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Beyond Convenience: Trust, Risk, and Gender in Shaping Student Adoption of Electronic Payment through a PLS-SEM Lens

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Abstract

The rapid shift from cash-based to electronic transactions has made student communities a strategic segment for understanding how digital payment habits take root, yet what pulls a young user toward routine use of such platforms is still debated across studies with mixed findings on trust and risk. This study examines how perceived usefulness, perceived ease of use, trust, and perceived risk shape electronic payment usage among university students in Banyumas Regency, and whether usage differs between male and female students, drawing on an extended Technology Acceptance Model in which trust and perceived risk complement the benefit-effort logic of the original model and gender is treated as a demographic grouping variable. A closed Likert-scale questionnaire was distributed to active students across several universities in the regency, and the resulting data were processed through Partial Least Squares Structural Equation Modeling to jointly assess the measurement and structural models. The measurement model met the required thresholds for convergent validity and construct reliability, although the closeness between perceptual constructs and the usage construct warranted a cautious reading of discriminant validity. The structural model confirmed that perceived usefulness, perceived ease of use, and trust each exert a positive and significant influence on electronic payment usage, whereas perceived risk exerts a significant negative influence, and female students report higher usage than male students once these perceptions are held constant. The proposed model explained a substantial share of variance in usage behavior, indicating strong predictive strength. These findings offer payment service providers and university administrators a basis for designing gender-responsive digital financial literacy programs that foreground usability, functional benefit, and risk mitigation to widen electronic payment adoption among young users

Keywords: Perceived Usefulness, Perceived Ease of Use, Trust, Perceived Risk, Gender, Electronic Payment, Pls-Sem.

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INTRODUCTION

Cash is steadily losing ground to screen-based transactions across the global economy, a shift visible in how quickly digital wallets, mobile banking, and QR-based payment rails have entered everyday routines (Aguilar et al., 2024; Karmaker et al., 2025; Rasheduzzaman et al., 2025). Young adults have driven much of this movement, adopting new payment tools faster than older cohorts, yet the same body of work keeps surfacing uneven adoption across demographic lines, gender among them, at both the national and individual level (Chen et al., 2023; Hoque et al., 2024; Lee et al., 2022).

Indonesia mirrors this pattern and, by several accounts, moves even faster than many of its regional peers. Bank Indonesia has reported continued double-digit annual growth in domestic digital payment volume, propelled largely by QR-code channels that now reach tens of millions of

users (Bank Indonesia, 2025), while regulators across emerging digital-payment markets have kept tightening consumer-protection safeguards to keep pace with that expansion (Angel-Rodriguez & Vicente-Pascual, 2026). University students sit at an interesting point in this landscape: comfortable with new interfaces yet still exposed to the financial risks that come with handling money digitally, a tension noted in several studies of young fintech users (Nurlaily et al., 2021; Yang et al., 2023). Banyumas Regency, home to one of the densest clusters of higher-education institutions in southern Central Java, offers a student population diverse enough to make a useful test case for how electronic payment habits actually form.

What makes this worth studying is that infrastructure alone does not explain who uses electronic payment and who does not. Coverage is already broad, yet uptake stays uneven, which points toward user-level factors, usefulness, ease of use, trust, and perceived risk, as the more likely drivers (Al-Qudah et al., 2024; Chawla & Joshi, 2019; Siagian et al., 2022), alongside demographic traits such as gender that appear to condition how strongly those perceptions translate into behavior (Chauhan et al., 2022; Pierre & Mombeuil, 2023). The Technology Acceptance Model offers a starting point here, arguing that perceived usefulness and perceived ease of use jointly shape the attitudes and behavior that determine whether a person takes up a given technology (Davis, 1989); later extensions add trust and risk to the picture, since electronic transactions inevitably involve handing over personal and financial data under some degree of uncertainty (Pavlou, 2003). A link between perceived usefulness and payment usage turns up repeatedly across the literature (Arsy & Iskamto, 2026; Siagian et al., 2022; Thanigan et al., 2025), as does one between ease of use and usage (Al-Qudah et al., 2024; Chawla & Joshi, 2019; Kurnia & Tandijaya, 2023), one between trust and usage (Humbani & Wiese, 2019; Noer et al., 2025; Xavier et al., 2024), and one between perceived risk and usage, this time in the opposite direction (Alrawad et al., 2023; Pierre & Mombeuil, 2023; Samuel et al., 2026).

Even so, a closer read of this literature turns up gaps worth addressing. On the empirical side, findings on perceived risk do not agree with one another, some studies find it a significant deterrent to usage (Alrawad et al., 2023; Pierre & Mombeuil, 2023) while others find no direct effect once trust is modeled alongside it (Apau et al., 2025), and few studies test gender differences alongside the full TAM structure within a single non-metropolitan student sample (Chauhan et al., 2022; Rasheduzzaman et al., 2025), though a recent multigroup analysis of QRIS adoption among Indonesian Generation Z suggests this gap is only beginning to close (Timur et al., 2026). On the methodological side, much of the Indonesian payment-adoption literature still relies on ordinary multiple regression applied to summed Likert scores without first validating a formal measurement model, a shortcut that Partial Least Squares Structural Equation Modeling avoids by testing convergent validity, discriminant validity, and construct reliability before any structural path is estimated (Hair et al., 2021; Hair et al., 2019; Henseler et al., 2015). Conceptually, trust and gender rarely appear together within a single TAM-based model, despite both being consequential for a financial service that is inherently risk-laden and shaped by social norms (Chen et al., 2023; Hoque et al., 2024; Lee et al., 2022).

This study builds on a recent extended-TAM model of digital payment adoption among university students that links perceived usefulness, ease of use, trust, and perceived risk to behavioral intention and actual use (Jagrič et al., 2026), and pushes that line of work further by folding gender into the same structure as an explicitly defined demographic grouping variable, and by replacing conventional regression with Partial Least Squares Structural Equation Modeling so that measurement quality can be verified before structural claims are made. The aim is to test how perceived usefulness, perceived ease of use, trust, and perceived risk relate to electronic payment usage among university students in Banyumas Regency, and whether that usage differs by gender. What is new here is the joint estimation of four perceptual determinants and a gender grouping term within a single variance-based structural model, applied to a student population outside the major metropolitan centers that most Indonesian digital-payment studies still favor. The contribution runs on three fronts: theoretically, it explains how trust and perceived risk add a provider- and environment-oriented layer to the benefit-effort logic of TAM and states the analytical role of gender explicitly; methodologically, it applies a full measurement-and-structural evaluation rarely seen in local digital-finance behavior research; and practically, it gives payment providers and university administrators evidence to build digital financial literacy efforts that respond to how users actually perceive and experience these platforms.

Theoretical Background And Hypotheses

The Technology Acceptance Model anchors this study because it explains technology uptake through two central constructs, perceived usefulness and perceived ease of use, which together shape the attitudes and behavioral intentions that lead a person to adopt a given system (Davis, 1989). The model traces back to the Theory of Reasoned Action, which holds that actual behavior begins with intention, and that intention in turn is shaped by attitude and by beliefs about what a given action will bring about (Ajzen & Fishbein, 1980). What keeps TAM useful across settings, electronic payment included, is its parsimony: a compact model that still holds up empirically across repeated tests involving sustained user-system interaction (Venkatesh et al., 2003).

Later work has stretched the model further by adding trust and perceived risk, because electronic transactions exchange money and personal data under a degree of uncertainty that the original model was not designed to capture (Gefen et al., 2003; Pavlou, 2003). TAM was developed for organizational information systems in which the user faced no outside counterparty whose conduct could cause harm, so its two beliefs describe the user's relationship with the system itself rather than with the party operating it (Davis, 1989; Gefen et al., 2003). Electronic payment breaks that assumption. A student who pays through a digital wallet hands funds and personal information to a provider whose internal conduct cannot be observed, over a network that can fail or be attacked, so continued use depends not only on what the system can do and how easily it can be operated, but also on whether the provider can be relied upon and how much could be lost if something goes wrong (Featherman & Pavlou, 2003; Pavlou, 2003).

Read together, the four constructs describe two sides of a single usage decision. Perceived usefulness captures the functional benefit a student expects from electronic payment, such as faster transactions, easier record-keeping, and access to promotions, while perceived ease of use captures the cognitive and procedural effort required to obtain that benefit; both are system-oriented beliefs and form the core TAM logic of benefit weighed against effort (Davis, 1989). Trust and perceived risk add a provider- and environment-oriented layer that TAM leaves out. Trust reflects confidence that the payment provider and the wider transaction environment will act competently and honestly, protecting funds and data even when the user cannot verify this directly, and therefore works as an enabler that lowers the felt uncertainty of each transaction (Gefen et al., 2003; Pavlou, 2003). Perceived risk captures the uncertainty that remains about financial loss, information-security breaches, and transaction failure, and works as an inhibitor that can hold usage back even when the system is useful and easy to operate (Featherman & Pavlou, 2003). This mirrors the net-valence view of electronic transactions, in which consumers act on the balance between expected benefit and perceived risk, with trust shaping how heavily that risk is weighed (Kim et al., 2008). On this reading, usefulness and ease of use explain why a student wants to use electronic payment and whether doing so is effortless, whereas trust and perceived risk explain whether the student feels safe enough to rely on it routinely; neither pair alone accounts for sustained use of a service that combines technology with money. Trust and perceived risk are treated as related but distinct constructs, in line with evidence that they carry separate effects on intention and use (Kim et al., 2008; Pavlou, 2003), and all four constructs are specified as direct antecedents of usage so that their relative weight can be compared within one model.

Gender plays a different theoretical role from the four perceptual constructs. In technology-acceptance research, gender has been modeled as a demographic control, as an independent predictor of usage, as a moderator of the paths from beliefs to behavior, and as a grouping variable for multigroup comparison, and these roles are not interchangeable because each answers a different question and requires a different analytical approach (Sarstedt et al., 2011; Venkatesh & Morris, 2000; Venkatesh et al., 2003). This study conceptualizes gender as an exogenous demographic grouping variable, entered into the structural model as a dummy-coded direct predictor of usage. Under this specification, the gender coefficient estimates the difference in electronic payment usage between female and male students after the four perceptual constructs are held constant, which answers the question of whether usage levels differ between the two groups. The study does not test whether gender changes the strength of the usefulness, ease-of-use, trust, or risk paths; that question requires a moderation or multigroup design, which lies outside the present scope and is proposed for future research. Bringing the four perceptual constructs and gender into one structural model in this way makes it possible to explain electronic payment usage among students more fully than any single construct could on its own.

Effect of Perceived Usefulness on Electronic Payment Usage

Perceived usefulness reflects a user's belief that electronic payment will make everyday transactions faster and more efficient (Davis, 1989). Students who see clear functional payoff, saved time, cleaner record-keeping, tend to fold the technology into daily routines more readily, and that belief also feeds into a broader positive attitude that speeds up continued use (Pavlou, 2003). Several studies confirm a significant positive link between perceived usefulness and payment-service uptake across different consumer segments, including a 2026 study of buy-now-pay-later adoption among Indonesian Generation Z (Arsy & Iskamto, 2026; Chawla & Joshi, 2019; Siagian et al., 2022; Thanigan et al., 2025). Taken together, this reasoning supports the following hypothesis:

H1: Perceived usefulness has a significant positive effect on electronic payment usage among students.

Effect of Perceived Ease of Use on Electronic Payment Usage

Perceived ease of use is the belief that operating electronic payment demands little mental or physical effort (Davis, 1989). Intuitive interfaces, simple registration, and short transaction flows lower the psychological barrier a first-time user faces, and that ease also amplifies perceived usefulness indirectly, since a system that is simple to run invites users to explore more of its beneficial features (Venkatesh et al., 2003). Prior work consistently finds a significant positive effect of perceived ease of use on payment-service intention and usage among students and younger consumers, a pattern a 2026 study of Indian digital payment users links directly to downstream satisfaction (Al-Qudah et al., 2024; Chawla & Joshi, 2019; Kurnia & Tandijaya, 2023; Samuel et al., 2026). This reasoning leads to the second hypothesis:

H2: Perceived ease of use has a significant positive effect on electronic payment usage among students.

Effect of Trust on Electronic Payment Usage

Trust is the belief that an electronic payment provider will keep its promises, protect user data, and guarantee transaction security (Pavlou, 2003). Higher trust lowers the sense of uncertainty built into any electronic transaction, making users more willing to treat the platform as their default payment method, and it effectively stands in for the direct verification a user cannot perform on a digital provider's internal conduct (Humbani & Wiese, 2019). Empirical evidence across consumer groups links trust to a significant positive effect on digital financial-service usage (Aljaradat & Shukla, 2025; Kumala et al., 2020; Kurnia & Tandijaya, 2023; Noer et al., 2025; Xavier et al., 2024). Based on this reasoning, the third hypothesis states:

H3: Trust has a significant positive effect on electronic payment usage among students.

Effect of Perceived Risk on Electronic Payment Usage

Perceived risk is a user's own estimate of possible financial loss, data leakage, or system failure tied to electronic payment (Pavlou, 2003). Worry about cyber-security and thin guarantees of compensation keep some users from switching fully to cashless transactions, even after they recognize the benefit and convenience on offer, and high perceived risk tends to override those positive perceptions once a user actually has to decide (Venkatesh et al., 2003); recent extended-TAM evidence among university students likewise shows perceived risk undermining trust, which then carries through to weaker behavioral intention and use (Jagrič et al., 2026). Earlier studies confirm a significant negative effect of perceived risk on payment-service intention and usage across several settings, with a 2026 study further showing perceived risk weakening the link between ease of use and perceived usefulness itself (Alrawad et al., 2023; Pierre & Mombeuil, 2023; Samuel et al., 2026). On this basis, the fourth hypothesis is stated as:

H4: Perceived risk has a significant negative effect on electronic payment usage among students.

Gender Differences in Electronic Payment Usage

Gender enters this study as a demographic grouping variable rather than as a belief about the system. Earlier research shows that men and women can differ in how they process information, weigh risk, and respond to new technology, so the two groups do not always follow the same adoption paths even when they face an identical system (Gefen & Straub, 1997; Venkatesh & Morris, 2000). Some studies report that male users give more weight to functional efficiency, while female users give more weight to social cues, trust, and security before committing to a digital financial service (Ashoer et al., 2024; Chauhan et al., 2022), but these patterns vary across samples and appear to narrow as digital and financial literacy improve (Lee et al., 2022). Several studies document significant gender-based differences in digital-payment adoption and usage, including

among student populations, and a 2026 multigroup PLS-SEM analysis of QRIS adoption found that the strength of key adoption drivers still varies by gender among Indonesian Generation Z users (Chen et al., 2023; Hoque et al., 2024; Rasheduzzaman et al., 2025; Timur et al., 2026). Because the direction of the gap differs across settings, with some studies favoring male users and others reporting a narrowing or reversed gap, the hypothesis is stated in non-directional form:
H5: Electronic payment usage differs significantly between male and female students.

CONCEPTUAL FRAMEWORK

The conceptual framework links perceived usefulness, perceived ease of use, trust, and perceived risk to electronic payment usage as direct antecedents, and positions gender (X5) as a dummy-coded demographic grouping variable whose direct path tests for a difference in usage level between male and female students, not a moderating effect on the other paths, as illustrated in Figure 1.

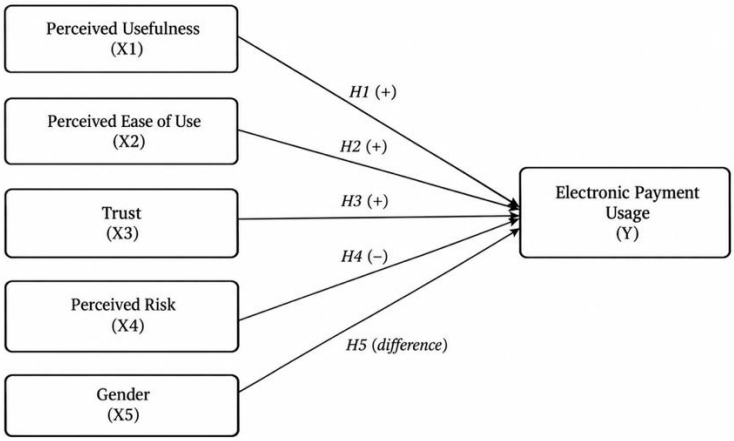


Figure 1. Conceptual Framework

METHOD

This study follows a quantitative, explanatory design intended to test causal relationships among the hypothesized variables. The population consists of active students enrolled at public and private universities across Banyumas Regency who already use electronic payment services. Minimum sample size was set using the Slovin formula with a ten percent margin of error, and respondents were drawn through non-probability accidental sampling, meaning anyone encountered who met the eligibility criteria became a potential data source, a common and defensible choice when a full sampling frame is unavailable (Etikan et al., 2016). The questionnaire was distributed online to students across various faculties and cohorts, then screened for completeness and internal consistency before analysis proceeded.

Data collection relied on a closed five-point Likert questionnaire, ranging from strongly disagree to strongly agree, built from indicators adapted from earlier work on financial-technology acceptance and recent extended-TAM instruments for digital payment (Davis, 1989; Jagrič et al., 2026; Pavlou, 2003). Gender was captured as a single-item dummy variable (0 = male, 1 = female) and entered into the structural model as a direct predictor of usage, so that its path coefficient reflects the difference in usage between female and male students after the perceptual constructs are controlled for; a positive coefficient therefore indicates higher usage among female students. Before full deployment, the instrument was pilot-tested on a subset of respondents to check preliminary validity and reliability, with item retention guided by conventional factor-loading thresholds (Tabachnick & Fidell, 2019).

Data were analyzed using Partial Least Squares Structural Equation Modeling, chosen for its ability to test the reflective measurement model and the structural model together without demanding strict multivariate normality (Hair et al., 2021; Hair et al., 2019). Measurement-model evaluation covered convergent validity through outer loadings and average variance extracted, construct reliability through Cronbach's alpha and composite reliability, and discriminant validity through the Fornell-Larcker criterion and the heterotrait-monotrait ratio (Henseler et al., 2015). Structural-model evaluation covered the coefficient of determination, effect size, predictive relevance, and path-coefficient significance obtained through bootstrap resampling to generate t-statistics and significance levels for each hypothesized relationship. To make the gender result

easier to interpret, the difference was also expressed in the original score units through an ordinary least squares cross-check of the same specification, which gives the covariate-adjusted mean difference in the summed usage score between female and male students together with its standard error and t-test.

Table 1. Operationalization and Measurement of Research Variables

Variable	Operational Definition	Indicators	Items	Scale
Perceived Usefulness (X1)	User belief that electronic payment improves transaction performance and efficiency	Transaction speed, accuracy, discounts/promotions, sense of security	4	Likert 1-5
Perceived Ease of Use (X2)	User belief that electronic payment is easy to understand and operate	Ease of understanding, ease of use, practicality, flexibility, ease of top-up and balance access	6	Likert 1-5
Trust (X3)	User confidence in the provider's commitment and integrity	Data confidentiality guarantee, company integrity, service consistency, security guarantee	4	Likert 1-5
Perceived Risk (X4)	User's subjective assessment of potential loss from using electronic payment	Concern over unexplained balance loss, transaction failure, cyber-crime, incomplete identity information	4	Likert 1-5
Gender	Respondent demographic characteristic	0 = male, 1 = female	1	Nominal
Electronic Payment Usage (Y)	Level and continuity of electronic payment service usage	Interest in using, continuity of use, perceived benefit, decision to keep using	4	Likert 1-5

Source: developed from Davis (1989), Pavlou (2003), and Siagian et al. (2022)

RESULT AND DISCUSSION

Respondent Profile

Questionnaire distribution yielded 132 responses, of which 4 (3.03%) were discarded for incomplete answers, leaving 128 respondents (96.97%) for analysis. Most respondents, 112 students (87.5%), came from private universities, while 16 (12.5%) came from public universities. By faculty, the Faculty of Economics and Business accounted for the largest share at 103 students (80.47%), with the remaining respondents spread thinly across other faculties. By cohort year, the 2024 intake was the largest group at 44 students (34.38%), followed by 2022 at 32 students (25.00%) and 2023 at 31 students (24.22%). By gender, female respondents outnumbered male respondents, 88 (68.75%) against 40 (31.25%), a split relevant to the gender-difference test reported later.

Measurement Model Assessment

Convergent validity was checked first through each indicator's outer loading against its construct, with 0.6 taken as the minimum acceptable loading alongside a significant bootstrap t-statistic (Hair et al., 2019). Results appear in Table 2.

Table 2. Outer Loading Results

Construct	Indicator	Outer Loading	t-Statistic	Remark
Perceived Usefulness (X1)	X1.1	0.851	30.079	Valid
	X1.2	0.845	22.416	Valid
	X1.3	0.798	19.623	Valid
	X1.4	0.838	28.796	Valid
Perceived Ease of Use (X2)	X2.1	0.785	18.351	Valid
	X2.2	0.697	10.083	Valid
	X2.3	0.874	38.730	Valid
	X2.4	0.857	15.773	Valid
	X2.5	0.890	42.974	Valid
	X2.6	0.773	12.435	Valid
Trust (X3)	X3.1	0.853	31.631	Valid
	X3.2	0.840	27.794	Valid

Construct	Indicator	Outer Loading	t-Statistic	Remark
	X3.3	0.869	34.312	Valid
	X3.4	0.853	34.531	Valid
Perceived Risk (X4)	X4.1	0.840	27.081	Valid
	X4.2	0.779	11.465	Valid
	X4.3	0.835	27.635	Valid
	X4.4	0.760	13.609	Valid
E-Payment Usage (Y)	Y.1	0.701	12.632	Valid
	Y.2	0.767	20.444	Valid
	Y.3	0.764	18.673	Valid
	Y.4	0.747	11.169	Valid

Source: primary data processed, 2026

Every indicator across all five constructs clears the 0.6 loading threshold with a significant t-statistic at the five percent level, so all indicators are retained as convergently valid.

Convergent validity was cross-checked through average variance extracted, while Cronbach's alpha and composite reliability handled construct reliability, as shown in Table 3.

Table 3. Convergent Validity and Construct Reliability Results

Construct	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Perceived Usefulness (X1)	0.852	0.901	0.695
Perceived Ease of Use (X2)	0.895	0.922	0.665
Trust (X3)	0.873	0.915	0.729
Perceived Risk (X4)	0.817	0.880	0.647
E-Payment Usage (Y)	0.728	0.833	0.556

Source: primary data processed, 2026

Every construct clears 0.5 on average variance extracted, 0.7 on composite reliability, and 0.7 on Cronbach's alpha, meeting the standard thresholds for convergent validity and reliability (Hair et al., 2019).

Discriminant validity was tested two ways, first against the Fornell-Larcker criterion, which compares the square root of average variance extracted with inter-construct correlations, and then against the heterotrait-monotrait ratio, a criterion generally regarded as more sensitive to discriminant-validity problems (Henseler et al., 2015). Both results appear in Table 4 and Table 5.

Table 4. Discriminant Validity Results (Fornell-Larcker Criterion)

Construct	X1	X2	X3	X4	Y
X1	0.833				
X2	0.566	0.815			
X3	0.749	0.553	0.854		
X4	0.116	0.135	0.064	0.804	
Y	0.782	0.770	0.721	-0.014	0.745

Source: primary data processed, 2026 (diagonal values represent the square root of average variance extracted)

Table 5. Discriminant Validity Results (Heterotrait-Monotrait Ratio)

Construct	X1	X2	X3	X4	Y
X1					
X2	0.652				
X3	0.865	0.632			
X4	0.139	0.154	0.075		
Y	0.986	0.958	0.898	0.015	

Source: primary data processed, 2026

Table 4 shows the square root of average variance extracted exceeding cross-construct correlations in most pairs, except that perceived usefulness sits close to e-payment usage. Table 5 reinforces this: the heterotrait-monotrait ratio between the three perceptual constructs (X1, X2, X3) and usage (Y) runs high, at or above the conservative 0.85 cutoff, while every other construct pair sits comfortably below it. This pattern points to a conceptual overlap between user perception

and actual usage behavior, a condition commonly encountered in cross-sectional technology-acceptance research (Henseler et al., 2015), and is revisited below as a methodological caveat.

Structural Model Assessment

Structural-model evaluation began with the coefficient of determination to gauge how much variance in the endogenous construct the exogenous variables explain, followed by effect size and predictive relevance, summarized in Table 6 and Table 7.

Table 6. R-Square and Predictive Relevance Results

Endogenous Construct	R-Square	Category	Q-Square	Category
E-Payment Usage (Y)	0.801	Strong	0.780	Strong predictive relevance

Source: primary data processed, 2026

Table 7. Effect Size (f-Square) of Each Exogenous Variable on E-Payment Usage

Exogenous Variable	f-Square on Y	Category
Perceived Usefulness (X1)	0.344	Large
Perceived Ease of Use (X2)	0.689	Large
Trust (X3)	0.057	Small
Perceived Risk (X4)	0.090	Small-to-moderate

Source: primary data processed, 2026

Together, the four exogenous variables explain a strong share of variance in electronic payment usage, and predictive relevance likewise falls in the strong category, supporting the adequacy of the structural model (Hair et al., 2019). Perceived ease of use contributes the largest share, followed by perceived usefulness, while trust and perceived risk contribute smaller but still meaningful shares.

Hypothesis testing relied on bootstrap resampling of the path coefficients to obtain t-statistics and significance levels, summarized in Table 8.

Table 8. Hypothesis Testing Results (Path Coefficients)

	Path	Path Coefficient	t-Statistic	p-Value	Remark
H1	Perceived Usefulness -> E-Payment Usage	0.412	5.371	0.000	Significant positive, H1 supported
H2	Perceived Ease of Use -> E-Payment Usage	0.464	7.492	0.000	Significant positive, H2 supported
H3	Trust -> E-Payment Usage	0.165	1.949	0.027	Significant positive, H3 supported
H4	Perceived Risk -> E-Payment Usage	-0.135	3.197	0.001	Significant negative, H4 supported
H5	Gender -> E-Payment Usage	0.190	1.984	0.049	Significant difference, H5 supported

Source: primary data processed, 2026; H1-H4 tested one-tailed in line with the directional hypotheses, H5 tested two-tailed

Every path coefficient reaches significance at the five percent level. Perceived usefulness, perceived ease of use, and trust each push electronic payment usage upward and perceived risk pulls it downward. Because gender is coded 0 for male and 1 for female, the positive gender coefficient indicates that female students report higher usage than male students with similar perceptions of usefulness, ease of use, trust, and risk, so all five hypotheses are supported.

Table 9 sets out the gender comparison in the original score units. Holding perceived usefulness, ease of use, trust, and risk constant, female students score 0.377 points higher than male students on the summed usage scale, which ranges from 4 to 20 and averages 16.54 in this sample. This equals about 0.09 points per item on the 1 to 5 scale. The difference is statistically significant ($t = 1.984$, $p = 0.049$) but small in size, with a standardized coefficient of 0.081 in the cross-check, so it is interpreted with caution in the discussion below.

Table 9. Gender Comparison of E-Payment Usage

Group	n	Share of Sample	Adjusted Difference in Usage Score	Significance
Male	40	31.25%	Reference group	Reference group
Female	88	68.75%	+0.377 (SE = 0.190)	t = 1.984; p = 0.049

Source: primary data processed, 2026; usage score = sum of items Y.1 to Y.4 (range 4 to 20; sample mean 16.54); difference adjusted for X1 to X4 in an ordinary least squares cross-check of the same model (standardized coefficient = 0.081)

DISCUSSION

The positive, significant effect of perceived usefulness on electronic payment usage confirms that students who see clear functional payoff, faster transactions, more accurate record-keeping, added value from promotions and discounts, tend to fold the technology more firmly into their daily financial routine. This lines up with the core claim of the Technology Acceptance Model, that perceived usefulness drives technology uptake (Davis, 1989), and matches earlier findings on digital payment use among younger consumers, including a 2026 study of buy-now-pay-later adoption among Indonesian Generation Z where usefulness fed directly into usage intention through trust (Arsy & Iskamto, 2026; Siagian et al., 2022; Thanigan et al., 2025). It also suggests that students weigh financial technology on functional, rational grounds rather than simply following a trend, which means messaging built around transaction efficiency is likely to land well with this segment.

Perceived ease of use turned out to carry the largest relative weight of any predictor, consistent with students' status as digital natives who have handled interface-driven technology since childhood. Understandable features, a process that feels more practical than handling cash, and painless top-ups all factor into whether a student sticks with a given payment app over time. This mirrors earlier evidence on the central role of ease of use in financial-technology acceptance, echoed in a 2026 Indian study where ease of use fed through to customer satisfaction with digital payment (Al-Qudah et al., 2024; Chawla & Joshi, 2019; Samuel et al., 2026), and signals that interface friction remains the chief obstacle to adoption even once a user already recognizes the functional benefit. Given how much weight this factor carries, providers likely gain more from simplifying the user flow than from adding features that make the interface more complicated.

Trust also showed a positive, significant effect, though a comparatively modest one next to usefulness and ease of use. Data confidentiality guarantees, provider integrity, and consistent service quality still matter before a student hands over personal financial information to a digital provider, echoing the TAM extension that foregrounds trust in transactions carrying inherent risk (Pavlou, 2003) and matching earlier findings on trust in digital financial-service uptake, including a 2025 multi-group study of Indonesian Generation Z e-payment users where trust shaped intention differently across payment platforms (Aljaradat & Shukla, 2025; Noer et al., 2025; Xavier et al., 2024). The relatively modest weight likely reflects the fact that students, having grown up alongside mainstream digital payment platforms, already carry a baseline trust in the broader ecosystem, letting functional factors like usefulness and ease take the lead over trust alone.

Perceived risk's negative, significant effect confirms that worry over unexplained balance loss, transaction failure, cyber-crime, and incomplete identity data on electronic cards still holds some users back even once benefit and convenience are well understood. This matches earlier evidence on risk as a genuine barrier to digital financial-service adoption, and lines up with a 2026 finding that perceived risk can even erode the link between ease of use and perceived usefulness themselves (Alrawad et al., 2023; Pierre & Mombeuil, 2023; Samuel et al., 2026), and underscores that cyber-security cannot be treated as a secondary concern in any strategy aimed at growing the electronic payment user base. That the effect size here lands in the small-to-moderate range, while still significant, suggests security worry among students is more contained than among the general public, likely thanks to stronger digital literacy, though it still deserves serious attention given how often social-engineering scams now target younger users.

The gender result needs careful reading. Because gender was coded 0 for male and 1 for female, the positive and significant coefficient indicates that female students in this sample use electronic payment more intensively than male students with comparable perceptions of usefulness, ease of use, trust, and risk. This direction runs against the earlier picture of a fintech gender gap in which men are the earlier and heavier adopters (Chen et al., 2023; Lee et al., 2022),

but it fits recent Indonesian evidence that the gap is narrowing or reversing in some groups, including a 2026 multigroup PLS-SEM study showing that the drivers of QRIS adoption still shift by gender among Generation Z users (Timur et al., 2026) and national survey data in which women's financial literacy and financial inclusion indices are slightly higher than men's (Otoritas Jasa Keuangan & Badan Pusat Statistik, 2024). Since the factors that might explain the gap were not measured directly in this study, the explanations below should be read as possibilities to be tested rather than as established mechanisms.

Several explanations are plausible. First, digital financial literacy may differ between the two groups; national survey data now show women in Indonesia scoring slightly higher on both financial literacy and inclusion (Otoritas Jasa Keuangan & Badan Pusat Statistik, 2024), and higher literacy tends to accompany more confident use of formal financial products (Lusardi & Mitchell, 2014). Second, financial independence and access to financial resources may play a part, since many students manage allowances or part-time income through digital wallets, and differences in who controls everyday spending money could translate into different payment volumes. Third, social and peer influence has been found to weigh more heavily on women's technology-usage decisions (Venkatesh & Morris, 2000), so widespread use of electronic payment within female peer networks may reinforce routine use. Fourth, patterns of online shopping and digital transactions may differ, as gender has been linked to different attitudes toward online shopping (Hasan, 2010), although the direction of that difference depends on context, and e-commerce platforms are a common entry point to e-wallets and paylater services. Fifth, trust and security perceptions may differ between the groups, as earlier work shows that gender can change how strongly trust shapes mobile-payment use (Chauhan et al., 2022). Finally, payment frequency and transaction purpose, such as small recurring purchases of food, transport, and daily needs as opposed to occasional larger payments, may differ between male and female students and feed directly into the usage score.

These differences should not be read as fixed or universal characteristics of men and women. The gap itself is small, about 0.09 points per item, and only just significant at the five percent level. The sample was dominated by female students (68.75 percent) and by students of the Faculty of Economics and Business (80.47 percent), so the observed gap may partly reflect who took part in the survey rather than gender as such. The gender coefficient also shows only a difference in usage level; it does not show whether usefulness, ease of use, trust, or risk operate differently for male and female students. For practice, the result suggests that digital financial literacy programs should take into account the different ways male and female students currently use electronic payment, rather than assuming that one group necessarily lags behind the other.

Overall, the model explains a strong share of variance in electronic payment usage and carries strong predictive relevance, reinforcing that the determinants tested here are genuine drivers of adoption behavior among students. One methodological note is worth flagging: the closeness in discriminant validity between the perceptual constructs and the usage construct suggests that usefulness, ease of use, and trust tend to be experienced almost simultaneously with actual usage behavior in a cross-sectional survey, a limitation common to technology-acceptance research that future studies could address through longitudinal designs or a time lag between measuring perception and measuring behavior. Taken as a whole, these findings add empirical weight to extending the Technology Acceptance Model with trust, risk, and gender for electronic payment research, echo the extended-TAM evidence recently reported among university students elsewhere (Jagrič et al., 2026), and reaffirm the value of a formal measurement-model approach in studying digital financial behavior in Indonesia.

CONCLUSION

Perceived usefulness, perceived ease of use, and trust each push electronic payment usage upward among students in Banyumas Regency, perceived risk pulls it downward, and female students report higher usage than male students once these perceptions are held constant. Bringing these determinants together in one model produced strong explanatory power and predictive relevance, lending weight to an extended Technology Acceptance Model in which trust and perceived risk complement the benefit-effort logic of usefulness and ease of use, and in which gender is treated as a demographic grouping variable, for research on electronic payment within higher-education settings.

These findings make clear that student adoption of financial technology is not simply a matter of infrastructure being available. It rests on a more layered interplay between functional perception, trust in the provider, risk concerns, and demographic traits. Payment service providers would likely gain the most from prioritizing a simpler interface and transaction flow, given how much weight ease of use carried in this study, while still communicating functional benefits clearly, reinforcing data-security guarantees, and addressing cyber-risk concerns proactively. Universities, for their part, have a role to play through gender-aware digital financial literacy programs, since female and male students in this sample showed different usage levels despite sharing the same academic environment, although such programs should avoid treating either group as uniformly ahead or behind.

A few limitations deserve mention for future research to address: the cross-sectional design limits any claim about long-term causal direction, the sample was drawn from a single higher-education region and was dominated by female students and by students of economics and business, and the closeness in discriminant validity between the perceptual constructs and the usage construct suggests a need for measurement instruments that separate attitude more sharply from actual behavior. Later studies would benefit from a longitudinal design, a broader geographic and payment-service scope, a formal test of gender as a moderating variable through multigroup analysis, and direct measurement of the possible explanations for the gender difference observed here, such as digital financial literacy, financial independence, peer influence, online shopping habits, and transaction purpose.

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