Received: October 2023 Accepted: December 2023 DOI: https://doi.org/10.58262/ks.v12i1.070

Identifying Performance Factors Impact on Motorcycle Purchase Intention of Z Generation

Sang Minh Vo¹*, Dang Vo Gia Le², Son Hoang Tran³, Ngan Kim Huynh⁴, Thu Anh Nguyen⁵, and Mo Nhu Pham⁶

Abstract

Electric vehicles (EVs) have emerged as a very efficient substitute for reducing pollutants associated with transportation. To promote the extensive use of electric automobiles (EVs) in the current transportation system, it is essential to have a comprehensive understanding of the factors that influence consumers' willingness to purchase EVs. The objective of this project is to enhance understanding of how Gen Z customers embrace electric automobiles. This will be achieved by developing a theoretical framework that combines the technological acceptance model (TAM) with the theory of planned behaviour (TPB). Additionally, it examines the essential factors that impact their buying choices. The primary objective of this research is to examine the factors that impact the likelihood of Generation Z customers to buy electric bikes. A total of 395 consumers in Can Tho, Vietnam were surveyed to collect data. The research findings are evaluated with Amos 25.0 and IBM SPSS. After using several experimental methodologies to assess the six hypotheses, it was concluded that technology, environmental consciousness, and mentality had a positive impact. Based on these findings, the research proposed measures for both businesses and the government to promote the growth of the electric motorcycle sector.

Keywords: Electric Motorcycle, Purchase Intention, Environment.

Introduction

The use of internal combustion engines fueled by fossil fuels in conventional automobiles has a substantial detrimental impact on the environment (Gryparis et al., 2020). An international endeavour to mitigate the adverse environmental impacts of carbon emissions involves the growing presence of electric vehicles on national roadways (Rezvani et al., 2015). Electric vehicles (EVs) rely on electricity as their primary energy source to operate and provide power for their electronic components (Maroti et al., 2022). Generation Z, the next cohort of automobile owners, is likely to be the last generation with the autonomy to choose their preferred vehicle once they achieve a certain level of financial stability. Individuals in this demographic were born throughout the time frame of 1996 to 2012. Given the substantial amount of time this generation devotes to social media, it is justifiable to infer that these platforms are exerting a significant influence on them. Publications and advertisements featuring recent electric vehicle (EV) models are prevalent, as are discussions on environmental concerns. Manufacturers may now target this specific group of potential customers, particularly by using the power of social media influencers (Koulopoulos & Keldsen, 2016).

The market adoption period for electric vehicles (EVs) in Vietnam is quite brief, often spanning three

Department of Business Administration, FPT University, 90000, Can Tho City, Vietnam. Email: SangVM@fe.edu.vn

² International Business, Faculty of Business Administration, FPT University, Can Tho City, Vietnam.

³ International Business, Faculty of Business Administration, FPT University, Can Tho City, Vietnam.

⁴ International Business, Faculty of Business Administration, FPT University, Can Tho City, Vietnam.

⁵ International Business, Faculty of Business Administration, FPT University, Can Tho City, Vietnam.

⁶ International Business, Faculty of Business Administration, FPT University, Can Tho City, Vietnam.

to five years. In 2020, the presence of a mere 900 electric vehicles (EVs) on Vietnamese roads indicates that the country's embrace of EVs is still very limited. Vietnam's electric vehicle (EV) market is more robust than those of its neighbouring countries, Indonesia, Malaysia, and Thailand. The firm operates as a regional manufacturer of electric automobiles, primarily targeting the Chinese market, which is the largest global market for such vehicles. Despite the government's efforts to encourage the electric vehicle (EV) sector, renowned automobile manufacturers such as Hyundai, Mercedes, Hongqi, Audi, and others continue to introduce EV models in Vietnam. However, customers in Vietnam still have uncertainties and concerns. The objective of this study, as stated by Nam and Huy (2021), is to examine the many factors that influence the level of adoption and acceptance of electric automobiles among customers.

Several studies (Ye et al., 2021; Moataz Mohamed & Christopher, 2018) have investigated consumer intentions to purchase electric vehicle (EV) products. The creation and execution of most of these may be attributed to the theory of planned behaviour (TPB). Bjerkan et al. (2016) and Sierzchula et al. (2014) are only two examples of several academic studies that examine various factors influencing consumers' inclination to buy and use electric vehicles. No study has comprehensively included both the theory of planned behaviour (TPB) and Vietnam's geographical position as a demographic factor, despite the existence of several research studies on this topic. Furthermore, prior research has largely disregarded the connection between the subjective norm in the TPB model and the purchase intentions of other consumers, namely those pertaining to environmental concerns and government support.

Recent study has focused on identifying the primary drivers behind the shift from gas-powered automobiles to electric bicycles. Zhang et al. (2013) conducted research indicating a slight correlation between purchase incentives and the likelihood of consumers buying electric automobiles. Furthermore, this research examines the progress of electric vehicle infrastructure and the efficacy of government regulations. Based on the findings of Sierzchula et al. (2014), non-monetary incentives may serve as the primary motivator for individuals to purchase electric automobiles. This research primarily focuses on the decision-making process of Generation Z and their preference for electric motorcycles over conventional internal combustion engine cars. The aim is to determine the elements that influence their desire to acquire an electric motorcycle.

Literature Review

Electric motorcycles (EMs) exemplify the harmonious integration of contemporary technology with environmental consciousness, resulting in the establishment of a sustainable future. Technology Acceptance Models (TAMs), Theories of Reasoned Action (TRAs), and Theory of Planned Behaviour (TPBs) are explanatory frameworks used to understand the factors influencing consumer adoption of electric motorcycles. Perceived behavioural control (PB) is primarily composed of an individual's inclination to engage in a certain action and their confidence in their ability to successfully carry it out (Kan & Fabrigar, 2017). The TPB model is founded on three fundamental pillars: control, behaviour, and normative. These pillars serve as the underlying framework for the model's logic. An individual's actions are determined and regulated by the six pillars that constitute the idea of purposeful conduct. The key determinants influencing an individual's response in a given context are their power dynamics, self-perceived behavioural control, subjective norms, societal standards, personal views, and underlying motivations. According to Spence et al. (2018), this concept suggests that consumers' beliefs have an influence on their purchasing decisions. Consequently, the sales of electric vehicles (EVs) in Sweden should align with the overall ideals upheld by the industry. Nevertheless, TPB has a limited scope in terms of time since it just considers the period during which intentions and actions occur. TPB does not include significant factors that might greatly impact one's life, such as temperament, anxiety, and risk.

Regarding the adoption of electric bicycles, this theory is widely recognised as one of the most popular. The Theory

Kurdish Studies

of Reasoned Action (TRA), developed by Ajzen and Fishbein in 1975, is a predictive model that examines the determinants influencing purchase intention. This study primarily focuses on attitude and subjective norms, which are two key components that impact behavioural intention. However, Ajzen and Fishbein (1975) have identified many issues with the TRA model's underlying premise that individuals engage in behaviour only based on their desires. Furthermore, the primary objective of TRA is to elucidate deliberate behaviours. According to Bentler and Speckart (1979) and Langer (1989), the phenomena does not include acts that are innate, unexpected, habitual, driven by strong wants, predetermined, or unintended to a significant extent.

An alternative hypothesis has equal significance. Ajzen and Fishbein (1980) and Fishbein and Ajzen (1975) developed the theory of planned behaviour (TPB) as a conceptual framework for comprehending reasoned action. An individual's disposition may be anticipated by examining the well established Theory of Planned Behaviour (TPB) paradigm. Based on the research conducted by Conner and Sparks (1996), and Godin and Kok (1996), this theory has effectively forecasted certain behaviours. Upon seeing the shortcomings of the TRA model, the creators devised the TPB Model, which admits that individuals engage in actions based on rational motivations.

The Technology Acceptance Model (TAM), introduced by Lee (2009) and Silva (2015), is a significant framework used for assessing behavioural intents. Lee (2009) assert that the TAM is a pivotal paradigm often used in research examining the factors that impact individuals' adoption of new technologies or information systems. Advancements in sustainability have been identified as the primary catalyst for the emergence of "green" technology such as electric motorcycles. To shed light on the reasons behind the widespread adoption of these technologies, the Technology Acceptance Model (TAM) may be used.

When an individual or organisation intends to acquire a product or service, they are indicating their inclination to do so. A greater likelihood of completing a purchase is linked to a more pronounced desire to acquire (Dodds et al., 1991; Schiffman and Kanuk, 2007). Researchers may discover that purchase intention is a valuable indicator for forecasting consumer behaviour. Brand loyalty is established when clients are driven to make a purchase and have a favourable inclination to do so, as stated by Fishbein and Ajzen (1975) and Schiffman and Kanuk (2007). In addition, electric vehicle (EV) systems are swiftly supplanting internal combustion engine (ICE) vehicles, such as automobiles, buses, and motorcycles, worldwide, including Vietnam (Hoang et al., 2020), as part of an endeavour to preserve the environment. Furthermore, it is imperative to enact legislation mandating the appropriate recycling and disposal of outdated electric vehicle batteries and motorcycles. The objective is to minimise the likelihood of environmental contamination. The reference originatesc (Hoang et al., 2020). Brand loyalty is cultivated when consumers have a favourable perception of the brand, leading to increased purchases of the product (Schiffman and Kanuk, 2007). Furthermore, purchase intention may be described as the inclination that increases when buyers are fascinated by the items they see, leading to an elevated curiosity in testing the product and ultimately, a strong desire to make a purchase (Kotler, 2008). The theory of planned behaviour has been utilised in research on various subjects, such as consumer behaviour related to vehicle usage and preferred modes of transportation. This theory examines the connection between attitudes, beliefs, intention to behave, and subsequent behaviour (Dang, 2012; Ning, Yafei, 2015). According to Sheetal and Abhishek (2012) and Pranav et al (2013), the brand name and marketing strategy have an influence on the likelihood of consumers in India using bicycles and electric scooters.

Methodology

Sampling Technique

The research used a five-point Likert scale to assess the opinions of participants, with a rating of five representing strong agreement and a rating of one indicating substantial disagreement. Participants were obligated to adhere to the requirement by filling out an online survey using Google Form. The gathered www.KurdishStudies.net

data was systematically arranged using Excel once it was made anonymous. The statistical analysis was conducted using SPSS 25.0. We used summary statistics, exploratory factor analysis (EFA), and Cronbach's alpha reliability analysis to assess the degree of convergence among the variables and enhance the survey materials. Extraneous variables were eliminated during the execution of this operation. The alignment between the proposed model and the data was evaluated by a confirmatory factor analysis (CFA). Several fit indices, including RMSEA, GFI, CFI, and Chi-square/df, were used to achieve this. Following this procedure, ascertaining the validity and distinctiveness of the variable structures should not pose significant challenges. The research aimed to enhance and evaluate the connections between hidden and visible factors via the use of structural equation modelling (SEM) in Amos software version 24.0. This approach facilitated the transformation of the theoretical model into a tangible form, hence facilitating its validation and further enhancement. The study received a total of 416 answers via the Google Forms questionnaire. After eliminating inaccurate samples, we examined the data from the remaining 395 responses that fulfilled our criteria.

Research Hypothesis

Based on the basic theory of pricing, individuals must make several compromises in order to get a product or service (Suharno & Sutarso, 2010). The sticker price refers to the total amount that a purchaser of an electric vehicle (EV) is required to pay, excluding any rebates or incentives (Yuniaristanto et al., 2022). Electric bikes are gaining popularity due to their affordability, superior performance, and user-friendly nature (Huang, 2020). In addition, Sudmant et al (2020) have said that electric bikes exhibit a reduced cost per kilometre and need fewer operational and maintenance expenses when compared to conventional motorbikes, although necessitating a higher initial investment. Electric motorcycles are a kind of vehicle that does not need a "oil change.".

H1: Cost Purchasing has a positive impact on Purchase Intention

The perceived level of safety for electric motorbike riders is influenced by the decibel (dB) level of sound, as shown by research done by Sang and Bekhet (2015) and She et al. (2017). The challenges associated with reducing charging times and enhancing peak speeds are impeding the widespread adoption of electric bikes (Egbue & Long, 2012; Guerra, 2019). When evaluating an electric motorcycle that relies only on batteries, the sole determinant to take into account is the battery capacity. As to the research conducted by Toha et al. (2013), an optimal battery would possess a substantial storage capacity, enhanced energy efficiency, and a more compact and lightweight structure. Ruensumruay et al (2016) emphasize the importance of assessing the energy efficiency and minimalist design of electric motorcycles in relation to their power production and emissions. Junquera et al. (2016) suggest that the gradual implementation of energy-efficient equipment might potentially lead to a decrease in overall expenses.

H2: Technology has a positive impact on Purchase Intention.

Environmental perception, as described by Trinh and Pham (2019), refers to the capacity to detect environmental degradation, comprehend the surrounding environment, and evaluate the impact of energy conservation on behaviour. In India, those who are financially prosperous and have completed higher education are more inclined to own electric scooters. On the other hand, millennials show the highest level of interest in purchasing e-motorcycles (Sheetal and Abhishek, 2012; Pranav et al, 2013). The surging popularity of electric motorcycles in Taiwan may be attributed to increasing concerns over energy efficiency and environmental effect (Yi-Chang & Gwo-Hshiung, 1999). Moreover, some recently established local enterprises are developing conversion kits that might potentially substitute the internal combustion engines of motorcycles with electric power systems. As per Asim et al. (2022), the original

Kurdish Studies

chassis is to be equipped with the electrical kit, electric motor, and battery.

H3: Environment awareness has a positive impact on Purchase Intention.

Both the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB) demonstrate that attitude has a substantial influence on behavioural intention. An individual's perspective on a product or service may be described as their evaluation of the advantages and disadvantages of participating in that particular activity (Ajzen & Fishbein, 1975). Furthermore, the sentiments of consumers have a substantial and favourable impact on their inclination to make a purchase (Huang & Ge, 2019). The results indicate that individuals are more likely to embrace EMs when they possess a comprehensive understanding of their nature, as well as the financial and environmental benefits they provide, together with the existence of incentive programmes (Murtiningrum et al, 2022). On the basis of the previously described theoretical and empirical research, the following hypothesis is presently being examined:

H4: Attitude has a positive impact on Purchase Intention.

The term "economic advantage" pertains to product attributes that quantify the decrease in operational costs in relation to other forms of transportation, such as motorcycles, from an economic standpoint. The inherent attributes of a product often determine economic benefits by shaping customer attitudes and behaviours. Understanding the financial benefits of an automobile sometimes requires considering both the initial purchase and ongoing maintenance bills. The initial acquisition cost of an electric automobile is mostly determined by the price of the battery, which remains the greatest obstacle to the general acceptance of electric vehicles. According to William et al. (2014), the decreasing cost of batteries would enhance the competitiveness of electric automobiles. A study conducted in Vietnam by Luke et al. (2013) revealed that electric motorcycles, in contrast to their gasoline-powered counterparts, exhibited reduced operating costs. Consumers are being lured into purchasing electric bikes because of the economic benefit. Fuel efficiency is a crucial factor to take into account when considering the economic aspects. It is essential to acknowledge that practicality and beauty remain significant considerations (Balaji and Shreyas, 2020).

H5: Economic Benefit has a positive impact on Purchase Intention.

Ajzen was the original proponent of the TPB version in 1991. The theory of reasoned action posits that there are two components, namely "attitude" and "subjective norms," which influence the intention to engage in a certain behaviour. Subjective norms refer to the perceived societal pressure to engage in or abstain from a certain activity. In addition, it is important to take into account the perspectives of customers on electric automobiles and their level of environmental consciousness (Usamah in 2022). Consumers' subjective criteria will significantly influence their behavioural intentions, leading to a substantial increase. The endorsement or criticism from friends and family significantly impacts consumers' decisions to purchase electric two-wheeled vehicles (Tuan, 2022). People's inclination to purchase electric bicycles would decrease in the absence of any arbitrary regulations. Subjective norms, as external factors, influence consumers' decision-making processes (Thanh, 2019). Companies exhibit subjective standards when they make efforts to influence client behaviour, either directly or indirectly. The impact described earlier (Kotler et al., 2014) include merchant marketing strategies, appealing promotional incentives, and support provided after the purchase.

H6: Subject Norm has a positive impact on Purchase Intention.

Results and Discussion

Wang and Rhemtulla (2021) performed a thorough examination of the relationships between various variables using advanced statistical methods, such as Structural Equation Modelling (SEM). The researchers performed the investigation by integrating the AMS 25.0 software tool, widely used in academia, with the SEM approach. The researchers systematically investigated and assessed the presented hypotheses using this technique. We used statistical methods, namely Confirmatory Factor Analysis (CFA), to determine the accuracy and reliability of the claims. The importance and level of confidence for each topic are shown in Table 1. The Cronbach's alpha coefficients imply a strong level of internal consistency for the following concepts: cost buying, technology, environmental awareness, attitude, economic benefit, subject norm, and purchase intention. The variables of cost buying, technology, environmental awareness, attitude, economic benefit, subject norm, and purchase intention have good levels of internal consistency, as shown by Cronbach's alpha values ranging from 0.740 to 0.855. De Leeuw et al. (2019) argue that an Alpha Cronbach value of 0.7 indicates a high association between latent and observable variables.

Table 1: Factor Loading and The Cronbach's A Estimates (Cronbach's Alpha).

	Cost purchasing_CP (Cronbach's Alpha)	0.845
CP1	I believe that I have the ability to purchase an electric scooter without relying on subsidies.	0.809
CP2	I think electric motorcycles are becoming popular because the initial purchase cost is relatively low, they are energy-efficient, and convenient.	0.785
CP3	I believe that the initial cost of purchasing an electric scooter may be higher than a conventional scooter, the operating cost per kilometer is lower.	0.807
CP4	I believe that the maintenance and operating costs of electric scooters will also decrease because there is no need for regular oil changes in electric motorbikes.	0.811
	Technology_T (Cronbach's Alpha)	0.838
T1	I believe that a good battery includes high energy storage capacity.	0.753
T2	I believe that energy-efficient EM and reduced energy emissions.	0.767
T3	I believe that employing energy-efficient technology can result in long-term cost savings.	0.802
	Environmental Awareness_EA (Cronbach's Alpha)	0.855
EA1	I think protecting the environment is necessary.	0.795
EA2	I believe that people with high income and education tend to buy electric motorbikes.	0.811
EA3	I believe that people who understand environmental issues have contributed to the rapid increase in the number of electric motorbikes.	0.784
	Attitude_A (Cronbach's Alpha)	0.833
A1	I highly appreciate the convenience of electric motorbikes.	0.757
A2	I believe that environmental benefits can positively impact attitudes towards purchasing electric motorbikes.	0.747
A3	I think electric motorbikes have economic benefits.	0.797
	Economic benefit_EB (Cronbach's Alpha)	0.780
EB1	I believe that as battery costs decrease, the competitiveness of electric motorbikes will similarly increase.	0.680
EB2	I believe that The operational costs for electric motorbikes are more cost-effective compared to gasoline- powered motorcycles.	0.670
EB3	I believe that The fuel efficiency is an economic factor worth considering.	0.758
	Subjective Norm_SN (Cronbach's Alpha)	0.740
SN1	My decision to use an electric motorbike may be influenced by other people's subjective opinions.	0.532
SN2	I believe that my intention to buy an electric motorbike can be influenced by the support or opposition of relatives and friends.	0.540
SN3	I buy electric motorbikes because of attractive promotion policies and after-sales service.	0.827
	Purchase Intention_PI (Cronbach's Alpha)	0.832
PI1	I intend to convert from a gasoline motorbike to an electric motorbike.	0.792
PI2	I intend to buy an electric motorbike in the future.	0.746
PI3	The business's brand and communication policy affect my intention to use an electric motorbike.	0.768
PI4	I intend to learn more about electric motorbike	0.839

Source: Field Survey Data, 2023

All factor loading values in Table 2 surpass the predefined threshold of 0.5. Based on the academic study done by Al-Lozi et al. (2018) and Sung et al. (2019), it has been confirmed that this specific spectrum is

feasible. Rimkeviciene et al. (2017) used covariance-based SEM as a comparison approach to establish the discriminant validity. The Kaiser-Meyer-Olkin (KMO) test was undertaken to determine the suitability of the relationship performance measures used in the factor analysis of the scale. Every number met or above the preset minimum threshold of 0.5. A Kaiser-Meyer-Olkin (KMO) score equal to or higher than 0.798, or a minimum score of 0.5, was considered to have statistical significance.

T.t.a.man	Factors							
Items	1	2	3	4	5	6	7	
Cos	st purchasing (CP))						
CP2	0.853							
CP3	0.825							
CP4	0.810							
CP1	0.808							
	Technology (T)							
<u>T1</u>		0.839						
13		0.803						
12		0.803	(T) (1)					
	Environme	ntal Awareness	<u>s (EA)</u>					
EA3			0.887					
EA1			0.875					
EA2		A	0.8/1					
A 1		Attitude (A)	0.000				
A1 A2				0.880				
A2 A2				0.820				
ЛJ	Economich	enefit (FB)		0.723				
FB1	Leononine b	ellelit (LD)			0.838			
EB2					0.823			
EB3					0.765			
1105		Subjective	Norm (SN)	0.705			
SN1		casjeeure	1 (0111) (01 (/		0.924	-	
SN2						0.908		
	Purchase Intentio	on (PI)						
PI2							0.832	
PI1							0.824	
PI3							0.792	
PI4							0.611	
Р	arameters of test					Result		
Kaise	r-Meyer-Olkin (KM	O)				0.798		
Cur	mulative % (Initial F	Eigenvalues)				73.92		
Ba	rtlett's Test of Sphe	ricity (Sig.)				0.000		
	Initial Eigenva	lue				1.270		
D: 110	D 0000							

Table 2: Scale of Factors and Test Parameters in Confirmatory Factor Analysis (CFA).

Source: Field Survey Data, 2023

Furthermore, components with eigenvalues greater than 1.270 were excluded. Use Bartlett's test of sphericity to establish the correlations between the observed variables for the factor. A statistically significant association (p < 0.05, $\chi^2 = 0.00$) exists between the variables analysed inside the factor, as shown by Bartlett's test. Statisticians use the factor loading coefficient to measure the degree of connection between two variables. The relevant variable has statistical significance when the factor loading value reaches 0.7. All seven parameters had loadings greater than 0.60. In a previous research done by Yu et al. (2014), it was shown that loadings of 0.50 or higher are considered to be legitimate. After finishing the measurement phase, the averages were computed for each multivariate construct. Precise allocation of items to certain dimensions based on the findings of Exploratory Factor Analysis (EFA) is crucial in order to comply with the criteria of the SEM framework.

			iie (aiie								
	CR	AVE	MSV	MaxR(H)	EB	СР	PI	Т	EA	Α	SN
EB	0.784	0.549	0.174	0.795	0.741						
СР	0.846	0.580	0.028	0.849	0.045	0.761					
PI	0.838	0.568	0.300	0.861	0.338	0.106	0.754				
Т	0.838	0.634	0.287	0.842	0.383	0.090	0.536	0.796			
EA	0.855	0.663	0.015	0.857	-0.037	0.047	0.121	0.002	0.814		
Α	0.833	0.625	0.300	0.835	0.417	-0.009	0.548	0.517	-0.031	0.791	
SN	0.841	0.728	0.028	0.920	0.040	0.166	-0.037	0.017	0.018	0.006	0.853
-											

 Table 3: Discriminant Validity.

Source: Field Survey Data, 2023

Convergent validity refers to the extent to which the chosen objects accurately reflect a certain notion by showing a high level of correlation. One way to evaluate how well different measures agree with each other is by analysing composite reliability, factor loading, or average variance extracted (AVE). Factor loading, as defined by Hashmi and Tawfiq (2020) and Hsieh and Hiang (2004), refers to the degree of association between an item and the underlying notion it represents. Typically, a threshold of 0.40 or above is considered to be the most favourable. The construct's internal consistency, as measured by composite reliability, should be equal to or greater than 0.70, as shown by studies done by Khan et al. (2022a) and Hashmi et al. (2021). Based on the studies conducted by Khan et al. (2022b) and Fornell & Larcker (1981), it is recommended that the Average Variance Extracted (AVE) should be equal to or above 0.50. The Average variation Extracted (AVE) is the average amount of variation that the indicators of a construct can explain. The study's concurrent validity is shown by the observed values in Table 3, ranging from 0.549 to 0.728. The obtained findings far exceed the minimal threshold of 0.5. The absolute levels of Composite Reliability (CR) also above the ideal threshold of 0.70. Table 3 provides a concise summary of the results. Thus, it may be safely deduced that the elements of the model exhibit a strong convergent validity.

Indicators	Cut-off values	Calculated values	Conclusion
Chi-square/df	≤ 3.000	1.628	Fit
CFI	≥ 0.900	0.968	Fit
GFI	≥ 0.900	0.934	Fit
TLI	≥ 0.900	0.961	Fit
RMSEA	≤ 0.080	0.040	Fit

Table 4: Model fit Indicators in SEM.

Source: Field Survey Data, 2023

Note: Cut-off values adopted from Yu et al. (2014)

The null hypothesis is decisively rejected based on compelling evidence, since the statistical analysis produced a p-value of 0.000 (p < 0.01). The chi-square/df score of 1.628 provides further evidence of the well-constructed structural model in the study. Both the analytical result (0.934) and the GFI value (0.900) provide evidence that the model is appropriate. The aforementioned indicators are really relevant. The model is considered to meet the specified criteria because the Tucker-Lewis index (TLI) value of 0.961 for the research model is higher than the threshold of 0.900, the comparative fit index (CFI) value of 0.968 also exceeds the threshold of 0.900, and the root mean square error of approximation (RMSEA) value of 0.040 is lower than the threshold of 0.080. Yu et al. (2014) found that the study's findings provide validation for the research paradigm. The obtained data is shown in Table 4.

Figure 1: SEM Model.



The study examined the influence of several variables on the propensity to purchase electric bikes using regression analysis and the correlation coefficient. Table 5 shows a robust and statistically significant association between several parameters and the propensity to participate in a transaction. The three measures being studied show a notable and positive association (R2 = 0.417), indicating the existence of a meaningful impact. The diverse discoveries may be concisely summarised as follows: According to the second hypothesis, people are more likely to buy an electric motorbike if they have a higher level of technical knowledge and experience. The link is substantiated by the beta coefficient of 0.272, the critical ratio of 4.819, and the p-value being less than 0.001. Hypothesis 3 suggests that there is a direct correlation between environmental awareness and the likelihood of making a purchase, given that the critical ratio is 2.674, the beta coefficient of 0.315, and a critical ratio of 5.271, establishes a statistically significant positive correlation between attitude and intention to buy. The hypotheses H1, H5, and H6 should be rejected owing to the insufficient empirical evidence obtained from the given data.

Relationship	Estimate β	S.E	C.R	P – value	Hypothesis Result		
PI <== CP	0.073	0.045	1.620	0.105	Reject		
PI <== T	0.272	0.056	4.819	***	Accepted		
PI <== EA	0.111	0.042	2.674	0.007	Accepted		
PI <== A	0.315	0.060	5.271	***	Accepted		
PI <== EB	0.071	0.060	1.195	0.232	Reject		
PI <== SN	-0.060	0.046	-1.315	0.189	Reject		
$R^2 = 0.417$							

Table 5: Factors Influence on Electric Motorbike Purchase Intention.

Source: Field Survey Data, 2023

Note: *, **, and *** are levels of significance at P < 0.05, P < 0.01, and P < 0.001, respectively.

The results are consistent with the studies done by Yuniaristanto et al. (2022). The likelihood of people buying electric motorcycles is greatly affected by technology, and this impact is also evident in broader aspects at the societal level. The development of new energy-saving technologies and the advancement of electric motorbike effectiveness are positively correlated, leading to a rise in customer demand. The future development of technology might greatly promote the widespread use of electric motorbikes. The level of users' excitement for electric bikes might be greatly influenced by advancements in charging infrastructure and battery technology. Younger individuals, who are environmentally sensitive and have a positive opinion of electric motorbikes, have a greater prevalence of using them (Guerra, 2019). The relationship between environmental awareness, attitude, and buying intention is also in line with previous studies. A study conducted by Emerald Insight in 2013 indicates that customers' willingness to purchase environmentally friendly automobiles is impacted in a favourable manner by their opinions. Individuals' significantly positive sentiments about electric motorbikes stem from their strong pro-environmental self-perception. Electric motorbikes are significantly influenced by instrumental features, as stated by Schuitema et al. (2013). A recent study by Johan (2013) suggests that customers' willingness to choose environmentally friendly automobiles is greatly impacted by their views. Li et al. (2019) argue that the increasing development of electric motorcycles is driven by the public's awareness of environmental issues. Evidence suggests that concerns about climate change and sustainability, as well as an individual's level of environmental consciousness, may influence their decision to purchase electric vehicles. It is often believed that an upsurge in electric vehicle registrations and sales is indicative of an increase in the adoption of electric vehicles (Austmann and Vigne, 2021). An individual's propensity to get an electric motorbike depends on their perception of the environmental, personal, and social benefits connected with such a purchase (Tu and Yang, 2019). Sudarsan et al (2021) made significant discoveries via the use of Structural Equation Modelling throughout their inquiry. The notion of the availability of charging infrastructure, environmental awareness, financial advantage, and social influence all have a beneficial effect on the perception of electric bikes. The probability of a purchase being completed is mostly based on one's perception of the surroundings. The ecological ramifications of powering motorbikes with gasoline are generally acknowledged (Trinh and Thanh, 2019). Research done by Mohamed et al. (2016) found that consumers' views have a substantial impact on their purchase choices when it comes to electric automobiles.

Conclusion

The proposition that consumers attribute significant value to technical proficiency, ecological consciousness, and viewpoint is substantiated by the observed favourable impacts in these three realms. The motorcycle business is gaining worldwide market attention due to the advent of electric cycles as a prominent player. However, people are naturally reluctant to purchase innovative items like electric bikes since there is a lack of data needed to make a comparison with traditional gasoline-powered alternatives. Governments and manufacturers must prioritise the deployment of attractive support measures that ease the spread of knowledge, meet customer expectations, and encourage the use of electric motorbikes. The results suggest that those who place a high value on environmental sustainability are more motivated to buy and use electric motors. Comprehending the ecological consequences of an electric motorcycle is a crucial factor in the choice to buy one. Due to increasing consumer consciousness about environmental preservation, there has been a significant rise in the demand for more eco-friendly transportation alternatives.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflicts of interest.

Availability of Data and Materials: Availability

References

- Adams, B. D., Black, R., Radtke, C., Williams, Z., Mehdi, B. L., Browning, N. D., & Nazar, L. F. (2014). The importance of nanometric passivating films on cathodes for Li–air batteries. ACS nano, 8(12), 12483-12493. <u>https://doi.org/10.1021/nn505337p</u>
- Ajzen, I. and Fishbein, M. (1980). Understanding Attitudes and Predicting Social Behavior. Englewood Cliffs, New Jersey: Prentice-Hall.
- Al-Lozi, M. S., Almomani, R. Z. Q., & Al-Hawary, S. I. S. (2018). Talent Management strategies as a critical success factor for effectiveness of Human Resources Information Systems in commercial banks working in Jordan. *Global Journal of Management and Business Research: A Administration and Management*, 18(1), 30-43.
- Asim, M., Usman, M., Muhammad Salman Abbasi, Ahmad, S., Mujtaba, M. A., Elahi, M., & Mohamed, A. (2022). Estimating the Long-Term Effects of National and International Sustainable Transport Policies on Energy Consumption and Emissions of Road Transport Sector of Pakistan. *Sustainability*, 14(9), 5732–5732. https://doi.org/10.3390/su14095732
- Austmann, L. M., & Vigne, S. A. (2021). Does environmental awareness fuel the electric vehicle market? A Twitter keyword analysis. *Energy Economics*, 101, 105337. <u>https://doi.org/10.1016/j.eneco.2021.105337</u>
- Bentler, P. M., & Speckart, G. (1979). Models of attitude-behavior relations. *Psychological Review*, 86(5), 452-464. <u>https://doi.org/10.1037/0033-295X.86.5.452</u>
- Bjerkan, K. Y., Nørbech, T. E., & Nordtømme, M. E. (2016). Incentives for promoting battery electric vehicle (BEV) adoption in Norway. *Transportation Research Part D: Transport and Environment*, 43, 169-180. <u>https://doi.org/10.1016/j.trd.2015.12.002</u>
- Conner, M., & Sparks, P. (1996). The theory of planned behaviour and health behaviours. In M. Conner & P. Norman (Eds.), Predicting health behaviour: Research and practice with social cognition models, 121–162.
- De Leeuw, E., Hox, J. J., Silber, H., Struminskaya, B., & Vis, C. (2019). Development of an international survey attitude scale: measurement equivalence, reliability, and predictive validity. *Measurement Instruments for the Social Sciences*, 1(1). https://doi.org/10.1186/s42409-019-0012-x
- Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, 28 (3), 307–319. <u>https://doi.org/10.2307/3172866</u>
- Dung, Đ. T. N. (2012). Các yếu tố ảnh hưởng đến ý định sử dụng hệ thống tàu điện ngầm Metro tại TP. Hồ Chí Minh. <u>https://digital.lib.ueh.edu.vn/handle/UEH/42928</u>
- Egbue, O., & Long, S. (2012). Barriers to widespread adoption of electric vehicles: An analysis of consumer attitudes and perceptions. *Energy Policy, 48, 717–729.* https://doi.org/10.1016/j.enpol.2012.06.009
- Emmanouil Gryparis, Papadopoulos, P., Leligou, H. C., & Psomopoulos, C. S. (2020). Electricity demand and carbon emission in power generation under high penetration of electric vehicles. A European Union perspective. *Energy Reports, 6* (6), 475–486. <u>https://doi.org/10.1016/j.egyr.2020.09.025</u>
- Fishbein, M. and Ajzen, I. (1975). Belief Attitude, Intention and Behavior: An Introduction to Theory and Research. Reading, Massachusetts: Addison-Wesley.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*, 39–50.

- Godin, G., Kok, G. (2016). The Theory of Planned Behavior: A Review of its Applications to Health-Related Behaviors. *American Journal of Health Promotion*. <u>https://doi.org/10.4278/0890-1171-11.2.87</u>
- Guerra, E. (2019). Electric vehicles, air pollution, and the motorcycle city: A stated preference survey of consumers' willingness to adopt electric motorcycles in Solo, Indonesia. *Transportation Research Part D: Transport and Environment, 68*, 52–64. <u>https://doi.org/10.1016/j.trd.2017.07.027</u>
- Hashmi, A. R., & Tawfiq, A. M. (2020). The effect of disruptive factors on inventory control as a mediator and organizational performance in Health Department of Punjab, Pakistan. *Journal of Sustainable Development & World Policy*, 9(2), 122-134. doi:10.18488/journal.26.2020.92.122.134
- Hashmi, A. R., Amirah, N. A., Yusof, Y., & Zaliha, T. N. (2021). Mediation of inventory control practices in proficiency and organizational performance: State-funded hospital perspective. *Uncertain Supply Chain Management, 9*(1), 89-98. doi:10.5267/j.uscm.2020.11.006
- Hoang Phuong Nguyen, Anh Tuan Hoang, Anh Tuan Le, Van Viet Pham, Van Nam Tran (2020). Learned experiences from the policy and roadmap of advanced countries for the strategic orientation to electric vehicles: A case study in Vietnam. *Energy Sources, Part A: Recovery, Utilization,* and Environmental Effects. <u>https://doi.org/10.1080/15567036.2020.1811432</u>
- Hsieh, Y.-C., & Hiang, S.-T. (2004). A study of the impacts of service quality on relationship quality in search-experience-credence services. *Total Quality Management Business Excellence*, 15(1), 43-58.
- Huang, Chih Chia Liao, M.-J., Zheng Feng Li, Faa Jeng Lin, & Wu, W. (2020). Simulation-Assisted Design of a Bidirectional Wireless Power Transfer With Circular Sandwich Coils for E-Bike Sharing System. *IEEE Access*, 8, 110003–110017. <u>https://doi.org/10.1109/access.2020.3000564</u>
- Huang, X., & Ge, J. (2019). Electric vehicle development in Beijing: An analysis of consumer purchase intention. *Journal of Cleaner Production, 216*, 361–372. <u>https://doi.org/10.1016/j.jclepro.2019.01.231</u>
- Jansson, J., Nordlund, A., & Westin, K. (2017). Examining drivers of sustainable consumption: The influence of norms and opinion leadership on electric vehicle adoption in Sweden. *Journal of Cleaner Production*, 154, 176–187. <u>https://doi.org/10.1016/j.jclepro.2017.03.186</u>
- Jones, L. R., Cherry, C. R., Vu, T. V., & Nguyen, Q. (2013). The effect of incentives and technology on the adoption of electric motorcycles: A stated choice experiment in Vietnam. *Transportation Research Part A: Policy and Practice*, 57, 1–11. <u>https://doi.org/10.1016/j.tra.2013.09.003</u>
- Jui Che Tu, & Yang, C. (2019). Key Factors Influencing Consumers' Purchase of Electric Vehicles. *Sustainability*, 11(14), 3863. <u>https://doi.org/10.3390/su11143863</u>
- Junquera, B., Moreno, B., & Fidel, R. (2016). Analyzing consumer attitudes towards electric vehicle purchasing intentions in Spain: Technological limitations and vehicle confidence. *Technological Forecasting and Social Change*, 109, 6–14. <u>https://doi.org/10.1016/j.techfore.2016.05.006</u>
- Kan, M., & Fabrigar, L. (2017). Theory of Planned Behavior. *Springer EBooks*, 1–8. https://doi.org/10.1007/978-3-319-28099-8 1191-1
- Khan, S., Benhamed, A., Rashid, A., Rasheed, R., & Huma, Z. (2022a). Effect of leadership styles on employees' performance by considering psychological capital as mediator: evidence from airlines industry in emerging economy. *World Journal of Entrepreneurship, Management and Sustainable Development, 18*(8).
- Khan, S., Rasheed., R., Rashid, A., Abbas, Q., & Mahboob, F. (2022b). The Effect of Demographic Characteristics on Job Performance: An Empirical Study from Pakistan. *Journal of Asian Finance, Economics and Business, 9*(2), 283-294. DOI: 10.13106/jafeb.2022.vol9.no2.0283
- Kotler, P., & Armstrong, G. (2008). Prinsip-prinsip pemasaran (Vol. 1, No. 2). Jilid.
- Kotler, P., & Keller, K.L. (2014). Marketing Management 14thed. New Jersey: Pearson Education.
- Koulopoulos, T., & Keldsen, D. (2016). Gen Z Effect: The Six Forces Shaping the Future of Business (1st ed.). Routledge. <u>https://doi.org/10.4324/9781315230337</u>

Kurdish Studies

- Langer, E. J. (1989). Minding Matters: The Consequences of Mindlessness–Mindfulness. Advances in Experimental Social Psychology, 137–173. <u>https://doi.org/10.1016/s0065-2601(08)60307-x</u>
- Lee, M.-C. (2009). Factors influencing the adoption of Internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications 8*(3), 130-141. DOI: <u>10.1016/j.elerap.2008.11.006</u>
- Li, Z., Amir Khajepour, & Song, J.-H. (2019). A comprehensive review of the key technologies for pure electric vehicles. *Energy*, *182*, 824–839. <u>https://doi.org/10.1016/j.energy.2019.06.077</u>
- Mohamed, M., Higgins, C. D., Ferguson, M., & Pavlos Kanaroglou. (2016). Identifying and characterizing potential electric vehicle adopters in Canada: A two-stage modelling approach. *Transport Policy*, 52, 100–112. <u>https://doi.org/10.1016/j.tranpol.2016.07.006</u>
- Mohamed, M., Higgins, C. D., Ferguson, M., & Réquia, W. J. (2018). The influence of vehicle body type in shaping behavioural intention to acquire electric vehicles: A multi-group structural equation approach. *Transportation Research Part A: Policy and Practice, 116*, 54–72. <u>https://doi.org/10.1016/j.tra.2018.05.011</u>
- Mohammed Nasser Al-Suqri, & Rahma Mohammed Al-Kharusi. (2015). Ajzen and Fishbein's Theory of Reasoned Action (TRA) (1980). Advances in Knowledge Acquisition, Transfer and Management Book Series, 188–204. <u>https://doi.org/10.4018/978-1-4666-8156-9.ch012</u>
- Murtiningrum, A. D., Darmawan, A., & Wong, H. (2022). The adoption of electric motorcycles: A survey of public perception in Indonesia. *Journal of Cleaner Production*, 379 (2), 134737. https://doi.org/10.1016/j.jclepro.2022.134737
- Nam, V.Q, & DTN Huy (2021). Solutions to Promote Startup for the Youth in Minoritty and Moutainous Region of Thai Nguyen Province-Vietnam. *Journal of Contemporary Issues in Business and Government*, 27 (3). <u>https://doi.org/10.47750/cibg.2021.27.03.260</u>
- Pandav Kiran Maroti, Sanjeevikumar Padmanaban, Mahajan Sagar Bhaskar, Ramachandaramurthy, V. K., & Frede Blaabjerg. (2022). The state-of-the-art of power electronics converters configurations in electric vehicle technologies. *Power Electronic Devices and Components*, 1, 100001. <u>https://doi.org/10.1016/j.pedc.2021.100001</u>
- Pham Van Tuan, Phuong, T., Linh, Tran Thi Le, & Nguyen Thuy Linh. (2022). Factors Influencing Purchasing Intention Toward Electric Vehicle in Vietnam. *Journal of Social Commerce*, 2(2), 82–99. <u>https://doi.org/10.56209/jommerce.v2i2.30</u>
- Pranav, R. B. Yuvraj, S. Razia (2013). Assessment of consumer buying behavior toward electric scooters in Punjab. *International Journal of Research in Commerce and Management* 4, 7-15.
- Rezvani, Z., Jansson, J., & Bodin, J. (2015). Advances in consumer electric vehicle adoption research: A review and research agenda. *Transportation Research Part D: Transport and Environment*, 34, 122–136. <u>https://doi.org/10.1016/j.trd.2014.10.010</u>
- Rimkeviciene, J., Hawgood, J., O'Gorman, J., & De Leo, D. (2017). Construct Validity of the Acquired Capability for Suicide Scale: Factor Structure, Convergent and Discriminant Validity. *Journal of Psychopathology and Behavioral Assessment, 39*, 291–302. <u>https://doi.org/10.1007/s10862-016-9576-4</u>
- Toha, S.F. et al. (2013). Artificial Intelligence Lithium Ion Modelling for Efficient Energy Optimisation in Electric Vehicle. *Energy*, ISSN: 1038 7212.
- Sadavarte, B., & Joshi, S. R. (2020). A Study on Electric Motorbikes: Paradigm Shift in Indian Auto Industry. *Quest Journal of Management, 11*(1), 44-55.
- Sang, Y.-N., & Hussain Ali Bekhet. (2015). Modelling electric vehicle usage intentions: an empirical study in Malaysia. *Journal of Cleaner Production, 92*, 75–83. https://doi.org/10.1016/j.jclepro.2014.12.045
- Schiffman, L.G., Kanuk, LL. (2007). Consumer Behaviour, 9thed. Prentice-Hall Inc, NJ.
- Schuitema, G., Anable, J., Skippon, S., & Kinnear, N. (2013). The role of instrumental, hedonic and symbolic attributes in the intention to adopt electric vehicles. *Transportation Research Part A: Policy and Practice, 48*, 39–49. <u>https://doi.org/10.1016/j.tra.2012.10.004</u>

- Shakeel, U. (2022). Electric vehicle development in Pakistan: Predicting consumer purchase intention. *Cleaner and Responsible Consumption, 5*, 100065. <u>https://doi.org/10.1016/j.clrc.2022.100065</u>
- She, Z.-Y., Sun, Q., Ma, J.-J., & Xie, B.-C. (2017). What are the barriers to widespread adoption of battery electric vehicles? A survey of public perception in Tianjin, China. *Transport Policy*, 56, 29–40. <u>https://doi.org/10.1016/j.tranpol.2017.03.001</u>
- Sheetal, S., & Abhishek, S. (2012). Consumer Behavior towards Two-Wheeler Bikes-A Comparative Study of Rural and Urban Consumers of Jodhpur District of Rajasthan, India. Research Paper, Global Research Analysis, 1, 91-92.
- Sierzchula, W., Bakker, S., Maat, K., & Van Wee, B. (2014). The influence of financial incentives and other socio-economic factors on electric vehicle adoption. *Energy policy*, 68, 183-194. <u>https://doi.org/10.1016/j.enpol.2014.01.043</u>
- Silva, P. (2015). Davis' Technology Acceptance Model (TAM) (1989). Advances in Knowledge Acquisition, Transfer and Management Book Series, 205–219. <u>https://doi.org/10.4018/978-1-4666-8156-9.ch013</u>
- Siriporn Ruensumruay, Woraratana Pattaraprakorn, Vivat Chutiprapat, & Pornrapeepat Bhasaputra. (2016). The study on the effect of electric motorcycle to energy consumption in Thailand. https://doi.org/10.1109/ecticon.2016.7561407
- Spence, M., Stancu, V., Elliott, C. T., & Dean, M. (2018). Exploring consumer purchase intentions towards traceable minced beef and beef steak using the theory of planned behavior. *Food Control*, 91, 138–147. <u>https://doi.org/10.1016/j.foodcont.2018.03.035</u>
- Sudarsan Jayasingh, T. Girija, & Sivakumar, A. (2021). Factors Influencing Consumers' Purchase Intention towards Electric Two-Wheelers. Sustainability, 13(22), 12851. <u>https://doi.org/10.3390/su132212851</u>
- Sudmant, A., Kalisa, E., & Bower, J. (2020). Ideas for growth The impact of scaling up electric motorbikes in Rwanda.
- Suharno dan Sutarno, Yudi. (2010). Marketing In Practice. Yogjakarta: Graha Ilmu.
- Sung, K.-S., Yi, Y. G., & Shin, H.-I. (2019). Reliability and validity of knee extensor strength measurements using a portable dynamometer anchoring system in a supine position. BMC musculoskeletal disorders, 20(1), 1-8. https://doi.org/10.1186/s12891-019-2703-0
- Trinh Thu Thuy, & Pham Thi Thanh Hong (2019). Attitude to and Usage Intention of High School Students Toward Electric Two-Wheeled Vehicles in Hanoi City. VNU Journal of Economics and Business, 35(2).
- Wang, C., Nguyen Van Thanh, & Su, C.-C. (2019). The Study of a Multicriteria Decision Making Model for Wave Power Plant Location Selection in Vietnam. *Processes*, 7(10), 650. <u>https://doi.org/10.3390/pr7100650</u>
- Wang, N., & Liu, Y. (2015). Key factors influencing consumers' willingness to purchase electric vehicles in China. *Business, Economics, Environmental Science*.
- Wang, Y. A., & Rhemtulla, M. (2021). Power analysis for parameter estimation in structural equation modeling: A discussion and tutorial. Advances in Methods and Practices in Psychological Science, 4(1). <u>https://doi.org/10.1177/2515245920918253</u>
- Ye, F., Kang, W., Li, L., & Wang, Z. (2021). Why do consumers choose to buy electric vehicles? A paired data analysis of purchase intention configurations. *Transportation Research Part A: Policy and Practice*, 147, 14–27. <u>https://doi.org/10.1016/j.tra.2021.02.014</u>
- Yi Chang Chiu, & Gwo-Hshiung Tzeng. (1999). The market acceptance of electric motorcycles in Taiwan experience through a stated preference analysis. *Transportation Research Part D: Transport and Environment, 4(2),* 127–146. <u>https://doi.org/10.1016/s1361-9209(99)00001-2</u>
- Yu, W., Chavez, R., Feng, M., and Wiengarten, F.(2014). Integrated green supply chain management and operational performance. *Supply Chain Management*, 19(5/6), 683-696. <u>https://doi.org/10.1108/SCM-07-2013-0225</u>

- Yuniaristanto, Y., Dela Utami, M. W., Sutopo, W., & Hisjam, M. (2022). Investigating Key Factors Influencing Purchase Intention of Electric Motorcycle in Indonesia. *Transactions on Transport Sciences*. <u>https://doi.org/10.5507/tots.2022.002</u>
- Zhang, X., Wang, K., Hao, Y., Fan, J.-L., & Wei, Y. (2013). The impact of government policy on preference for NEVs: The evidence from China. *Energy Policy*, 61, 382–393. https://doi.org/10.1016/j.enpol.2013.06.114