Journal of Social Research

P-ISSN:2827-9832
E-ISSN: 2828-335x
Vol.5, No.4, March 2026
http://ijsr.internationaljournallabs.com/index.php/ijsr

Factors Influencing Purchase Intention for Electric Motorcycles in Indonesia: An Integrated Theory of Planned Behavior–Technology Acceptance Model Approach

Budi Oktavianus Yusan*, Marcellia Susan, Anny Nurbasari
Universitas Kristen Maranatha, Indonesia
Email: budiworung@gmail.com*, marcellia.susan@gmail.com, annynurbasari@gmail.com

Keywords:
Attitude;
Consumer behavior;
Electric motorcycles;
Indonesia;
Marketing strategy

ABSTRACT

This study examines Indonesian consumers' intention to purchase electric motorcycles by identifying the factors that influence it, using an integrated Theory of Planned Behavior (TPB)–Technology Acceptance Model (TAM) framework. A cross-sectional survey (n = 143) was conducted, and data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The measurement model showed acceptable reliability and validity. The findings revealed that attitude was the strongest direct predictor of purchase intention (β = .353), followed by subjective norms (β = .315) and perceived behavioral control (β = .214), explaining 54.7% of the variance in intention (R^2 = .547). Technology beliefs influenced intention indirectly through TPB pathways: perceived usefulness strongly predicted attitude (β = .709), while perceived ease of use positively predicted perceived behavioral control (β = .490), supporting both mediation effects. The model also demonstrated predictive relevance in cross-validation. Theoretically, the study extends TPB–TAM evidence to Indonesia's two-wheeler context by showing that TAM beliefs operate through attitude and control. Practically, the findings suggest three levers to raise purchase intention: quantified value communication (e.g., total cost of ownership, reliability, daily convenience), friction reduction (test rides, charging and service enablement), and social-proof activation (peer/community endorsement).

INTRODUCTION

Indonesia is among the world's largest two-wheeler markets, with roughly 137.3 million motorcycles—about 83% of registered motor vehicles—driving sizable daily fuel consumption and wide-ranging externalities (CNN Indonesia, 2024). Beyond fiscal and energy-security pressures, dense two-wheeler traffic contributes to urban air-quality burdens with measurable public-health consequences; evidence from Greater Jakarta underscores the significance of on-road vehicle emissions for air quality and health outcomes (Mahalana et al., 2022). Accelerating electric motorcycle adoption therefore has social and environmental relevance: it can reduce tailpipe pollution and noise in cities (United Nations Environment Programme [UNEP], 2021) and lower climate impacts through reduced life-cycle greenhouse-gas emissions—with electric scooters estimated to have materially lower life-cycle emissions than gasoline scooters under Indonesia-relevant scenarios, with further gains as the electricity mix decarbonizes (Mera & Bieker, 2023).

To capture these co-benefits, the government targets 13 million electric motorcycles on the road by 2030; however, despite incentives and a growing ecosystem of charging/battery services, electric two-wheelers (E2Ws) have remained a niche choice—around ~1% of new sales in 2024, indicating a persistent adoption gap (IESR, 2024; Juwita, 2025). Market-monitoring evidence further suggests that electric motorcycle sales increased during the 2023–2024 subsidy period but declined after subsidies ended, highlighting that incentives alone may be insufficient to sustain demand at scale (International Council on Clean Transportation [ICCT], 2025).

Prior studies point to structural frictions—limited and uneven charging infrastructure outside major cities, higher upfront prices than internal-combustion alternatives, and incomplete information about long-run economic/environmental benefits—that dampen consumers' propensity to adopt E2Ws (Kehagia et al., 2024; Sheykhfard et al., 2025). Yet, a key research gap remains: existing evidence has not fully explained why adoption stays low despite incentives, particularly how these market frictions translate into (i) consumers' perceived value (usefulness), (ii) their perceived capability to adopt (behavioral control), and (iii) social endorsement dynamics that can amplify or suppress intention in collectivistic settings. This motivates a behavioral lens—alongside techno-economic analysis—to clarify the mechanisms underpinning Indonesia's intention–adoption gap.

This paper adopts an integrated framework combining the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM) to explain purchase intention for electric motorcycles in Indonesia. In TPB, intention is determined by attitude toward the behavior, subjective norms, and perceived behavioral control (Ajzen, 1991, 2020). TAM posits that perceived usefulness and perceived ease of use are proximal beliefs guiding technology acceptance (Davis, 1989; Venkatesh & Davis, 2000). Integrating TPB and TAM is theoretically appropriate for E2Ws because technology-specific beliefs (usefulness, ease of use) complement broader motivational and social determinants (attitude, norms, control) that are salient in mobility choices within emerging economies.

Evidence from Indonesia and the broader Asian region supports the salience of these constructs. Attitude toward EVs is repeatedly found to be a strong predictor of intention, reflecting evaluations of economic efficiency and environmental contribution (Falisa & Tricahyono, 2025; Gunawan et al., 2022). Subjective norms—shaped by family, peers, and media narratives—are influential in collectivistic settings, amplifying intention when EV ownership is socially endorsed (Boo & Tan, 2024; Jain et al., 2020). Perceived behavioral control captures consumers' sense of capability to overcome financial, infrastructural, and operational hurdles and has been shown to significantly influence EV purchase intention (Moons & De Pelsmacker, 2012; Ouyang et al., 2021).

Within TAM, perceived usefulness relates to expected economic/functional benefits (e.g., fuel and maintenance savings, mobility convenience, environmental contribution), while perceived ease of use reflects the perceived simplicity of charging, daily operation, and upkeep; both beliefs are central to technology acceptance and, in EV contexts, are expected to strengthen attitude and perceived control (Davis, 1989; Hu et al., 2023; Venkatesh & Davis, 2000). In Indonesia's E2W market where charging access, range familiarity, and brand/service ecosystems are still developing, capturing these TAM beliefs alongside TPB variables is critical to explain intention.

Accordingly, this study specifies and tests a five-variable TPB–TAM model—Attitude, Subjective Norms, Perceived Behavioral Control, Perceived Usefulness, and Perceived Ease of Use—in which the three TPB constructs remain the sole direct predictors of purchase intention and the two TAM constructs influence intention indirectly through attitude and perceived behavioral control. By centering theoretically grounded drivers of intention in a high-impact vehicle segment, the study aims to generate context-specific evidence to inform policy design and marketing strategies that can help close the intention–adoption gap in Indonesia's two-wheeler electrification.

METHOD

We conducted a cross-sectional survey to test an integrated TPB–TAM model with five reflective constructs—Attitude (ATT), Subjective Norms (SN), Perceived Behavioral Control (PBC), Perceived Usefulness (PU), and Perceived Ease of Use (PEOU)—to explain electric two-wheeler purchase intention (EVPI) in Indonesia. A cross-sectional design provides an efficient snapshot of intention formation in a fast-evolving market and is appropriate for estimating the nomological network among beliefs, norms, control perceptions, and intention when panel tracking is not feasible (Rindfleisch et al., 2008). However, because predictors and outcomes are measured at one point in time, the design cannot establish temporal precedence; thus, findings should be interpreted as associative evidence rather than definitive causal effects (Rindfleisch et al., 2008). Analyses used Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4, suitable for complex latent models, relaxed distributional assumptions, and moderate samples (Hair et al., 2019). Measurement assessment followed standard criteria (indicator loadings > .70; AVE > .50; HTMT < .90; α and CR ≥ .70). The structural model reported R^2, f^2, and Q^2 (blindfolding) and used bootstrapping to test path significance at $\alpha = .05$ (two-tailed). We employed 5,000 bootstrap resamples with bias-corrected and accelerated (BCa) 95% confidence intervals; significance was evaluated two-tailed at $\alpha = .05$. Because all measures were self-reported, we also considered common method bias; as a diagnostic check, full collinearity VIFs for all constructs were < 3.3, indicating no pervasive common method bias concern (Kock, 2015; Podsakoff et al., 2003).

Respondents were recruited using stratified quota sampling (urban vs. suburban) to ensure representation across residential contexts where daily motorcycle use and travel needs differ. Within each stratum, we applied controlled convenience recruitment by prioritizing provinces and touchpoints with higher observable exposure to electric two-wheelers (E2Ws)—such as EV dealers, automotive exhibitions, and active EV community networks—because Indonesia's E2W ecosystem (availability, service/brand presence, and charging familiarity) remains uneven and is more visible in major urban corridors. This approach was intended to ensure that respondents could meaningfully evaluate technology-related beliefs (perceived usefulness and ease of use) and control beliefs (perceived behavioral control) based on realistic market conditions rather than purely hypothetical judgments (Belgiawan et al., 2024; IESR, 2024; Sheykhfard et al., 2025). Data were collected via online distribution and offline administration at dealers, exhibitions, and public spaces over approximately four weeks. The questionnaire included a study overview and consent statement, demographic items, and multi-item measures for all model constructs.

Given this sampling frame, the achieved sample is concentrated in urban/suburban areas and is geographically skewed toward Java (with most respondents from West Java, Banten, and DKI Jakarta). This concentration reflects the study's practical focus on early-adoption settings but also limits national representativeness; accordingly, generalization to rural areas and provinces with lower E2W exposure should be made cautiously. The final usable sample comprised n = 143 single-group observations (no multi-group analysis). Adequacy was judged against recent recommendations for PLS-SEM minimum-sample estimation (inverse square-root / gamma-exponential methods), indicating that models of this complexity are well served by samples in this range; thus n = 143 is adequate for the present model (Kock & Hadaya, 2018). We also note PLS-SEM's suitability for moderate samples (Hair et al., 2019).

All latent variables were modeled as reflective and measured with multi-item, five-point Likert scales (1 = strongly disagree to 5 = strongly agree) adapted to the E2W context from established TPB/TAM sources (Ajzen, 1991, 2020), (Davis, 1989; Venkatesh & Davis, 2000; Moons & De Pelsmacker, 2012; Hu et al., 2023). Content validity was ensured via expert review by three scholars (marketing, management, quantitative methods) prior to fielding (Lynn, 1986). Construct validity and reliability were subsequently examined using CFA/PLS measurement tests (loadings, AVE, HTMT, α, CR).

Table 1. Variable Operationalization

No	Variable (Code)	Brief Conceptual Definition	Indicators (Code — Statement)
1	Electric Vehicle Purchase Intention (EVPI)	The degree of readiness and willingness to purchase and switch to an electric motorcycle in the near term.	EVPI1 — I intend to purchase a two-wheeled electric vehicle within the next 12 months. EVPI2 — I will consider buying a two-wheeled electric vehicle for my next vehicle purchase. EVPI3 — I am more likely to choose an electric motorcycle than a gasoline motorcycle for my next purchase. EVPI4 — I plan to start replacing my conventional motorcycle with an electric motorcycle.
2	Attitude Toward EV (ATT)	Overall cognitive– affective evaluation of buying and using	ATT1 — For me, using an electric motorcycle is a good thing.
		an electric motorcycle (usefulness, environmental value, convenience).	ATT2 — I have a positive view of electric motorcycles. ATT3 — Using an electric motorcycle will benefit me. ATT4 — I feel comfortable with the idea of buying an electric motorcycle.
3	Subjective Norms (SN)	Perceived social pressure/support from significant others to buy an electric motorcycle.	SN1 — People important to me (family/friends) approve of me buying an electric motorcycle. SN2 — I feel encouraged by my social environment to buy an electric motorcycle. SN3 — Recommendations from my close contacts would influence my decision to buy an electric motorcycle.
4	Perceived Behavioral Control (PBC)	Perceived capability and availability of enabling conditions for purchasing/using an electric motorcycle (self- efficacy +	PBC1 — Financial capability: I feel financially able to buy an electric motorcycle if I want to. PBC2 — Charging access: I believe I can easily access charging facilities near where I live. PBC3 — After-sales service: I am confident I will obtain

No	Variable (Code)	Brief Conceptual Definition	Indicators (Code — Statement)
		controllability).	after-sales service (maintenance & spare parts) for electric motorcycles. PBC4 — Overcoming technical difficulties: If I want to, I can handle technical difficulties in using an electric motorcycle.
5	Perceived Usefulness (PU)	Belief that an electric motorcycle is beneficial (efficiency/savings and ease in daily activities).	PU1 — Fuel savings: An electric motorcycle will reduce my fuel costs. PU2 — Maintenance: An electric motorcycle will reduce my long-term maintenance costs. PU3 — Mobility convenience: An electric motorcycle will facilitate my daily mobility. PU4 — Personal environmental benefits: An electric motorcycle provides environmental benefits that matter to me.
6	Perceived Ease of Use (PEOU)	Belief that an electric motorcycle is easy to learn, operate, and maintain.	PEOU1 — Easy to use: I believe an electric motorcycle is easy to use. PEOU2 — Minimal habit adjustment: Operating an electric motorcycle does not require much adjustment from my usual habits. PEOU3 — Charging is not troublesome: Charging an electric motorcycle is not troublesome for me. PEOU4 — Information easy to understand: Information on how to use and maintain an electric motorcycle is easy for me to understand.

Source: Based on Ajzen (1991), Davis (1989), Venkatesh & Davis (2000), Moons & De Pelsmacker (2012), and Hu et al. (2023)

PLS-SEM proceeded in two stages. Measurement model: convergent validity (loadings > .70; AVE > .50), discriminant validity (Fornell–Larcker; HTMT < .90), and internal consistency (α, CR ≥ .70) (Fornell & Larcker, 1981; Hair et al., 2019). Structural model: explanatory power (R^2), effect sizes (f^2), predictive relevance (Q^2 via blindfolding), and significance testing of hypothesized paths via bootstrapping (two-tailed, $\alpha = .05$). Collinearity was monitored via VIF.

As part of measurement purification, one PBC indicator (PBC1: financial capability) was removed due to a standardized loading < .70 in pre-estimation checks. All reported reliability/validity statistics and structural estimates are based on the purified measurement model.

Based on the integrated TPB–TAM framework and the TPB assumption that attitude, subjective norms, and perceived behavioral control are the only direct predictors of intention (Ajzen, 1991, 2020), we tested seven hypotheses: H1 ATT → EVPI (positive); H2 SN → EVPI (positive); H3 PBC → EVPI (positive); H4 PU → ATT (positive); H5 PEOU → PBC (positive); H6 ATT mediates a positive indirect effect of PU on EVPI; and H7 PBC mediates a positive indirect effect of PEOU on EVPI.

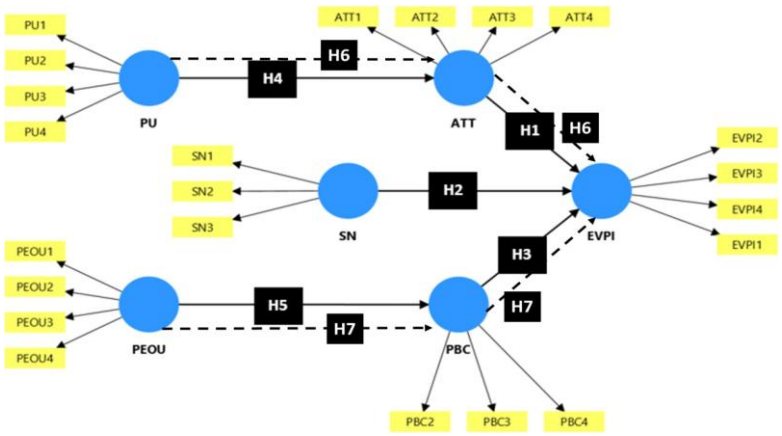

Figure 1. Integrated TPB–TAM framework and hypotheses for electric two-wheeler purchase intention (EVPI)
Source: Adapted from Ajzen (1991), Davis (1989), and Venkatesh & Davis (2000)

RESULTS AND DISCUSSION

We analyzed n = 143 respondents, predominantly working age 17–44 (78%; 17–24: 27%, 25–34: 25%, 35–44: 26%). The sample is largely urban/suburban (Urban 66%, Suburban 30%; Rural 3%) and concentrated on Java—West Java 66%, Banten 13%, DKI Jakarta 8% (≈93% Java overall). Riding intensity is high: 46% ride daily, another 40% ride 1–6×/week. Charging near home is reported by 62% (26% none, 12% don't know). Gender is balanced (51% male), education skews high (Diploma/Bachelor 64%, Postgraduate 24%). Monthly spending is mixed (<3M: 24%; 3–5M: 18%; 5–10M: 24%; 10–20M: 17%; >20M: 17%). Ownership is common (1 unit 48%; 2+ units 36%); typical travel distances are <20 km (59%) or 20–50 km (33%). Current E2W owners are 13%; 34% have ever test-ridden an E2W. Purchase preference is overwhelmingly new (96%) rather than used.

Table 2. Sample Characteristics

Variable	Category	% of Respondents
Age	< 17 years	1%
	17–24 years	27%
	25–34 years	25%
	35–44 years	26%
	45–54 years	15%
	≥ 55 years	6%
Residence Area	Rural	3%
	Urban	66%
	Suburban/Peri-urban	30%

Variable	Category	% of Respondents
Province / Region	Banten	13%
	DKI Jakarta	8%
	West Java	66%
	Central Java	3%
	East Java	3%
	Riau Islands	1%
	Lampung	1%
	East Nusa Tenggara	1%
	North Sulawesi	1%
	Others	3%
Motorcycle Use Frequency	1–2×	13%
	3–4×	15%
	5–6×	12%
	Every day	46%
	Never	14%

Variable	Category	% of Respondents
Charging Facilities Near Residence	Available	62%
	Not available	26%
	Don't know	12%
Gender	Male	51%
	Female	49%
Education	Diploma/Bachelor (D1–D4/S1)	64%
	Postgraduate (S2/S3)	24%
	Junior/Senior High School	13%
Monthly Spending (IDR)	< 3 million	24%
	3–5 million	18%
	5–10 million	24%
	10–20 million	17%
	> 20 million	17%
Number of Motorcycles Owned	None	17%
	1 unit	48%
	2 units or more	36%
Typical Daily Travel Distance	< 20 km	59%
	20–50 km	33%
	> 50 km	8%
Currently Own an	Yes	13%
	No	87%
Ever Test-Ridden an	Yes	34%
	No	66%
Purchase Preference (E2W)	New	96%
	Used	4%

Source: Based on data collected from a cross-sectional survey conducted in Indonesia (2025)

All reflective constructs met conventional reliability and validity criteria. Cronbach's α ranged 0.79– 0.91, composite reliability 0.865–0.940, and AVE 0.561–0.798, establishing convergent validity (Hair et al., 2019). For discriminant validity, the Fornell–Larcker criterion was satisfied (√AVE on the diagonal exceeded inter-construct correlations) and HTMT values were all < .90, indicating adequate separation among constructs (Fornell & Larcker, 1981; Hair et al., 2019). Outer- and inner-VIF values were below common thresholds (≈1.0–3.3), suggesting no problematic collinearity.

All hypothesized paths were significant and in the expected direction:

1. H1: Attitude (ATT) → EV purchase intention (EVPI): $\beta = .353$, $t = 4.353$, $p < .001$
2. H2: Subjective norms (SN) → EVPI: $\beta = .315$, $t = 3.522$, $p < .001$
3. H3: Perceived behavioral control (PBC) → EVPI: $\beta = .214$, $t = 2.840$, $p = .005$
4. H4: Perceived usefulness (PU) → Attitude: $\beta = .709$, $t = 13.930$, $p < .001$
5. H5: Perceived ease of use (PEOU) → PBC: $\beta = .490$, $t = 7.504$, $p < .001$

Explained variance (R^2) indicates the proportion of variance in an endogenous construct accounted for by its predictors. In this model, predictors explain 54.7% of the variance in purchase intention (EVPI; $R^2 = .547$), 50.3% of the variance in attitude (ATT; $R^2 = .503$), and 24.1% of the variance in perceived behavioral control (PBC; $R^2 = .241$). Using common PLS-SEM interpretive guidelines, these values reflect moderate-to-substantial explanatory power for EVPI and ATT and weak-to-moderate explanatory power for PBC (Hair et al., 2019). Effect size (f^2) complements R^2 by quantifying each predictor's incremental contribution to an endogenous construct when that predictor is omitted; benchmarks of 0.02/0.15/0.35 are often used to indicate small/medium/large effects (Cohen, 1988). Accordingly, PU → ATT shows a very large effect ($f^2 = 1.012$), indicating that perceived usefulness is the dominant driver of attitude formation. PEOU → PBC is near-large ($f^2 = .317$), suggesting that operational simplicity and ease cues strongly increase perceived control. For EVPI, the direct predictors have small-to-medium incremental effects (ATT $f^2 = .146$; SN $f^2 = .119$; PBC $f^2 = .076$), implying that intention is shaped by a combination of evaluative and social influences with an additional, smaller—but meaningful—controllability component.

Two theoretically consistent indirect effects were significant: PU → ATT → EVPI ($\beta = .251$, $t = 4.069$, $p < .001$) and PEOU → PBC → EVPI ($\beta = .105$, $t = 2.672$, $p = .008$), thereby supporting H6 and H7 and confirming that technology beliefs shape intention via motivational and control channels.

PLS-Predict indicated Q^2predict > 0 for all indicators, evidencing predictive relevance. CVPAT showed PLS produced significantly lower error than the Indicator-Average benchmark for ATT, PBC, EVPI, and overall, while performing comparably to a linear model (no significant difference), aligning with best practices for variance-based SEM (Hair et al., 2019).

Table 3. Hypothesis Testing Summary

Hypothesis	Path	β	t	p	Supported
H1	ATT → EVPI	.353	4.353	< .001	✔
H2	SN → EVPI	.315	3.522	< .001	✔
H3	PBC → EVPI	.214	2.840	.005	✔
H4	PU → ATT	.709	13.930	< .001	✔
H5	PEOU → PBC	.490	7.504	< .001	✔
H6	PU → ATT → EVPI	.251	4.069	< .001	✔
H7	PEOU → PBC → EVPI	.105	2.672	.008	✔

Source: Based on results of Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis, Hair et al. (2019)

The outputs from our PLS-SEM procedure provide a coherent behavioral and technology-acceptance explanation for Indonesian consumers' intention to purchase electric motorcycles. The measurement diagnostics—high indicator loadings, strong internal consistency (α and CR), adequate convergent validity (AVE), clear discriminant validity (Fornell–Larcker, HTMT), and acceptable VIF—indicate that the five latent variables were captured reliably in this context, enabling confident structural interpretation (Fornell & Larcker, 1981; Hair et al., 2019). On that foundation, the structural estimates show that attitude, subjective norms, and perceived behavioral control each make positive and meaningful contributions to intention, while perceived usefulness very strongly shapes attitude and perceived ease of use strengthens perceived behavioral control. Together these relations yield moderate- to-substantial explanatory power for purchase intention ($R^2 \approx .55$) and significant mediating routes from technology beliefs to intention.

Interpreted against the Theory of Planned Behavior, the pattern that attitude and subjective norms exert small-to-moderate, comparable effects on intention is consistent with prior Indonesian and regional evidence that favorable evaluations and social endorsement are central to early EV adoption (Ajzen, 1991, 2020; Falisa & Tricahyono, 2025; Gunawan et al., 2022). Studies in collectivistic settings repeatedly report that family and peer approval, community cues, and media visibility can convert curiosity into concrete intention; our positive subjective-norms coefficient aligns with those findings and with work showing that normative pressure matters even after controlling for attitudinal beliefs (Boo & Tan, 2024; Jain et al., 2020). The significant contribution of perceived behavioral control is also expected: where charging access is uneven, technology is still being learned, and financial considerations are salient, capability beliefs remain a binding constraint on intention (Moons & De Pelsmacker, 2012; Ouyang et al., 2021). In short, the Indonesian estimates reproduce TPB regularities observed in other Asian EV markets, reinforcing their external validity in a two-wheeler setting.

On the technology-belief side, the very strong usefulness-to-attitude linkage mirrors classic TAM results in which perceived usefulness is the primary antecedent of favorable evaluations and downstream acceptance (Davis, 1989; Venkatesh & Davis, 2000). In E2W usage, usefulness is naturally anchored in total cost of ownership, maintenance simplicity, and everyday mobility convenience; these evaluative anchors likely explain the magnitude of the usefulness effect we observe, and they are consistent with recent EV studies in Asia that connect perceived economic value to positive attitudes and intention (Hu et al., 2023; Gunawan et al., 2022). Our model also clarifies how ease-of-use cues propagate into intention: rather than acting directly on attitude, perceived ease of use substantially raises perceived behavioral control—suggesting that simpler charging routines, clearer guidance, and visible service access enhance controllability beliefs that, in turn, support intention. This mechanism complements prior EV work that often emphasizes PEOU → Attitude; by documenting a robust PEOU → PBC path and a significant PEOU → PBC → Intention mediation, the results spotlight controllability as the proximal consequence of ease in early-infrastructure markets (Moons & De Pelsmacker, 2012; Venkatesh & Davis, 2000).

The mediation results—usefulness → attitude → intention and ease of use → perceived control → intention—provide an integrated account of how technology beliefs travel through TPB channels to influence intention. In line with Ajzen's (2020) clarification that attitude, subjective norm, and perceived behavioral control are the only proximal predictors of intention in TPB, our model retains these three constructs as the sole direct drivers of purchase intention and treats perceived usefulness and perceived ease of use as antecedent beliefs that act through them (Ajzen, 1991, 2020). The significant H6 and H7 pathways show that TAM beliefs do not bypass TPB by directly predicting intention; instead, they operate indirectly by strengthening attitude and perceived control. Similar indirect routes have been reported in broader EV settings, but have been less frequently tested together in two-wheeler markets; our evidence therefore extends the generalizability of the TPB–TAM synthesis to a high-volume mobility segment (Davis, 1989; Venkatesh & Davis, 2000; Hu et al., 2023).

Methodologically, the positive Q^2_predict values for all indicators and the CVPAT findings—PLS outperforming a naïve indicator-average benchmark and matching linear regression—suggest the model is not only explanatory but also practically predictive for screening policy and marketing levers (Hair et al., 2019). Taken together with the sample profile (frequent riders, short daily distances, urban/suburban concentration), these outputs point to two high-leverage pathways consistent with the literature: first, intensify value communication (quantified TCO, maintenance reliability, range-fit to daily travel) to heighten attitudes via usefulness (Davis, 1989; Hu et al., 2023); second, pursue friction removal (hands-on test-rides, charger locators, home/office charging options, service guarantees, battery-health assurances) to elevate perceived control via ease of use (Moons & De Pelsmacker, 2012). Because subjective norms remain meaningful in collectivistic settings, programs that mobilize peer endorsement—owner clubs, referral schemes, influencer/community rides, and visible pilot fleets—are likely to translate social proof into stronger intentions, as shown in prior Southeast-Asian studies (Boo & Tan, 2024; Jain et al., 2020; Gunawan et al., 2022).

These findings translate into clear and differentiated implications for policy design and marketing strategy because the model identifies which levers move intention through which psychological channels. Since perceived usefulness is the dominant antecedent of attitude,

policies and campaigns should prioritize making the economic and functional value of E2Ws concrete and credible—e.g., stable and transparent incentives tied to total cost-of-ownership savings, warranty and battery-health assurances that reduce uncertainty about long-run benefits, and information tools that help riders compare operating costs and maintenance reliability in everyday terms. In parallel, the strong pathway from perceived ease of use to perceived behavioral control implies that adoption can be accelerated by reducing "operational complexity": expanding and standardizing charging/service touchpoints, improving charger/service discoverability and guidance, and supporting hands-on onboarding (trial programs, assisted first-charge experiences, and dealer/service training) so consumers feel capable of adopting and using E2Ws with minimal friction.

For marketing execution, the results suggest a dual focus on value proof (to raise attitude via usefulness) and friction removal (to raise perceived control via ease of use). Practical tactics include test-ride roadshows and community ride events, simple "how-to own and charge" demonstrations, cost-savings calculators embedded in campaigns, and bundled service/warranty packages that make ownership feel predictable. Because subjective norms remain comparable in importance to attitude, both public and private actors can amplify social endorsement through visible pilot fleets, referral programs, owner communities, and influencer/peer storytelling that normalizes E2W ownership as a desirable and feasible choice (Boo & Tan, 2024; Jain et al., 2020).

Finally, beyond the cognitive beliefs captured in TPB–TAM, emotional and symbolic motives may also shape purchase intention—often by strengthening (or weakening) attitude, norms, and perceived control. Positive affect (e.g., excitement, pride, feeling "modern/innovative") and self-image signaling can reinforce favorable attitudes and make adoption socially meaningful, while negative affect (e.g., worry about battery degradation, safety concerns, "range/charging anxiety") can undermine controllability beliefs even when incentives exist (Li et al., 2022; Moons & De Pelsmacker, 2012; Zhou et al., 2022). Future work could therefore extend the current model by treating affective responses, perceived risk, and self-image motives as upstream antecedents to attitude, subjective norms, and perceived behavioral control, enabling a richer explanation of why intention and adoption may lag despite supportive policies.

Finally, the alignment between our Indonesian estimates and prior regional results strengthens confidence that the TPB–TAM integration captures durable drivers of intention in emerging-economy mobility markets. Where our results diverge in emphasis—specifically, the prominent role of PEOU in shaping perceived control rather than attitude—that nuance appears theoretically coherent for an ecosystem still building charging familiarity and service density. Future work can deepen comparisons by explicitly modeling policy incentives and infrastructure availability as antecedents to usefulness and control beliefs, and by testing heterogeneity across ownership status or locale; however, within the current design, the pattern of effects and predictive diagnostics collectively support actionable pathways to accelerate cleaner two-wheeler adoption in Indonesia (Ajzen, 1991, 2020; Davis, 1989; Venkatesh & Davis, 2000; Moons & De Pelsmacker, 2012; Hair et al., 2019; Hu et al., 2023; Ouyang et al., 2021; Boo & Tan, 2024; Jain et al., 2020; Gunawan et al., 2022).

CONCLUSION

This study finds that Indonesian consumers' intention to purchase electric motorcycles is shaped by motivational, social, and capability beliefs, with technology-specific perceptions of usefulness and ease of use influencing intention mainly through attitude, subjective norms, and perceived behavioural control. Attitude and social norms are the strongest direct drivers, while perceived usefulness and ease of use create indirect pathways via attitude and perceived control, respectively. For practice, adoption strategies should focus on demonstrating tangible value, reducing operational friction, and amplifying social proof to accelerate uptake. A key limitation lies in the mostly urban, Java-focused sample and the cross-sectional design, which limit generalisability and causal inference; future research should employ longitudinal or experimental approaches and ensure broader, more representative sampling, particularly across rural and non-Java regions, to capture regional heterogeneity and dynamic shifts in intention.

REFERENCE

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211.

Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies*, *2*(4), 314–324.

Belgiawan, P. F., Dharmowijoyo, D. B. E., Novizayanti, D., Farda, M., Prasetio, E. A., & Dirgahayani, P. (2024). Does range or fiscal policies matter on EV adoption in Jakarta Metropolitan Area? Transportation Research Interdisciplinary Perspectives, 23, 101027. https://doi.org/10.1016/j.trip.2024.101027

Boo, S. Y., & Tan, C. (2024). Electric vehicles purchase intention: The role of mediators using an extended TPB model. Journal of Contemporary Marketing Science, 7(2), 158–183. https://doi.org/10.1108/JCMARS-11-2023-0042

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Lawrence Erlbaum Associates.

CNN Indonesia. (2024, October 5). Jumlah kendaraan di Indonesia tembus 164 juta unit, 83 persen motor. https://www.cnnindonesia.com/otomotif/20241004133318-579-1151516/jumlah-kendaraan- di-indonesia-tembus-164-juta-unit-83-persen-motor

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008

Falisa, C., & Tricahyono, D. (2025). Factors influencing consumers' purchase intention to use battery electric cars in Indonesia. International Journal of Science, Technology & Management, 4(5), 37–51. https://doi.org/10.46729/ijstm.v6i1.1234

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39–50. https://doi.org/10.2307/3151312

Gunawan, I., Redi, A. A. N. P., Santosa, A. A., Maghfiroh, M. F. N., Pandyaswargo, A. H., & Kurniawan, A. C. (2022). Determinants of customer intentions to use electric vehicles in Indonesia: An integrated model analysis. Sustainability, 14, 1972. https://doi.org/10.3390/su14041972

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). A primer on partial least squares structural equation modeling (PLS-SEM) (2nd ed.). SAGE

Publications. https://eli.johogo.com/Class/CCU/SEM/_A%20Primer%20on%20Partial%20Least%20Squares%2 0Structural%20Equation%20Modeling_Hair.pdf

Hu, X., Zhou, R., Wang, S., Gao, L., & Zhu, Z. (2023). Consumers' value perception and intention to purchase electric vehicles: A benefit–risk analysis. Research in Transportation Business & Management, 49, 101004. https://doi.org/10.1016/j.rtbm.2023.101004

Institute for Essential Services Reform (IESR). (2024). Indonesia energy transition outlook (IETO) 2024. https://iesr.or.id/pustaka/indonesia-energy-transition-outlook-ieto-2024

International Council on Clean Transportation. (2025, December). Electric vehicle market in Indonesia. https://theicct.org/publication/electric-vehicle-market-in-indonesia-dec25/

Jain, J., Walia, N., & Gupta, S. (2020). Evaluation of behavioral biases affecting investment decision- making of individual equity investors by fuzzy analytic hierarchy process. Review of Behavioral Finance, 12(3), 297–314. https://doi.org/10.1108/RBF-03-2019-0044

Juwita, R. D. (2025, August 19). Sales slump slows electric motorcycle production. The Jakarta Post. https://www.thejakartapost.com/business/2025/08/19/sales-slump-slows-electric-motorcycle- production.html

Kehagia, F., Karagiotas, I., & Giotaki, S. (2024). Evaluating preferences towards electromobility in Greece. Future Transportation, 4(3), 856–873. https://doi.org/10.3390/futuretransp4030041

Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. Information Systems Journal, 28(1), 227–261. https://doi.org/10.1111/isj.12131

Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. International Journal of e-Collaboration, 11(4), 1–10.

Kresnanto, N. C., & Putri, W. H. (2024). Subsidies for electric vehicles as a form of green transportation: Evidence from Indonesia. Transportation Research Interdisciplinary Perspectives, 27, 101230. https://doi.org/10.1016/j.trip.2024.101230

Li, L., Wang, Z., Gong, Y., & Liu, S. (2022). Self-image motives for electric vehicle adoption: Evidence from China. Transportation Research Part D: Transport and Environment, 109, 103383. https://doi.org/10.1016/j.trd.2022.103383

Lynn, M. R. (1986). Determination and quantification of content validity. Nursing Research, 35(6), 382–385. https://doi.org/10.1097/00006199-198611000-00017

Mahalana, A., Yang, L., Dallmann, T., Lestari, P., Maulana, K., & Kusuma, N. (2022, November). Measurement of real-world motor vehicle emissions in Jakarta. International Council on Clean Transportation. https://theicct.org/publication/true-jakarta-remote-sensing-nov22/

Mera, Z., & Bieker, G. (2023, September). Comparison of the life-cycle greenhouse gas emissions of combustion engine and electric passenger cars and two-wheelers in Indonesia. International Council on Clean Transportation. https://theicct.org/publication/comparison-life-cycle-ghg-emissions-combustion-engine-and-electric-pv-and-2w-indonesia-sept23/?gad_source=1&gad_campaignid=22639629046&gbraid=0AAAAA_pFlecHvBg

B0NIjIbWsWkXYVrVvs&gclid=CjwKCAiA9aPKBhBhEiwAyz82Jwc2Pb4T5g6yJj_1q_Oltk0qYxLtBCdiJncMC_OGEuN7frrsga659BoCjKQQAvD_BwE

Moons, I., & De Pelsmacker, P. (2012). Emotions as determinants of electric car usage intention. Journal of Marketing Management, 28(3–4), 195–237. https://doi.org/10.1080/0267257X.2012.659007

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. Journal of Applied Psychology, 88(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Rajendra, R. (2025, February 25). Ternyata ini penyebab harga mobil listrik bekas anjlok. Bisnis Otomotif. https://otomotif.bisnis.com/read/20250225/275/1842469/ternyata-ini-penyebab-harga- mobil-listrik-bekas-anjlok

Rindfleisch, A., Malter, A. J., Ganesan, S., & Moorman, C. (2008). Cross-sectional versus longitudinal survey research: Concepts, findings, and guidelines. Journal of Marketing Research, 45(3), 261–279. https://doi.org/10.1509/jmkr.45.3.261

Sheykhfard, A., Azmoodeh, M., Das, S., & Kutela, B. (2025). Analyzing purchase intentions of used electric vehicles through consumer experiences: A structural equation modeling approach. Transport Policy, 160, 125–137. https://doi.org/10.1016/j.tranpol.2024.10.038

Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. Information Systems Research, 6(2), 144–176. https://doi.org/10.1287/isre.6.2.144

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. Management Science, 46(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926

Ouyang, D., Zhou, S., & Ou, X. (2021). The total cost of electric-vehicle ownership: A consumer- oriented study of China's post-subsidy era. Energy Policy, 149, 112023. https://doi.org/10.1016/j.enpol.2020.112023

Zhou, Y., He, Z., Wang, J., Shen, W., Li, W., & Lu, W. (2022). Influence of emotion on purchase intention of electric vehicles: A comparative study of consumers with different income levels. Current Psychology, 42(25), 21704–21719. https://doi.org/10.1007/s12144-022-03253-1

community), *Interview***,** {Sunday, 16 Februari 2017}