among others (Davcik, 2014; Hair et al., 2014; Hazen et al., 2014; Schreiber et al., 2006; Xiong et al., 2015). According to Kock (2012), thereis a strong conceptual distinction between CB-SEM and PLS-SEM. CB-SEM is the appropriate method if the research goal is to test and confirm hypotheses. In contrast,if the study's objective is to make predictions and construct theories, PLS-SEM is a suitable technique. Multiple regression analysis is theoretically and practically comparable to PLS-SEM analysis. In terms of model fit interpretation, if the aim is to test just hypotheses, the model fit indices are useless if each arrow represents a hypothesis. Assume, however, that the goal is to determine which model best fits theoriginal data. In this case, model fit indices are useful collections of model quality metrics (Kock, 2012).

Nonetheless, using PLS-SEM software techniques, the following indices were calculated: Fit indices such as the standardized root mean squared residual (SRMR), the standardized mean absolute residual (SMAR), the standardized Chi-squared (SChS), the standardized threshold difference count ratio (STDCR), and the standardized threshold difference sum ratio are used to compare indicator correlation matrices (STDSR). As is the case with traditional model fit and quality indicators, the interpretation of these indices is dependent on the SEM analysis's objective. Due to thefact that these indices relate to the fit between the model-implied and empirical indicator correlation matrices, they become more important when determining whetherone model fits the original data better than another, especially when combined with the conventional indices Kock (2021). When evaluating the model's fit to the data, the following criteria are recommended: As shown in Table 5, the average path coefficient(APC) is 0.166 with a P-value of 0.002, the average R-squared (ARS) is 0.607 with a P-value < 0.001, and the average adjusted R-squared (AARS) is 0.598 with a P-valueof <0.001. The average block VIF (AVIF) value is 3.337, which is good if the value is 5, but preferably 3.3. The average full collinearity VIF (AFVIF) value is 3.456 which isacceptable if 5, and preferably 3.3, is considered desirable. Tenenhaus GoF (GoF) equals 0.696, which is considered small if it is equal to 0.1, medium equals 0.25, and big equals 0.36. GoF is considered to be large when it is greater than the geometric mean of the average communality (outer measurement model), and the average R^2 ofendogenous latent variables serves as an index for globally validating the PLS model as it seeks a compromise between the measurement process and the structural model,respectively. The Sympson's paradox ratio (SPR) equals 0.909, acceptable if greater than 0.7, and ideally greater than 1. As a result, it is considered an optimum in this research. The R-squared contribution ratio (RSCR) of 1.000 is considered optimal in this research, with 0.9 being acceptable and 1 being perfect. The statistical suppression ratio (SSR) equals 1.000, which is considered acceptable if greater than 0.7 and idealif more than 1. Nonlinear bivariate causality direction ratio (NLBCDR) = 1.000, acceptable if the value is greater than 0.7, is considered acceptable in this research. As a result, this model on the influence of various factors to the purchase intention hashigh fit indices (Kock, 2021)

Table 5. Model fit and quality indices

Index Name	Values	Criterion (Kock, 2020)
Average Path Coefficient (APC)	0.166, P=0.002	P <0.05
Average R-Squared (ARS)	0.607, P<0.001	P <0.05
Average Adjusted R-Squared (AARS)	0.598, P<0.001	P<0.05
Average block VIF (AVIF)	3.337	Acceptable if <= 5, ideally <=3.3
Average Collinearity VIF(AFVIF)	3.456	Acceptable if <= 5, ideally <=3.3
Tenenhaus GOF	0.696	Small >=0.1; mediam >=0.25; large >=0.36
Sympson's Paradox Ratio (SPR)	0.909	Acceptable if >=0.7, ideally =1
R-Squared contribution Ratio (RSCR)	1.000	Acceptable if >=0.9, ideally = 1
Statistical Suppression Ratio (SSR)	1.000	Acceptable if >=0.7
Nonlinear Bivariate Causality Direction Ratio	1.000	Acceptable if >=0.7

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Table 6 shows coefficient of determination (R^2); full collinearity VIF and Q^2 of all the endogenous variables in the study. Results on the R^2 indicate the amount of variationof the endogenous construct that ca be explained by the identified causal constructs found in the model. Also, full collinearity VIP tests the possibility of bias towards researchresults due to multicollinearity. Results indicate that each EC has a value less than 3.3 indicating that the research model is free from the problem of collinearity. Moreover, Q^2 test signifies the predictive validity of the predictor to each EC. Results indicate that eachQ2 associated with each EC is greater than zero indicating strong predictive validity (Hair.2011)

Table 6. Coefficient of Determination, Full Collinearity VIF, Q2

Endogenous Construct	R^2	Full Collinearity VIF	Q^2
Willingness To Pay	0.442	2.373	0.502
Purchase Intention	0.772	3.230	0.699

Note: R^2 – Coefficient of Determination, Q^2 – Stone-Geisser's Value

Results of the testing of hypothesis as shown in Table 7 indicate that not all thehypotheses are supported.

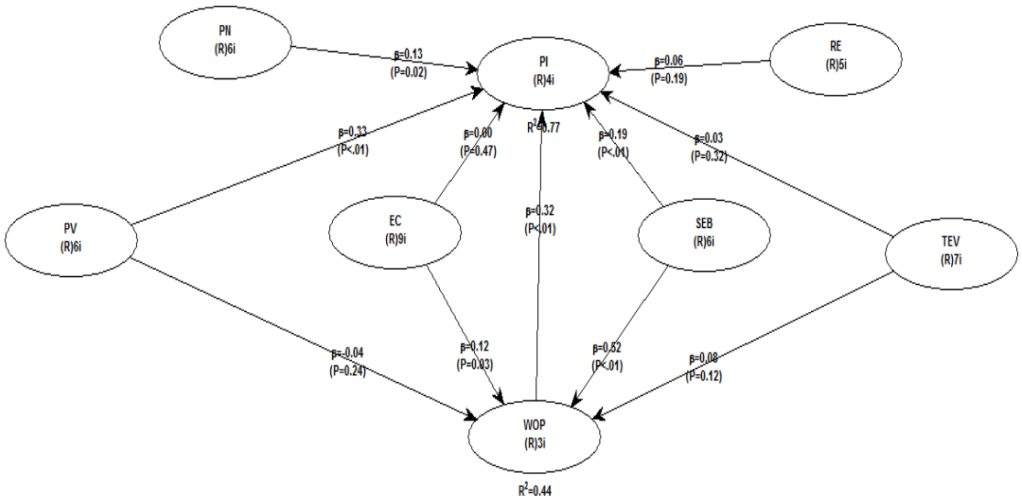

Figure 2. Structural Model with Beta Coefficients

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V.DISCUSSION AND IMPLICATIONS

This research helps fill a gap in the literature by adding to the body of work aimed at developing and testing theoretical frameworks for the factors that influence individuals' EV buying choices. It identifies the psychological factors that may explain and predict EV purchases, which may be used to design interventions to impact consumer behavior. Predictors from the theory of planned behaviors and the norm activation model are included into this model, which is based on a meta-analyticstructural equation model of psychological determinants of environmental behaviorsby Rezvani et al. (2018). Additional factors were the potential value of self-expression and the perceived effectiveness of one's responses. We suggested a paradigm in whichthese six factors—perceived value, self-expressive advantages, environmental concern,faith in EV, personal norms, and responsive efficacy—play critical roles. The model andseven of the eleven hypotheses were supported by the PLS-SEM analysis. Consistentwith earlier research, the three most important predictors of purchase intention of EVwere trust in EV, responsive effectiveness, and perceived value (Khurana et al., 2020). A substantial positive effect on willingness to pay a premium for EVs was providedby the notions of self-expressive advantage of EVs. Some customers are prepared to pay more for electric vehicles because they believe that doing so would provide thema sense of fulfillment via signaling effects (Kurani et al., 2018) or because they believethat making environmentally conscious purchases is a more advantageous way of living (Zhang and Hung, 2020). Those who want to invest in environmentally friendly goodslike electric vehicles may do so in the hopes of gaining societal approval and the personal satisfaction that comes with it. Consumers' willingness to pay a premium for EVs was positively connected to theirimpression of EV value and their level of environmental concern, in line with findings from earlier research. According to the research of Shim et al. (2018), consumers whocare about the environment are more likely to be prepared to pay a premium for greenproducts. Those with a greater concern for the environment are more likely to see that the advantages of purchasing a green product are worth the additional money (Balezentis et al., 2021). Many buyers are prepared to pay a premium for anenvironmentally friendly product as long as they are not required to skimp on quality,therefore the value that customers place on EVs is an important factor in determiningwhether or not EVs will sell well (Naderi and Van Steenburg, 2018). Given the insignificant correlation between trust and responsive efficacy and thedesire to buy an EV, a more successful marketing strategy would compensate this weak association to highlight the positive impact that EV purchases may have on environmental conservation. The phrases "our ecosystem needs you" and "we can make a difference in our society" are examples of emotive appeals that might be usedin advertising. Efforts put towards marketing a product should center on establishing its legitimacy by highlighting the worthiness of the product and the tangible advantages it provides. Increasing WTP is educating the public on how EVs benefit the environment(Shao et al., 2022).

In recent years, the marketing of EVs has entered a new phase, marked by improved product quality, more developed markets, and significant possibilities for EVs.In recent years, the demand for electric vehicles in Asian countries like the Philippines has increased dramatically. Marketers looking to create campaigns for electric vehicles in these regions might learn useful information from this research. Ourresearch shows that consumers' adoption of EVs still rely on the perceived quality of and complementary services for EVs, such as charging stations and maintenance services, even if green trust and the responsive effectiveness of EVs have a substantial impact on EV adoption. Eco-friendly goods have a reputation for being more costly than non-green alternatives (Aigner et al., 2019) and less effective (Tripathi and Pandey, 2018). Many buyers feel they must compromise in order to save the planet. The rapid development of new technologies might render these ideas obsolete. It is possible to encourage customers to make the transition from traditional to environmentally friendly goods by providing them with electric vehicles at affordable costs without sacrificing quality or efficiency (Comm and Mathaisel, 2018). Increased focus on social concerns, such as eco-friendly practices, is altering themarketing landscape swiftly (Kumar, 2018). There has been a recent increase in the number of eco-friendly goods hitting store shelves. This research will be useful for marketers since it will provide light on how certain aspects of a marketing strategy, particularly communication, might have an effect on customer behavior. From the standpoint of public policy, this research offers some insights as well. Understanding consumer behavior intentions

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is important for policymakers to create rules that encourage the purchase of environmentally friendly items. Their policies shouldprioritize the complementing growth of EVs, as well as the advancement of understanding of environmental issues and the benefits of green goods.

VI. LIMITATIONS AND FURTHER STUDIES

The majority of studies on EV buyers have been conducted in the West, and therehas been very little study done on non-Western groups. For theoretical purposes,this research is essential to understanding how various communities' cultural perspectives shape their perceptions of the human-environment interaction and their pro-environmental purchasing decisions. Although the study's sample may not be statistically significant as a whole, the data set does provide useful for understanding the willingness to pay (WTP) and intent to buy (PBI) for EVs in the Philippines.

The conclusions of this study are congruent with those of earlier research; nonetheless, this study has several limitations. The emphasis of this research was therespondents' behavioral intentions. However, the translation of behavioral intentions into actual conduct is a subject that warrants greater study (Jung et al., 2020). The insignificant influence of personal norms, environmental concerns, and responseefficacy in this research necessitates the continued examination of the combined theories. Future research may investigate the addition of moral standards or mediatorsto enhance the explanation of pro-environmental actions (Krettenauer and Lefebvre, 2021). Perhaps, consumer experiences have been significantly altered by technological advances. After EVs become more accessible to customers, their experiences will influence their views and propensity to embrace EVs. In addition to the environmentaladvantages of EVs, customers' understanding of EVs' energy efficiency remains limited.As a result, it is proposed that more research be conducted on the impacts of enhancing EV knowledge.

REFERENCES

Ahmadi, P., Cai, X. M., & Khanna, M. (2018). Multicriterion optimal electric drive vehicleselection based on lifecycle emission and lifecycle cost. International Journal of Energy Research, 42(4), 1496-1510.
Ateş, H. (2020). Merging theory of planned behavior and value identity personal normmodel to explain pro-environmental behaviors. Sustainable Production and Consumption, 24, 169-180.
Bagozzi, R. P., & Yi, Y. (1990). Assessing method variance in multitrait-multimethodmatrices: The case of self-reported affect and perceptions at work. Journal ofApplied Psychology, 75(5), 547.
Balezentis, T., Streimikiene, D., Mikalauskas, I., & Shen, Z. (2021). Towards carbonfree economy and electricity: The puzzle of energy costs, sustainability and security based on willingness to pay. Energy, 214, 119081.
Barnstone, D. A., & Barnstone, R. V. (2018). The electric highway: Intelligent infrastructures for kinetic cities. In Urban Energy Transition (pp. 153-166).Elsevier.
Cecere, G., Corrocher, N., & Guerzoni, M. (2018). Price or performance? A probabilisticchoice analysis of the intention to buy electric vehicles in European countries. Energy policy, 118, 19-32.
Chen, K., Ren, C., Gu, R., & Zhang, P. (2019). Exploring purchase intentions of newenergy vehicles: From the perspective of frugality and the concept of “mianzi”. Journal of Cleaner Production, 230, 700-708.
Chin, W. W. (2010). How to write up and report PLS analyses. In Handbook of partialleast squares (pp. 655-690). Springer, Berlin, Heidelberg.
Choi, D., & Johnson, K. K. (2019). Influences of environmental and hedonic motivationson intention to purchase green products: An extension of the theory of planned behavior. Sustainable Production and Consumption, 18, 145-155.
Cohen, J. (1992). Quantitative methods in psychology: A power primer.In Psychological bulletin.
Davcik, N. S. (2014). The use and misuse of structural equation modeling inmanagement research: A review and critique. Journal of Advances in Management Research.
Ferguson, Mark, Moataz Mohamed, Christopher D. Higgins, Elnaz Abotalebi, and PavlosKanaroglou. "How open are Canadian households to electric vehicles? A national latent class choice analysis with willingness-to-pay and metropolitan characterization." Transportation Research Part D: Transport and Environment 58(2018): 208-224.
Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservablevariables and measurement error: Algebra and statistics.
Fuller, B., Liu, Y., Bajaba, S., Marler, L. E., & Pratt, J. (2018). Examining how the personality, self-efficacy, and anticipatory cognitions of potential entrepreneurs shape their entrepreneurial intentions. Personality and Individual Differences, 125,120-125.

Hair Jr, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in businessresearch. European business review.

ISSN: 2350-0328
International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 12, Issue 6, June 2025

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silverbullet. Journal of Marketing theory and Practice, 19(2), 139-152.
Hazen, B. T., Overstreet, R. E., & Boone, C. A. (2015). Suggested reporting guidelinesfor structural equation modeling in supply chain management research. The International Journal of Logistics Management.
Henseler, J. (2018). Partial least squares path modeling: Quo vadis?. Quality &Quantity, 52(1), 1-8.
Higueras-Castillo, E., Liébana-Cabanillas, F. J., Muñoz-Leiva, F., & García-Maroto, I. (2019). Evaluating consumer attitudes toward electromobility and the moderatingeffect of perceived consumer effectiveness. Journal of Retailing and Consumer Services, 51, 387-398.
Hua, J., & Chen, W. Y. (2019). Prioritizing urban rivers' ecosystem services: Animportance-performance analysis. Cities, 94, 11-23.
Irfan, M., Zhao, Z. Y., Rehman, A., Ozturk, I., & Li, H. (2021). Consumers' intention-based influence factors of renewable energy adoption in Pakistan: a structural equation modeling approach. Environmental Science and Pollution Research, 28(1), 432-445.
Jiao, Y., Yu, L., Wang, J., Wu, D., & Tang, Y. (2022). Diffusion of new energy vehicles under incentive policies of China: Moderating role of market characteristic. Journalof Cleaner Production, 353, 131660.
Kahraman, A., & Kazançoğlu, İ. (2019). Understanding consumers' purchase intentionstoward natural-claimed products: A qualitative research in personal care products. Business Strategy and the Environment, 28(6), 1218-1233.
Kapferer, J. N., & Valette-Florence, P. (2021). Which consumers believe luxury must beexpensive and why? A cross-cultural comparison of motivations. Journal of Business Research, 132, 301-313.
Khurana, A., Kumar, V. R., & Sidhpuria, M. (2020). A study on the adoption of electricvehicles in India: The mediating role of attitude. Vision, 24(1), 23-34.
Kock, N., & Lynn, G. (2012). Lateral collinearity and misleading results in variance- based SEM: An illustration and recommendations. Journal of the Association forinformation Systems, 13(7).
Kumar, V. R., & Khurana, A. (2019). Transitioning from Fuel Based Automobiles toElectric Vehicles: A Conceptual Model for India. SAMVAD, 18, 121-125.
Kurani, K. S., Caperello, N., TyreeHageman, J., & Davies, J. (2018). Symbolism, signs,and accounts of electric vehicles in California. Energy research & social science, 46, 345-355.
Li, H., Inzamam, U. H., Hira, N., Gadah, A., Wedad, A., Ahsan, N., & Javaria, H. (2020). How environmental awareness relates to green purchase intentions can affectbrand evangelism? Altruism and environmental consciousness as mediators. Revista Argentina de Clinica Psicologica, 29, 811-825. How environmental awareness relates to green purchase intentions can affectbrand evangelism? Altruism and environmental consciousness as mediators. Revista Argentina de Clinica Psicologica, 29, 811-825.
Li, W., Long, R., Chen, H., Yang, T., Geng, J., & Yang, M. (2018). Effects of personalcarbon trading on the decision to adopt battery electric vehicles: Analysis basedon a choice experiment in Jiangsu, China. Applied Energy, 209, 478-488.
Li, Z., Khajepour, A., & Song, J. (2019). A comprehensive review of the keytechnologies for pure electric vehicles. Energy, 182, 824-839.
Liu, Y., Ouyang, Z., & Cheng, P. (2019). Predicting consumers' adoption of electricvehicles during the city smog crisis: An application of the protective action decision model. Journal of Environmental Psychology, 64, 30-38.
Malik, M. I., Mir, F. N., Hussain, S., Hyder, S., Anwar, A., Khan, Z. U., ... & Waseem, M.(2019). Contradictory results on environmental concern while re-visiting green purchase awareness and behavior. Asia Pacific Journal of Innovation and Entrepreneurship.
Massey, M., O'Cass, A., & Otahal, P. (2018). A meta-analytic study of the factors drivingthe purchase of organic food. Appetite, 125, 418-427.
Nayum, A., & Thøgersen, J. (2022). I did my bit! The impact of electric vehicle adoptionon compensatory beliefs and norms in Norway. Energy Research & Social Science, 89, 102541.
Ninh, N. G. (2021). Resistance to Change and Purchase Intention of Electric Vehicles:Empirical evidence from Vietnam. Asian Journal of Business Research Volume, 11(2).
Nunnally, J. C., & Bernstein, I. H. (1994). Psychological theory.
Orlov, A., & Kallbekken, S. (2019). The impact of consumer attitudes towards energyefficiency on car choice: Survey results from Norway. Journal of cleaner production, 214, 816-822.
Policarpo, M. C., & Aguiar, E. C. (2020). How self-expressive benefits relate to buying ahybrid car as a green product. Journal of Cleaner Production, 252, 119859.
Pradhananga, A. K., & Davenport, M. A. (2022). "I Believe I Can and Should": Self- efficacy, Normative Beliefs and Conservation Behavior. Journal of ContemporaryWater Research & Education, 175(1), 15-32.
Rezvani, Z., Jansson, J., & Bengtsson, M. (2018). Consumer motivations for sustainableconsumption: The interaction of gain, normative and hedonic motivations on electric vehicle adoption. Business Strategy and the Environment, 27(8), 1272- 1283.
Sarstedt, M., Hair Jr, J. F., & Ringle, C. M. (2022). "PLS-SEM: indeed a silver bullet"– retrospective observations and recent advances. Journal of Marketing Theory andPractice, 1-15.
Sarstedt, M., Ringle, C. M., & Hair, J. F. (2014). PLS-SEM: Looking back and movingforward. Long Range Planning, 47(3), 132-137.
Sarstedt, M., Ringle, C. M., Henseler, J., & Hair, J. F. (2014). On the emancipation of PLS-SEM: A commentary on Rigdon (2012). Long range planning, 47(3), 154-160.
Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reportingstructural equation modeling and confirmatory factor analysis results: A review. The Journal of educational research, 99(6), 323-338.
Scorrano, M., & Danielis, R. (2021). The characteristics of the demand for electric scooters in Italy: An exploratory study. Research in Transportation Business &Management, 39, 100589.
Shao, J., & Ünal, E. (2019). What do consumers value more in green purchasing?Assessing the sustainability practices from demand side of business. Journal ofCleaner Production, 209, 1473-1483.
Sharma, S. (2019). The role of perceived value and gender on customers' purchaseintention of ride sharing services. International Journal of Asian Business and Information Management (IJABIM), 10(4), 31-46.
Testa, F., Pretner, G., Iovino, R., Bianchi, G., Tessitore, S., & Iraldo, F. (2021). Driversto green consumption: A systematic review. Environment, development and sustainability, 23(4), 4826-4880.

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International Journal of AdvancedResearch in Science, Engineering and Technology
Vol. 12, Issue 6, June 2025

Wang, J., Nguyen, N., & Bu, X. (2020). Exploring the roles of green food consumption and social trust in the relationship between perceived consumer effectiveness andpsychological wellbeing. International Journal of Environmental Research and Public Health, 17(13), 4676.
Wei, W., Cao, M., Jiang, Q., Ou, S. J., & Zou, H. (2020). What influences Chinese consumers' adoption of battery electric vehicles? A preliminary study based onfactor analysis. Energies, 13(5), 1057.
Westin, K., Jansson, J., & Nordlund, A. (2018). The importance of socio-demographiccharacteristics, geographic setting, and attitudes for adoption of electric vehiclesin Sweden. Travel Behaviour and Society, 13, 118-127.
Xu, X., Wang, S., & Yu, Y. (2020). Consumer's intention to purchase green furniture:Do health consciousness and environmental awareness matter?. Science of the Total Environment, 704, 135275.
Zahedi, S., Batista-Foguet, J. M., & van Wunnik, L. (2019). Exploring the public's willingness to reduce air pollution and greenhouse gas emissions from private roadtransport in Catalonia. Science of the total environment, 646, 850-861.
Zhang, K., & Hung, K. (2020). The effect of natural celebrity–brand association andpara-social interaction in advertising endorsement for sustainable marketing. Sustainability, 12(15), 6215.
Zhang, X., Bai, X., & Shang, J. (2018). Is subsidized electric vehicles adoption sustainable: Consumers' perceptions and motivation toward incentive policies,environmental benefits, and risks. Journal of Cleaner Production, 192, 71-79.
Zhang, Y., Xiao, C., & Zhou, G. (2020). Willingness to pay a price premium for energy-saving appliances: Role of perceived value and energy efficiency labeling. Journalof Cleaner Production, 242, 11