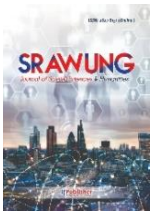

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Determinants of Electric Vehicle Purchase Intention among Cambodian Generation Z: An Integrated TAM–TPB Model

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ABSTRACT

As Generation Z (Gen Z) becomes an increasingly influential consumer segment, understanding their electric vehicle purchase intention is essential for businesses targeting this digitally native and environmentally conscious demographic. Although previous studies have applied the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB) to examine electric vehicle purchase intention, the two theories have been examined separately, with limited integrated SEM-based evidence in the Cambodian context. This study addresses the empirical research gap by integrating the TAM and the TPB into a cohesive framework to predict electric vehicle purchase intention among Cambodian Gen Z university students. Using a quantitative method, data were collected from 300 students across four faculties at BELTEI International University through structured questionnaires and analyzed with SPSS and AMOS. Exploratory factor analysis and confirmatory factor analysis were conducted to assess the factor structure and validity of the measurement model, while structural equation modeling was employed to examine the hypothesized relationships among constructs. The findings reveal that perceived ease of use significantly influences perceived usefulness, explaining 70% of its variance. Furthermore, perceived ease of use and perceived usefulness positively influence attitudes toward electric vehicle purchase, accounting for 68% of the variance in attitude. Finally, perceived ease of use, perceived usefulness, attitude, subjective norm, and perceived behavioral control significantly predict electric vehicle purchase intention, jointly explaining 79% of its variance. These results extend the TAM–TPB literature in a developing country context and offer practical insights for businesses and policymakers to promote electric vehicle adoption among Gen Z. Overall, future research may validate the model across broader populations and geographic settings.

Keywords: *Cambodia, Electric Vehicle, Generation Z (Gen Z), Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB)*

INTRODUCTION

Electric vehicles (EVs) are transforming the automotive industry through advances in manufacturing technology and sustainable transportation (Rehman et al., 2024; Yamini et al., 2025). EV adoption has increased rapidly worldwide, with growing momentum across ASEAN, particularly in Thailand and Indonesia (Fesli & Ozdemir, 2024; Direkudomsak, 2023), while Cambodia has also experienced a substantial rise in EV registrations (Ministry of Public Works and Transport [MPWT], 2024; Chea, 2026). In Cambodia, EV registrations increased from over 600 vehicles in 2023 to 14,534 by February 2026, prompting the Royal Government to introduce the National Policy on EV Development (2024–2030) to promote investment, expand charging infrastructure, and accelerate EV adoption (Chea, 2026; MPWT, 2024). EVs offer technological, economic, environmental, and health benefits, including improved functionality, lower operating costs, reduced emissions, and improved air quality (Fesli & Ozdemir, 2024; Zaino et al., 2024; Carey, 2023; Zhu et al., 2023). Consequently, increasing research has examined the factors influencing EV purchase intention across diverse contexts (Yeğin & Ikram, 2022; Buhmann et al., 2024; Bektaş & Akyıldız Alçura, 2024; Sun & Lee, 2024).

Despite the growing development of EV technology and supportive policies, consumer acceptance remains a key challenge, as EV adoption decisions are influenced by both technological perceptions and socio-psychological factors. Accordingly, the Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) provide complementary perspectives for understanding EV purchase intention. TAM studies show that perceived ease of use (PEOU) and perceived usefulness (PU) positively influence EV purchase intention, while TPB studies confirm that attitude (ATT), subjective norm (SN), and perceived behavioral control (PBC) are significant predictors (Bektaş & Akyıldız Alçura, 2024; Sun & Lee, 2024; Yeğin & Ikram, 2022). However, most studies examine TAM and TPB separately, with limited evidence among Gen Z consumers and in developing countries such as Cambodia. Therefore, this study integrates TAM and TPB to examine EV purchase intention among Cambodian Gen Z university students by investigating the effects of PEOU on PU, PEOU and PU on ATT, and the effects of PEOU, PU, ATT, SN, and PBC on EV purchase intention. The findings provide insights for policymakers to promote EV adoption through improved infrastructure, affordability, and usability.

LITERATURE REVIEW

Overview of Electric Vehicles

According to the IEA (2023), EVs accounted for approximately 20% of global vehicle sales in 2023, reflecting their growing importance in sustainable transportation. EVs include Hybrid Electric Vehicles, Plug-in Hybrid Electric Vehicles, and Battery Electric Vehicles (Bektaş & Akyıldız Alçura, 2024), while

Ghosh (2020) also includes electric cars, motorbikes, bicycles, and other battery-powered transport. Their environmental and economic benefits, such as lower emissions, improved air quality, government incentives, and reduced operating costs, have increased consumer interest, particularly among Generation Z (Bektaş & Akyıldız Alçura, 2024; Wulandari, 2023; Messias et al., 2025; Mitić & Vehapi, 2021). Previous studies have applied the Technology Acceptance Model (Davis, 1989) and the Theory of Planned Behavior (Ajzen, 1991) to explain Generation Z's EV purchase intention in countries including the USA, China, Taiwan, Indonesia, Australia, India, Malaysia, Romania, and Vietnam (Pamidimukkala et al., 2024, 2025; Catană et al., 2025; Wang et al., 2022; Tsai et al., 2025; Salim, 2024; Utari & Yasa, 2024; Stork, 2022; Mishra et al., 2025; Messias et al., 2025; Thwe et al., 2025; Tran et al., 2026).

These studies consistently identify PEOU, PU, ATT, SN, and PBS as significant determinants of EV purchase intention (Norng, 2022; Hiew et al., 2022). However, research on EV purchase intention in Cambodia remains limited. Existing studies mainly focus on cost, affordability, charging time, convenience, incentives, and product availability (Keo, 2023; Jung et al., 2025), while most apply TAM and TPB separately, limiting understanding of their combined explanatory power. Therefore, this study integrates TAM and TPB to examine EV purchase intention among Cambodian Generation Z university students by investigating the effects of PEOU on PU, PEOU and PU on ATT, and the direct effects of PEOU, PU, ATT, SN, and PBC on EV purchase intention. The study contributes by integrating TAM and TPB and providing empirical evidence from the Cambodian context.

Theoretical Background of TAM and TPB

This study theoretically integrates the TAM (Davis, 1989) and the TPB (Ajzen, 1991) to explain EV purchase intention. TAM proposes that PU and PEOU are the primary cognitive determinants of technology adoption (Davis, 1989). PU refers to the extent to which a technology enhances performance, whereas PEOU reflects the degree to which it is easy to use (Chawla et al., 2023). TAM further posits that PEOU positively influences PU, and both constructs shape ATT toward technology adoption (Chawla et al., 2023; Lee et al., 2025; Chen et al., 2025). TPB, which extends the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Ajzen, 1991), explains behavioral intention through ATT, SN, and PBC (Ajzen, 1991; Kufaine, 2024). Collectively, TAM and TPB provide a comprehensive framework for explaining both cognitive and socio-psychological determinants of behavioral intention. The integrated TAM–TPB model has been widely applied in e-wallet adoption in Vietnam (Nguyen & Ao, 2020), mobile payment in China (Zhang & Poon, 2021), and online service adoption in Italy (Troise et al., 2021) and Malaysia (Poon & Tung, 2024). Accordingly, this study applies the integrated framework to examine EV purchase intention among Cambodian Gen Z university students by incorporating PU, PEOU, ATT, SN, and PBC.

Hypothesis Development

1. Perceived Ease of Use and Perceived Usefulness

   According to Luo et al. (2024), perceived ease of use (PEOU) refers to an individual's belief that a technology can be used with minimal effort and is characterized by ease of learning, clarity, and user-friendliness (Ayanwale & Ndlovu, 2024). In the EV context, PEOU enhances perceived usefulness (PU) by improving efficiency, simplifying charging and maintenance, and facilitating access to charging infrastructure (Ayanwale & Molefi, 2024; Saleh et al., 2024). Previous studies consistently confirmed that PEOU positively influences PU in EV purchase intention (Bektaş et al., 2024; Pamidimukkala et al., 2024; Saleh et al., 2025). Therefore, the following hypothesis is proposed:

   H1: Perceived ease of use has a significant positive effect on perceived usefulness toward electric vehicle purchase intention.

2. Perceived Ease of Use and Attitude

   According to Davis (1989), PEOU reflects the extent to which an individual believes that using a technology is effortless and easy to operate. Technologies perceived as user-friendly tend to generate more favorable evaluations, making PEOU an important antecedent of attitude (Hutabarat & Nusraningrum, 2025). Consistent with this view, previous studies found that PEOU positively influences attitude toward EV purchase intention (Rachmawati & Rahardi, 2023; Salim, 2024; Christianto & Lahindah, 2025). Therefore, the following hypothesis is proposed:

   H2: Perceived ease of use has a significant positive effect on attitude toward electric vehicle purchase intention.

3. Perceived Usefulness and Attitude

   PU refers to the extent to which individuals believe that using a technology provides benefits and enhances performance or quality of life (Vafaei-Zadeh et al., 2022; Albayati, 2024). Because consumers tend to evaluate technologies based on their perceived benefits, PU plays an important role in shaping favorable attitudes toward adoption (Kurniawan & Nugroho, 2021; Mican & Sitar-Tăut, 2023). Previous studies consistently found that PU positively influences attitude toward EV purchase intention (Salim, 2024; Utari & Yasa, 2024; Catană et al., 2025). Therefore, the following hypothesis is proposed:

   H3: Perceived usefulness has a significant positive effect on attitude toward electric vehicle purchase intention.

4. Perceived Ease of Use and Electric Vehicle Purchase Intention

   Electric vehicle purchase intention (EVPI) refers to an individual's intention to purchase an EV based on personal needs, preferences, and

available information (Arviya & Ramli, 2024; Hutabarat & Nusraningrum, 2025). In the EV context, perceived ease of use (PEOU) enhances purchase intention by making EVs easier to operate and supported by accessible charging infrastructure (Jaiswal et al., 2022). Previous studies consistently reported that PEOU has a significant positive effect on EV purchase intention (Sun & Lee, 2024; Bektaş et al., 2024; Christianto & Lahindah, 2025). Therefore, the following hypothesis is proposed:

H4: Perceived ease of use has a significant positive influence on electric vehicle purchase intention.

5. Perceived Usefulness and Electric Vehicle Purchase Intention

PU is considered a key determinant of EV purchase intention because consumers are more likely to adopt EVs when they perceive benefits such as environmental friendliness, lower operating costs, and cost savings (Kamal et al., 2020; Wang et al., 2022; Utari & Yasa, 2024). Similar findings have been reported in Thailand and Indonesia (Worasatepongsa & Prakthayanon, 2022; Utari & Yasa, 2024). Consistent with these findings, previous studies confirmed that PU has a significant positive effect on EV purchase intention (Belmonte et al., 2024; Kurniawan & Samryn, 2024; Tsai et al., 2025). Therefore, the following hypothesis is proposed:

H5: Perceived usefulness has a significant positive influence on electric vehicle purchase intention.

6. Attitude and Electric Vehicle Purchase Intention

According to Davis (1989), behavioral intention is influenced by individuals' attitudes toward a technology. In the EV context, consumers with more favorable attitudes are more likely to develop stronger purchase intentions. Previous studies consistently demonstrated that attitude has a significant positive effect on EV purchase intention across different contexts (Jaiswal et al., 2021; Wang et al., 2022; Ali & Naushad, 2022; Mohd Noor et al., 2025; Ng et al., 2025; Purwanto et al., 2025). Therefore, the following hypothesis is proposed:

H6: Attitude has a significant positive influence on electric vehicle purchase intention.

7. Subjective Norm and Electric Vehicle Purchase Intention

According to Ajzen (1991), subjective norm (SN) refers to the perceived social pressure to perform or avoid a behavior. In the EV context, encouragement from family, friends, and significant others can strengthen purchase intention by reducing concerns about price and charging infrastructure (Mizana & Albari, 2024; Phang, 2024; Bi & Gu, 2024). Previous studies consistently found that SN positively influences

EV purchase intention (Ji et al., 2024; Nguyen et al., 2025; Yudistira & Aruan, 2025). Therefore, the following hypothesis is proposed:

H7: Subjective norm has a significant positive influence on electric vehicle purchase intention.

8. Perceived Behavioral Control and Electric Vehicle Purchase Intention

According to Ajzen (1991), perceived behavioral control (PBC) reflects an individual's perceived ease or difficulty in performing a behavior. In the EV context, factors such as repair accessibility, maintenance support, affordability, and the ability to overcome ownership barriers enhance consumers' perceived control and purchase intention (Yeğin & Ikram, 2022; Buhmann et al., 2024; Messias et al., 2025). Previous studies consistently found that PBC positively influences EV purchase intention among Gen Z consumers (Ambarwati et al., 2024; Ramadan et al., 2024; Sharma et al., 2024; Darma & Padmantyo, 2025). Therefore, the following hypothesis is proposed:

H8: Perceived behavioral control has a significant positive influence on electric vehicle purchase intention.

Conceptual Framework

Based on the literature, this study proposes an integrated TAM–TPB framework to examine EV purchase intention among Cambodian Gen Z university students. The framework integrates PEOU and PU from TAM with ATT, SN, and PBC from TPB, examining the effects of PEOU on PU and ATT, as well as the direct effects of PEOU, PU, ATT, SN, and PBC on EV purchase intention. The proposed framework is presented in Figure 1.

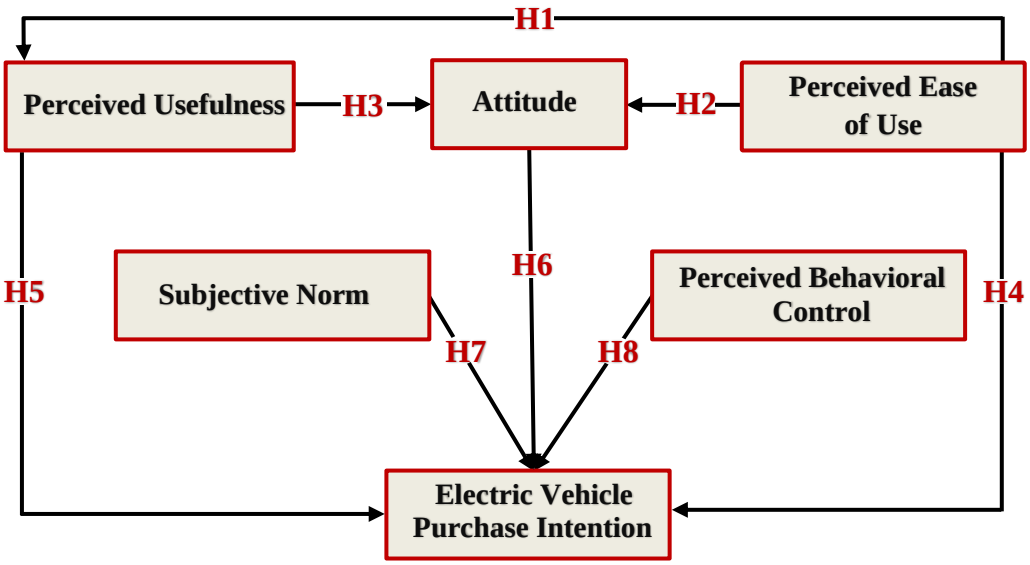

Figure 1 Conceptual Framework
Source: Adapted from TAM (Davis, 1989) and TPB (Ajzen, 1991)

RESEARCH METHODOLOGY

This study employed a quantitative correlational design to examine the relationships between five predictors and EV purchase intention among Generation Z consumers. Because the target population size was unknown, the minimum sample size was calculated as $n = p(1 - p)(Z_{\alpha/2} / B)$ (Bowerman et al., 2019), yielding 196 respondents ($p = 0.5$, $Z_{\alpha/2} = 1.96$, $B = 0.07$). As structural equation modeling (SEM) requires a larger sample for robust estimation, 300 Gen Z undergraduate students were recruited through convenience sampling (Hair et al., 2019; Scholtz, 2021) from the Faculties of Business Administration, Finance and Banking, Law, and Information Technology at Campuses 1 and 2 of BELTEI International University. Participants were required to have basic awareness of EVs. However, the use of convenience sampling and the predominance of female respondents (76.3%) may limit the generalizability of the findings. The structured questionnaire comprised a demographic section and measurement items adapted from prior studies, summarized in Table 1. The instrument was translated into Khmer and back-translated into English by bilingual experts, with minor revisions made after pilot testing; a bilingual version was used for data collection. Items were rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), interpreted as: 1.00–1.79 (strongly disagree), 1.81–2.59 (disagree), 2.60–3.39 (moderate), 3.40–4.19 (agree), 4.20–5.00 (strongly agree) (Armstrong, 1987).

Table 1 Summary of Construct Measurement

Constructs	Items	Sources
Perceived Ease of Use	PEOU1–PEOU5	Sun and Lee (2024); Bektaş and Akyıldız Alçura (2024).
Perceived Usefulness	PU1–PU5	Sun and Lee (2024); Salim (2024)
Attitude	ATT1–ATT5	Buhmann et al. (2024); Handarujati (2024)
Subjective Norm	SN1–SN5	Solekah et al. (2023); Thwe et al. (2025)
Perceived Behavioral Control	PBC1–PBC5	Thwe et al. (2025); Buhmann et al. (2024); Solekah et al. (2023)
Electric Vehicle Purchase Intention	EVPI1–EVPI6	Al-Amin et al. (2016); Solekah et al. (2023); Dutta (2025); Buhmann et al. (2024)

Source: Researchers' Design (2026)

Data were collected in two phases. A pilot test (n = 100) was conducted from May 15 to 17, 2026, to assess item clarity and perform preliminary exploratory factor analysis for item purification. The main survey (n = 300) was conducted from May 19 to 27, 2026, on both campuses via Google Forms shared through Telegram, with participation voluntary and based on informed consent, and confidentiality ensured. Data were analyzed using confirmatory factor analysis and SEM to validate the measurement model and test the hypothesized relationships. Analysis was conducted using Excel 2015 for data screening and cleaning, SPSS 27 for

descriptive statistics, reliability analysis, and exploratory factor analysis (EFA), and AMOS 23 for confirmatory factor analysis and SEM. EFA used principal component analysis with varimax rotation (Groth et al., 2013; Phan et al., 2025), with sampling adequacy verified via the Kaiser–Meyer–Olkin measure and Bartlett's test of sphericity (Hutcheson & Sofroniou, 1999). Items were retained based on eigenvalues > 1, loadings ≥ 0.60, cross-loadings < 0.40, and cumulative variance > 60% (Hair et al., 2014, 2019; Kline, 2005). Internal consistency was assessed via Cronbach's alpha (≥ 0.70) and average inter-item correlation (Bujang et al., 2024). CFA and SEM were conducted in AMOS 23 to validate the measurement model and test structural relationships, with model adequacy evaluated using CMIN/DF, RMSEA, NFI, CFI, GFI, AGFI, TLI, IFI, and RFI (Kline, 2005; Schermelleh-Engel et al., 2003), per the thresholds in Table 2. Modification indices were applied only where theoretically justified.

Table 2 Measurement Model Fit Indices

Model Fit Indices	Acceptable Fit	Good Fit
Chi-square divided by degrees of freedom (χ2 /df)	2< χ2≤ 3	0≤χ2/df≤2
Root Mean Square Error of Approximation (RMSEA)	0.05<RMSEA≤0.08	0≤RMSEA≤0.05
Normed Fit Index (NFI)	0.90≤NFI<0.95	0.95≤NFI≤1.00
Comparative Fit Index (CFI)	0.95≤CFI<0.97	0.97≤CFI≤1.00
Goodness -of-Fit Index (GFI)	0.90≤GFI<0.95	0.95≤GFI≤1.00
Adjusted Good-of-Fit Index (AGFI)	0.85≤AGFI<0.90	0.90≤AGFI≤1.00
Tucker-Lewis Index (TLI)	0.90≤TLI<0.95	0.95≤TLI≤1.00
Incremental Fit Index (IFI)	0.90≤IFI<0.95	0.95≤IFI≤1.00
Relative Fit Index (RFI)	0.90≤RFI<0.95	0.95≤RFI≤1.00

Source: Researchers' Design (2026)

Convergent validity was assessed via average variance extracted (AVE ≥ 0.50) and composite reliability (CR ≥ 0.70) (Henseler et al., 2015), computed as:

$$\mathbf{AVE}=\frac{\sum_{i=1}^{n}\lambda_i^2}{n} \quad \textbf{(a)} \qquad \mathbf{CR}=\frac{(\sum_{i=1}^{n}\lambda_i)^2}{(\sum_{i=1}^{n}\lambda_i)^2+(\sum_{i=1}^{n}\delta_i)} \quad \textbf{(b)}$$

where λ is the standardized factor loading, i is the number of items, and δ is the error variance ($\delta = 1 - \lambda^2_i$). Loadings above 0.60, with t-values > 1.96 and p < 0.001, were required to confirm convergent validity (Hair et al., 2014). Discriminant validity was assessed via the Fornell–Larcker criterion, confirmed when a construct's √AVE exceeded its correlations with other constructs (Fornell & Larcker, 1981). Pearson correlation analysis examined the strength and direction of relationships among variables (Krehbiel, 2004). Common method bias was evaluated using the common latent factor (CLF) technique, comparing CFA models with and without a CLF; a difference of less than 0.20 in standardized loadings

indicated bias was not a serious concern (Afthanorhan et al., 2021; Podsakoff et al., 2003). Finally, SEM was used to examine the hypothesized relationships, including the effects of PEOU on PU, PEOU and PU on ATT, and PEOU, PU, ATT, SN, and PBC on EV purchase intention, reporting standardized path coefficients.

RESULTS AND DISCUSSION

Respondent Demographics

Table 3 summarizes the demographic characteristics of the 300 participants. Most respondents were female and aged 18–20 years. The Faculty of Business Administration contributed the largest proportion of participants, followed by Law and Finance and Banking, while Information Technology had the smallest representation. Motorcycles were the primary mode of transportation, followed by bicycles, walking, and ride-hailing services, with a few respondents using cars. Most participants also rated environmental concern as very important, followed by important or moderately important, whereas only a small proportion rarely considered it.

Table 3 Demographic Characteristics of the Respondents

Demographic	Description (n = 300)	Frequency	Percentage (%)
Gender	Male	71	23.7
	Female	229	76.3
Age Gap	18 – 20 years old	244	81.3
	21 – 23 years old	49	16.3
	24 – 26 years old	5	1.7
	27 – 29 years old	2	0.7
Faculty	Faculty of Business Administration	115	38.3
	Faculty of Finance and Banking	60	20.0
	Faculty of Information Technology	17	5.7
	Faculty of Law	108	36.0
Primary Mode of Transportation	Motorcycle	262	87.3
	Car	9	3.0
	Public transportation	2	0.7
	Ride-hailing services (Grab, PassApp, etc.)	8	2.7
Environmental Concern	Very important	164	54.7
	Important	95	31.7
	Neutral	31	10.3
	Not very important	6	2.0
	Never	4	1.3

Source: Processed Data by Researchers (2026)

Descriptive Statistics

According to Table 4, all constructs recorded mean values ranging from 3.063 to 3.249. The minimum and maximum values of the response scale were 1.00 and 5.00, demonstrating that respondents utilized the full range of the Likert scale. In addition, the standard deviation values (0.979 to 1.069) suggest a moderate level of dispersion, illustrating that respondents' views were not entirely uniform but moderately varied across all constructs.

Table 4 Results of Descriptive Statistics

No	Constructs	Minimum	Maximum	Mean	Standard Deviation	Level of Agreement
1	PEOU	1.00	5.00	3.063	0.998	Moderate
2	PU	1.00	5.00	3.223	1.014	Moderate
3	ATT	1.00	5.00	3.166	0.979	Moderate
4	SN	1.00	5.00	3.111	0.987	Moderate
5	PBC	1.00	5.00	3.229	1.069	Moderate
6	EVPI	1.00	5.00	3.249	1.055	Moderate

Source: Processed Data by Researchers (2026)

Exploratory Factor Analysis

EFA was conducted in the initial phase using a separate dataset, independently collected from the main sample, to identify the latent factor structure and facilitate item refinement. Due to the exploratory purpose of this preliminary phase and the relatively small sample size (n = 100), the EFA results were primarily employed for item screening. The results showed that two items demonstrated factor loadings below the recommended threshold of 0.60, namely PEOU2 (FL = 0.522) and SN4 (FL = 0.561). These items also exhibited cross-loadings above 0.40 and contributed minimally to the total variance explained, indicating conceptual overlap with other factors. Consequently, they were removed to improve construct clarity and strengthen the validity of the refined measurement model. All remaining items met the established criteria, with factor loadings exceeding 0.60, eigenvalues greater than one, and cumulative variance exceeding 60%. The factor loadings are presented in descending order in Table 5.

Table 5 Exploratory Factor Analysis Results

Constructs		Factor Analysis			
		FL	KMO	E	Cu%
Perceived Ease of Use (PEOU)					
PEOU4	I find the features of electric vehicles (EVs) easy to understand.	0.843	0.807	2.534	63.349
PEOU1	I think an EV is easy to operate.	0.789			
PEOU3	I believe it is easy to learn how to charge an EV.	0.779			
PEOU5	I feel comfortable operating an EV.	0.770			

Constructs		Factor Analysis			
		FL	KMO	E	Cu%
PEOU2	I perceived it as easy to do what I want to do with an EV.	0.522			
Perceived Usefulness (PU)					
PU3	EVs can reduce my transportation costs.	0.842	0.849	3.226	64.512
PU1	I think using EVs will improve my life.	0.810			
PU4	EVs are environmentally friendly.	0.799			
PU2	Using EVs is seen to enable my travel efficiency.	0.792			
PU5	The advantages of using an EV outweigh the disadvantages.	0.772			
Attitude (ATT)					
ATT1	I think purchasing an EV is a good concept.	0.871	0.833	3.222	64.442
ATT3	EVs can reduce my transportation costs.	0.844			
ATT2	I think buying an EV is a wise decision for the future.	0.776			
ATT4	I think EVs are over conventional gasoline vehicles.	0.765			
ATT5	I feel positive about the idea of owning an EV.	0.751			
Subjective Norm (SN)					
SN1	People who are important to me think that I should buy an EV in the future.	0.844	0.803	2.633	65.835
SN3	People who are important to me would prefer that I buy an EV rather than a conventional gasoline vehicle.	0.840			
SN2	People who are important to me would approve of me buying an EV.	0.815			
SN5	People who are important to me believe that EVs support sustainable transportation.	0.742			
SN4	Many people around me are considering purchasing an EV.	0.561			
Perceived Behavioral Control (PBC)					
PBC2	I will have the ability to buy an EV in the future.	0.879	0.824	3.284	65.690
PBC4	I can find where to buy an EV if I wanted to.	0.866			
PBC3	I am confident that if I want to, I will definitely be able to choose an EV for my next purchase.	0.784			
PBC5	For me, buying an EV would be easy if I wanted to.	0.777			
PBC1	I can largely decide whether or not to buy an EV.	0.738			
Electric Vehicle Purchase Intention (EVPI)					
EVPI1	I think I will own an EV in the future.	0.865	0.866	4.047	67.452
EVPI6	I am confident that if I want, I can use an EV in the future.	0.862			

Constructs		Factor Analysis			
		FL	KMO	E	Cu%
EVPI3	I will consider buying an eco-friendly EV.	0.844			
EVPI4	I will buy an EV if it is of higher quality than conventional vehicles.	0.799			
EVPI2	I plan to buy an EV soon.	0.786			
EVPI5	I will recommend using EVs to others.	0.767			

Source: Processed Data by Researchers (2026)

Note: Recommended thresholds: FL ≥ 0.60; KMO ≥ 0.60; E > 1; and Cu% > 60%.

Reliability Analysis

Table 6 indicates that all constructs demonstrated satisfactory reliability, with Cronbach's alpha (α) values ranging from 0.807 to 0.903. In addition, the AIIC values ranged from 0.510 to 0.608, indicating adequate internal consistency and meeting the recommended threshold criteria. These reliability results were confirmed after EFA, in which PEOU2 and SN4 were removed. Overall, the findings indicate that the measurement items consistently captured their intended constructs, supporting the reliability of the measurement model for subsequent analyses.

Table 6 Reliability Analysis of Measurement Items (n = 100)

No	Constructs	Items	Cronbach's α	Reliability Level	AIIC
1	PEOU	4	0.807	Good	0.510
2	PU	5	0.862	Good	0.556
3	ATT	5	0.861	Good	0.553
4	SN	4	0.826	Good	0.543
5	PBC	5	0.868	Good	0.568
6	EVPI	6	0.903	Excellent	0.608

Source: Processed Data by Researchers (2026)

Note. Cronbach's α: excellent (> 0.90); good (0.80–0.89); acceptable (0.70–0.79); questionable (0.60–0.69); poor (0.50–0.59); and unacceptable (< 0.50); AIIC: 0.30 ≤ AIIC ≤ 0.70.

Confirmatory Factor Analysis

CFA was performed using the main sample (n = 300) to validate the measurement model before structural analysis. This procedure ensured that the factor structure was stable before hypothesis testing. The CFA assessed both first-order and second-order factor models. In the first-order model, all items loaded significantly on their respective constructs. Standardized loadings exceeded the recommended threshold of 0.60, indicating acceptable measurement quality. These results confirmed the adequacy of the initial measurement structure. In the second-order model, all higher-order factor loadings also exceeded 0.60.

However, several items (PU1, PU2, ATT1, ATT3, SN1, SN4, PBC2, PBC3, EVPI1, EVPI3, and PEOU3) were removed. The removal was based on cross-

loadings, high modification indices, and conceptual overlap among indicators. These issues suggested redundancy and limited discriminant clarity. Deleting these items improved construct validity and theoretical distinctiveness. The final measurement model demonstrated good fit with $\chi^2/df = 1.782$ and RMSEA = 0.051. Incremental fit indices also indicated strong model adequacy, including CFI = 0.980, TLI = 0.974, IFI = 0.980, NFI = 0.957, and RFI = 0.943. Absolute fit indices were also acceptable, with GFI = 0.931 and AGFI = 0.899. Overall, the CFA results confirmed that the measurement model was valid, reliable, and suitable for subsequent SEM analysis.

Table 7 Model Fit Indices for CFA

Models	**χ2**	**df**	**p**	**χ2/df**	**RMSEA**	**NFI**
Results	208.475	117	.000	1.782	0.051	0.957
Criteria				Good Fit	Acceptable Fit	Good Fit
Models	**CFI**	**GFI**	**AGFI**	**TLI**	**IFI**	**RFI**
Results	0.980	0.931	0.899	0.974	0.980	0.943
Criteria	Good Fit	Acceptable Fit	Acceptable Fit	Good Fit	Good Fit	Acceptable Fit

Source: Processed Data by Researchers (2026)

Convergent Validity and Composite Reliability

Table 8 shows strong convergent validity and reliability of the measurement model. Composite reliability ranged from 0.865 to 0.891, while AVE values exceeded 0.50 (lowest = 0.682), confirming adequate convergent validity. All standardized loadings (0.795–0.904) and t-values (14.857–19.733, $p < 0.001$) were significant, supporting indicator validity. Cronbach's alpha values were above 0.70, indicating strong internal consistency. Overall, the results confirm that the measurement model meets established reliability and validity standards.

Table 8 Confirmatory Factor Analysis Results

Constructs	**Items**	**λ**	**t-value**	**p-value**	**CR**	**AVE**	**α**
PEOU	PEOU5	0.814	–	–	0.856	0.682	0.849
	PEOU3	0.833	14.857	***			
	PEOU1	0.830	16.189	***			
PU	PU4	0.809	–	–	0.871	0.693	0.866
	PU3	0.860	17.193	***			
	PU2	0.828	16.340	***			
ATT	ATT2	0.862	–	–	0.880	0.710	0.878
	ATT5	0.796	17.071	***			
	ATT1	0.867	19.733	***			
SN	SN2	0.904	–	–	0.878	0.706	0.878
	SN5	0.795	18.002	***			
	SN1	0.818	19.008	***			
PBC	PBC1	0.869	–	–	0.890	0.723	0.887

Constructs	Items	λ	t-value	p-value	CR	AVE	α
	PBC4	0.830	18.293	***			
	PBC2	0.852	19.129	***			
EVPI	EVPI1	0.868	–	–	0.891	0.731	0.891
	EVPI3	0.847	19.226	***			
	EVPI2	0.850	19.291	***			

Source: Processed Data by Researchers (2026)

Discriminant Validity and Correlation Analysis

According to Table 9, all √AVE values (0.826–0.855) exceeded their corresponding inter-construct correlations, confirming satisfactory discriminant validity. Correlation analysis also showed significant positive relationships among constructs ($r = 0.725–0.818$, $p < 0.01$), with the highest correlation between ATT and SN ($r = 0.818$), but still below the 0.85 threshold. Overall, the results indicate that the constructs are distinct yet meaningfully related.

Table 9 Discriminant Validity (Fornell–Larcker Criterion) and Correlation Matrix

Constructs	PEOU	PU	ATT	SN	PBC	EVPI
PEOU	0.826					
PU	0.795**	0.833				
ATT	0.777**	0.761**	0.843			
SN	0.760**	0.725**	0.818**	0.840		
PBC	0.739**	0.729**	0.770**	0.742**	0.850	
EVPI	0.761**	0.765**	0.779**	0.764**	0.797**	0.855

Source: Processed Data by Researchers (2026)

Common Method Bias

Given the use of a single-source, self-reported questionnaire administered at one-time point, common method bias (CMB) was assessed using the common latent factor (CLF) technique within the confirmatory factor analysis framework. Several items showed standardized loading differences exceeding the recommended 0.20 threshold (e.g., PEOU1 decreased from 0.83 to 0.44), indicating that CMB cannot be entirely ruled out. Therefore, the findings should be interpreted with appropriate caution.

Structural Equation Modeling Results

According to Figure 2, the SEM results provide strong support for the proposed model. Perceived ease of use exerted a strong positive effect on perceived usefulness ($\beta = 0.835$, C.R. = 11.673, $p < 0.001$), indicating that Cambodian Gen Z consumers are more likely to perceive electric vehicles as useful when they are easy to understand and operate. Furthermore, both perceived ease of use ($\beta = 0.278$, C.R. = 2.168, $p < 0.05$) and perceived usefulness ($\beta = 0.578$, C.R. = 4.633, $p < 0.001$) significantly influenced attitude toward electric vehicles, with perceived usefulness

showing a stronger effect, suggesting that functional benefits play a more prominent role than ease of use in shaping attitudes.

In addition, all five predictors significantly and positively influenced electric vehicle purchase intention: perceived ease of use ($\beta = 0.176$, C.R. = 2.811, $p < 0.01$), perceived usefulness ($\beta = 0.245$, C.R. = 2.405, $p < 0.05$), attitude ($\beta = 0.249$, C.R. = 2.811, $p < 0.01$), subjective norm ($\beta = 0.192$, C.R. = 5.100, $p < 0.001$), and perceived behavioral control ($\beta = 0.330$, C.R. = 5.827, $p < 0.001$). Among these, perceived behavioral control emerged as the strongest predictor, highlighting the importance of consumers' perceived resources and control. Overall, the findings confirm that EV purchase intention among Cambodian Gen Z is shaped by both technological perceptions and social–psychological factors, supporting the integrated TAM–TPB framework.

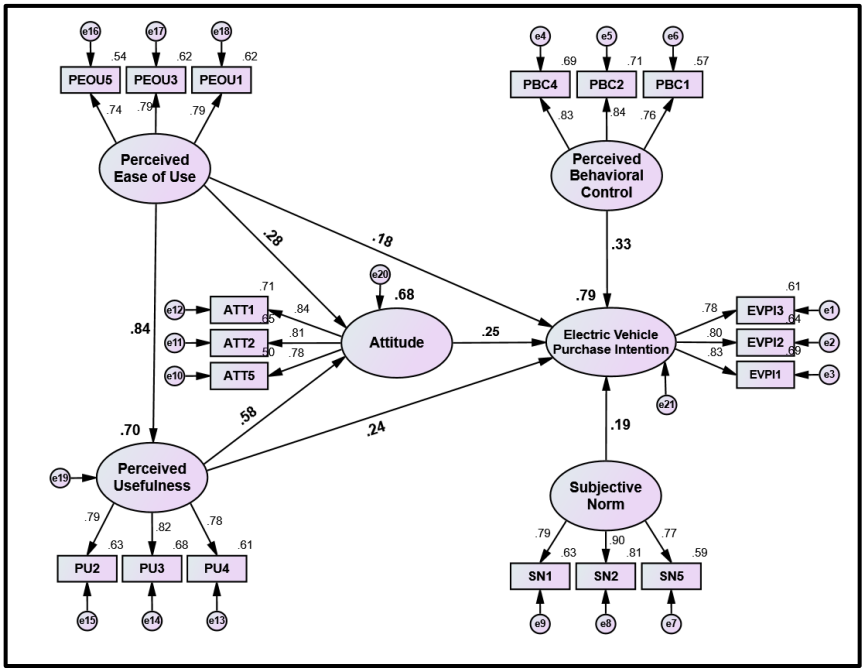

Figure 2 Proposed Structural Equation Model Results
Source: Processed Data by Researchers (2026)

Table 10 presents the standardized path coefficients (β), critical ratios (C.R.), and p-values for all hypotheses (H1–H8), all of which are supported as positive and statistically significant. Perceived ease of use (PEOU) significantly and positively influences perceived usefulness (PU) (H1), while both PEOU (H2) and PU (H3) significantly influence attitudes (ATT) toward electric vehicles, with PEOU showing the strongest effect on PU. Furthermore, PEOU (H4), PU (H5), ATT (H6), SN (H7), and PBC (H8) all significantly and positively influence EV purchase intention, with PBC emerging as the strongest predictor, followed by ATT, PU, SN, and PEOU. Overall, the model explains a substantial proportion of variance in the endogenous constructs. PEOU explains 70% of the variance in PU ($R^2 = .70$), while

PEOU and PU jointly explain 68% of ATT (R^2 = 0.68). In addition, all predictors together account for 79% of EV purchase intention (R^2 = .79), indicating strong explanatory power of the model.

Table 10 Hypothesis Testing Results

Constructs	Hypothesis	Path Relationships	β	C.R	p-value	Results
PEOU	H1	PEOU → PU	0.835	11.673	0.000	Supported
	H2	PEOU → ATT	0.278	2.168	0.030	Supported
PU	H3	PU → ATT	0.578	4.633	0.000	Supported
PEOU	H4	PEOU → EVPI	0.176	2.811	0.005	Supported
PU	H5	PU → EVPI	0.245	2.405	0.016	Supported
ATT	H6	ATT → EVPI	0.249	2.811	0.005	Supported
SN	H7	SN → EVPI	0.192	5.100	0.000	Supported
PBC	H8	PBC → EVPI	0.330	5.827	0.000	Supported

Source: Processed Data by Researchers (2026)

*Note. C.R = Critical Ratio (> 1.96); β = standardized path coefficient; path significance is as follows: * p < 0.05; ** p < 0.01; *** p < 0.001*

The findings indicate that EV purchase intention among Cambodian Gen Z university students is influenced by both technological perceptions and social–psychological determinants. The model explained 70% of the variance in PU, while PEOU and PU collectively accounted for 68% of the variance in ATT toward EV purchase intention. Furthermore, PEOU, PU, ATT, SN, and PBC explained 79% of the variance in EV purchase intention. Among the significant predictors, PBC emerged as the strongest determinant, followed by ATT, PU, SN, and PEOU. These findings suggest that favorable perceptions of EV usefulness and ease of use, together with psychological readiness and social influence, play important roles in shaping purchase intention. The findings further reveal that PEOU significantly influences PU, which subsequently affects EV purchase intention among Cambodian Gen Z university students.

This result aligns with previous TAM studies, indicating that ease of use enhances perceptions of usefulness and indirectly strengthens behavioral intention through PU as a key mechanism. In the Cambodian context, students are more likely to perceive EVs as valuable and beneficial when they are easy to operate, thereby increasing their intention to adopt EVs. Additionally, PEOU and PU significantly influence ATT, with PU demonstrating a stronger effect. This supports prior TAM research and highlights the greater importance of performance-related evaluations compared with ease-related perceptions. Moreover, the results demonstrate that PEOU, PU, ATT, SN, and PBC collectively influence EV purchase intention, with PBC emerging as the strongest predictor, followed by PU, SN, ATT, and PEOU. This finding supports previous TAM and TPB studies and emphasizes the dominant role of perceived control in behavioral intention formation.

In an emerging market context, where practical constraints may influence adoption decisions, perceptions of capability and access to resources, such as affordability and charging availability, are particularly important. Meanwhile, PU remains a significant predictor, suggesting that perceived functional benefits, including efficiency, cost savings, and environmental value, encourage EV purchase intention, while SN reflects the influence of social surroundings. Overall, the findings demonstrate that EV purchase intention among Cambodian Gen Z students is primarily driven by PBC, supported by technological perceptions and social influence. This pattern may reflect the combination of practical limitations and increasing awareness of EV benefits in Cambodia. However, the findings should be interpreted with caution because the study focused on Gen Z university students and may not represent the broader population. Future studies may examine whether these relationships vary across different demographic groups, regions, and socioeconomic contexts.

Implications of the Study

The findings provide important theoretical implications by extending EV adoption research through the integration of the Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) among Cambodian Gen Z university students. The results demonstrate that EV purchase intention is shaped by both technological perceptions and social–psychological factors, with perceived behavioral control emerging as the strongest predictor. This highlights the complementary roles of TAM and TPB, suggesting that technology-related beliefs alone are insufficient to explain EV adoption without considering perceived control and social influence, particularly in developing contexts.

Practically, the findings provide implications for policymakers, EV industry stakeholders, and consumers. Policymakers should focus on improving EV affordability, charging infrastructure, and accessibility to strengthen perceived behavioral control among Gen Z consumers. EV companies should emphasize functional benefits, such as cost savings, efficiency, and environmental advantages, while using social influence strategies to promote positive EV perceptions. For consumers, greater awareness of EV benefits and improved access to supporting resources may enhance adoption intention. Overall, promoting EV adoption requires coordinated efforts in infrastructure development, market communication, and social influence mechanisms.

CONCLUSION

The study primarily investigates determinants of electric vehicle purchase intention among Cambodian Gen Z university students using an integrated Technology Acceptance Model and Theory of Planned Behavior framework. The findings exhibited that the model explains a substantial proportion of variance in perceived usefulness, attitude, and EV purchase intention, indicating strong

explanatory power. In addition, EV purchase intention is incorporated by technological perceptions, including perceived ease of use and perceived usefulness, and social–psychological factors, including attitude, subjective norm, and perceived behavioral control, demonstrating the multifaceted nature of adoption behavior in this context.

Among all significant predictors, perceived behavioral control exerted the strongest determinant of EV purchase intention, followed by perceived usefulness, subjective norm, attitude, and perceived ease of use. The results emphasize that while perceived usefulness and ease of use shape attitudes and intentions, actual perceived control over resources and opportunities plays the most significant role in enabling purchase intention. This suggests that improving affordability, accessibility, and infrastructure support may be essential to enhancing EV adoption among young consumers in Cambodia.

LIMITATION AND FUTURE RESEARCH

This study provides new insights into EV purchase intention among Gen Z by integrating TAM and TPB into a cohesive framework, contributing conceptually, contextually, and methodologically within the Cambodian context. However, several limitations should be acknowledged. First, the study was conducted at a single private university using convenience sampling, with respondents mainly from business administration, law, finance and banking, and information technology disciplines, and a higher proportion of female students, which may limit generalizability. Second, the study relied on self-reported cross-sectional data, which may introduce response bias and restrict causal interpretation, although common method variance was assessed.

Third, the literature foundation mainly included studies published between 2020 and 2025, which may limit the coverage of earlier theoretical developments. Finally, EFA was conducted using a relatively small independent sample, which may affect factor stability. Future research should employ more representative samples, longitudinal or mixed-method designs, and incorporate additional variables to strengthen causal understanding and enhance the explanatory power of the integrated TAM–TPB framework. Future studies may also compare EV adoption intentions across different generations, regions, and cultural contexts to provide broader insights into consumer behavior.

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