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Analysis of factors influencing the use of digital payments on student purchase levels using Structural Equation Modeling (SEM)

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ABSTRACT

Technological advancements have driven the growth of digital payments, making them increasingly essential in everyday transactions. In Indonesia, Generation Z dominates its usage; however, the system is still evolving and continuously adapting to technological changes and user needs. This study aims to analyze the factors influencing students' interest in adopting digital payment services in Malang City and their impact on purchasing levels. Adapting the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB), this research examines Perceived Benefits (PB), Perceived Ease of Use (PEU), Attitude (A), Subjective Norm (SN), and Behavioral Control (BC). Data was collected through a questionnaire distributed to 225 students and analyzed using Structural Equation Modeling (SEM). The results show that Perceived Benefits (PB) and Attitude (A) have a direct influence on students' interest in using digital payments. Additionally, PB and PEU positively and significantly affect Attitude (A). Another key finding reveals that Student Interest has a negative and significant effect on Purchase Level, indicating that students with a high interest in digital payments tend to be more selective in making purchases.

1. Introduction

The rapid advancement of technology has significantly impacted the financial sector, particularly payment systems. Initially, transactions were conducted solely with cash; however, they have now evolved into digital payments [1]. In Indonesia, digital payment services began to develop in 2001 with the introduction of mobile banking applications by Bank Central Asia (BCA), followed by DOKU Wallet in 2007 as the country's first e-wallet. The adoption of digital payments has continued to rise, especially during the COVID-19 pandemic, making them an essential part of daily life.

The growth of digital payment usage in Indonesia can be observed through the increasing number of electronic money transactions, which reached IDR 37.46 trillion in April 2023—an increase of 1.4% compared to March 2023 and 5.8% compared to April 2022. This data indicates a shift in payment preferences among Indonesians, where more individuals are transitioning to digital payments as their primary alternative. Generation Y and Z, who are more familiar with digital technology, have become the primary drivers of this increasing adoption. According to a study by Katadata Insight Center in 2020, approximately 75% of Generation Z use electronic money more frequently for transactions than conventional payment methods.

Although digital payment usage is growing rapidly, the digital payment system is still in its early stages of development and requires further analysis. Technology continues to evolve, while user needs also change over time [2]. Therefore, in-depth research is needed to identify the factors that influence users' interest in adopting digital payment services. These factors have the potential to be key success drivers in achieving competitive advantage and capturing market share in the increasingly competitive financial [3]. Moreover, it is also crucial to understand how digital payment usage influences students' purchasing behavior, as they are an active group in adopting technological innovations.

Previous studies have employed various models to analyze digital payment adoption factors. Budyastuti [4] utilized the Technology Acceptance Model (TAM) with variables such as Perceived Ease of Use, Perceived Risk, Perceived Benefits, and Trust, finding that Perceived Ease of Use and Perceived Benefits positively influence usage intensity. Meanwhile, Ajouz [5] applied

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the Theory of Planned Behavior (TPB) with variables such as Attitude, Subjective Norm, and Behavioral Control, showing that subjective norms and behavioral control play a crucial role in digital payment adoption. However, these two models have limitations when used separately. The TAM model does not consider social factors and behavioral control, while TPB lacks emphasis on technological aspects. Therefore, this study adopts a combined approach between TAM and TPB to provide a more comprehensive understanding of the factors influencing digital payment usage among students.

Based on the literature review, the factors used in this study include Perceived Ease of Use, Perceived Benefits, Behavioral Control, Subjective Norm, and Attitude Toward Use. Additionally, this study incorporates the Purchase Intention variable to examine whether there is a positive influence between students' interest in using digital payments and their purchasing behavior in Malang City.

To comprehensively analyze the impact of these factors, this study employs the Partial Least Squares Structural Equation Modeling (PLS-SEM) method. PLS-SEM is chosen for its flexibility in exploring variable relationships and its ability to explain the variance in dependent variables within the tested model [6]. Through this approach, the study aims to test and confirm theories regarding the factors influencing digital payment usage among students in Malang City. This research is expected to provide in-depth insights into user behavior towards digital payments and contribute to the development of more effective digital payment systems tailored to users' needs in the current digital era.

2. Literature review

2.1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), invented by Fred Davis in 1986, serves as a framework for analyzing factors that influence the adoption of information systems. TAM focuses on the adoption and use of information technology [7]. TAM explains that adopting information technology is driven by behavioral intentions, which in turn are influenced by attitudes toward the use of technology. This attitude is shaped by the perception of ease of use and the perception of benefits [8].

2.2. Theory of Planned Behavior (TPB)

Initially, this theory was called the Theory of Reasoned Action (TRA) and in 1967 it was developed. Then, Martin Fishbein and Icek Ajzen continued to expand and revise this theory. This theory has been used since 1980 to develop more appropriate interventions and to study human behavior. TPB is the most useful framework for describing human behavior. TPB has a core, namely the individual's intention to carry out a behavior. In TPB, norms and subjective attitudes towards behavior are said to be able to influence interest, and have elements of controlling behavioral perceptions that are integrated into additional factors that influence consumer interest and behavior. The three main components of TPB are perceived behavioral control, subjective norms, and attitudes toward behavior.

2.3. Structural Equation Model (SEM)

Structural Equation Modeling (SEM) is a statistical method developed to model relationships between variables, both observed and unobserved (latent variables) [9]. SEM uses covariance data to estimate causal effects between variables. The SEM method extends multiple regression and path analysis, both of which fall under multivariate analysis.

There are two common types of SEM: Covariance-Based SEM (CB-SEM) and Partial Least Squares SEM (PLS-SEM) [10]. CB-SEM is used to test or confirm existing theories [11], while research using CB-SEM primarily focuses on theory validation. In contrast, PLS-SEM is used to develop new theories or explore alternative models, emphasizing variance explanation in the dependent variable to assess the model's effectiveness [11].

3. Material and method

3.1. Research design

The research framework in this study is the result of the integration of two main theoretical models, namely the Technology Acceptance Model (TAM) introduced by Davis in 1989 and the Theory of Planned Behavior (TPB) developed by Ajzen in 1991.

The Technology Acceptance Model (TAM) this model focuses on two main variables, namely perceived usefulness and perceived ease of use, which directly affect user attitudes toward technology adoption. Davis [12] emphasized that when users feel the benefits and convenience of a technology, they tend to have a positive attitude that encourages adoption. Meanwhile, the Theory of Planned Behavior (TPB) adds other dimensions, such as subjective norms and behavioral control, which affect individual intentions and behavior. Ajzen [13] argues that in addition to attitudes, social pressure and individual perceptions of their ability to perform a behavior also play an essential role in decision-making. This combination can affect a person's interest in digital payments, influencing purchasing behavior. The analysis method used is Partial Least Squares - SEM on the questionnaire survey data on the use of digital payments by students in Malang. Some of the variables used in this study are as follows.

3.1.1. Perceived Benefits (PB)

The perception of benefits is based on the extent to which users believe that digital payment services

provide benefits, so they decide to use them [14]. In Nguyen's research [15], the perception of benefits influences the interest in using digital payments. On the other hand, Amalia's research [16] shows that the perception of benefits influences the use attitude. Therefore, the hypothesis that is built is:

- H_{01} : Perceived benefits do not affect the interest in using digital payment services.
- H_{a1} : Perceived benefits affect the interest in using digital payment services.
- H_{02} : Perceived benefits do not affect the attitude of using digital payment services.
- H_{a2} : Perceived benefits affect the attitude of using digital payment services.

3.1.2. *Perceived Ease of Use (PEU)*

Perceived ease of use can be explained as using a system without effort will increase comfort and trust. Understanding the perception of ease of use indicates that no excessive effort is required in utilizing digital payments [16]. In Teka's research [17], the perception of ease of use affects interest in digital payments. Arthana's research [18] and Sodik [19] also explain that the perception of ease of use influences the use attitude. Therefore, the formulated hypothesis is:

- H_{03}: Perceived ease of use does not affect the interest in digital payment services.
- H_{a3}: Perceived ease of use affects the interest in digital payment services.
- H_{04}: Perceived ease of use affects the interest in digital payment services..
- H_{a4}: Perceived ease of use affects the attitude of using digital payment services.

3.1.3. *Attitude (A)*

Attitude towards technology refers to an individual's positive or negative assessment of technology. This attitude can affect how a person views technology's benefits and ease of use [8]. Therefore, attitudes towards digital payments include accepting or rejecting the impact of digital payments in carrying out their duties. The results of research by Nguyen [15] and Sodik [19] showed that mastery influences interest in using digital payments. Therefore, the hypothesis that is built is:

- H_{05} : Attitude does not influence the interest in using digital payment services.
- H_{a5} : Attitude influences the interest in using digital payment services.

3.1.4. *Subjective norms (SN)*

Subjective norms include individuals' social pressure when deciding whether to perform a particular behavior [12]. In other words, subjective norms include the opinions of people close to or considered necessary, which influence the motivation and behavioral decisions of individuals to meet the expectations of others. The basis of subjective norms is the desire of each individual to be assessed positively and accepted by the surrounding community. Senalasari's research [20] showed that subjective norms influence the interest in using digital payments. According to the study, the hypothesis that was built is:

- H_{06}: Subjective norms have no influence on the intention to use digital payment services.
- H_{a6}: Subjective norms have an influence on the intention to use digital payment services.

3.1.5. *Behavioral control (BC)*

Behavioral control is defined as an individual's personal evaluation of the level of ease or difficulty they may encounter when engaging in a particular behavior. Senalasari [20] explain that perceived behavioral control has a positive influence on the intention to use digital payment services. Therefore, the proposed hypothesis is:

- H_{07}: Behavioral control does not affect the interest in using digital payment services.
- H_{a7}: Behavioral control affects the interest in using digital payment services.

3.1.6. *Interest (I)*

Interest is a perspective that influences a person's psychological aspects, resulting in a sense of interest in an object, which encourages a tendency to carry out or use it sustainably [21]. In this study, interest is defined as a person's interest in using digital payments that makes them use digital payments as a transaction tool. Riska's study [22] stated a significant and positive influence of the use of digital payments on the level of student purchases. The hypothesis built is as follows:

- H_{08}: Interest in using digital payments has no positive effect on user purchase rates
- H_{a8}: Interest in using digital payments has a positive effect on user purchase rates.

3.1.7. *Purchase Level (P)*

Purchase Level is defined as the high level of someone's consumption in making purchases/transactions after using digital payments. Indicators of the level of purchase after using digital payments can include several metrics that describe the extent to which the adoption and use of digital payment methods contribute to the level of purchasing activity.

3.2. *Data collection*

This study was conducted in Malang City, East Java, Indonesia, to analyze the factors that influence students' use of digital payments. Data were collected through a questionnaire distributed to students via Google Forms and social media such as WhatsApp, X, and Instagram. This questionnaire contains questions to collect data to solve research problems and test hypotheses. Respondents' answers were measured using a Likert scale to assess the level of agreement or disagreement with questions related to the research object.

In this study, the sample consisted of students in Malang City who had prior experience using digital payments. Since there is no precise data on the total number of students using digital payments, the population is considered unknown or unlimited. The sampling technique applied was Purposeful Sampling, in which participants were selected based on criteria relevant to the research objectives [23]. For cases where the population size is uncertain, the Lemeshow formula can be used to determine the appropriate sample size. Based on this calculation, the minimum required sample size for this study was 185 participants. While this sample reflects Malang City's role as an educational hub, the study does not specifically evaluate how well it represents the broader student population in Indonesia. Consequently, the findings of this study are most applicable within the context of Malang City.

3.3. *Research methods*

To analyze the data collected through the questionnaire, it is essential to ensure that each variable measured through the questions in the questionnaire passes the validity and reliability test. Construct testing is carried out to evaluate the reliability and validity of each item in the questionnaire so that the analysis results are reliable and accurate.

After conducting the validity and reliability test of the questionnaire, the next step is to conduct a Structural Equation Modeling (SEM) analysis using the Partial Least Squares (PLS) method. This process consists of two main stages: evaluating the outer or measurement models and the inner or structural models. The inner model or measurement model is used to evaluate the reliability and validity of the model to provide certainty that the measurement is suitable for use as a measurement [16]. Some tests carried out in the outer model are Cronbach Alpha, Composite Reliability, Average Variance Extracted (AVE), Discriminant Validity test, and Convergent Validity test. Meanwhile, the inner model analysis is used to see how accurately the structural model is built. Several indicators that can be identified from the evaluation of the inner model are the Predictive Relevance and Goodness Of Fit Index (GoF) and the Determination Coefficient (R^2).

4. Results and discussions

The data that has been collected is processed using several types of data testing which are taken with several types of sensors, such as pH sensors, temperature sensors, and TDS sensors.

4.1. *Pre-test data testing*

To analyze the data collected through the questionnaire, a Pre-Test was conducted with 30 respondents as the initial sample of the study to test its validity and reliability. Thirty respondents were considered sufficient to obtain a distribution of measurement values that were almost the same as usual so that the number of respondents was at least 30 for the questionnaire test with reliability and validity tests [24]. If the results of the 30 respondents indicate that the Instrument meets the validity and reliability tests, then it is worthy of being a data collection tool.

Validity is a parameter that assesses the research instrument's ability to measure the required results [25]. The research instrument can be called valid if the calculated *r*-value is greater than *r*-table. The validity test will be carried out using SPSS software. The results show that all indicators are valid because the calculated *r* value is greater than *r*-table, where the *r*-table value is 0.312. Reliability testing is carried out to determine the extent to which a research instrument can produce reliable and consistent data. The reliability of research instruments is often measured using Cronbach's alpha value. In reliability testing, the coefficient is considered weak if the Cronbach Alpha (a) value is < 0.5, is considered acceptable if the Cronbach Alpha (a) value is 0.5 < a <0.8 and is called good if the Cronbach Alpha value is > 0.8. The Reliability Test will be carried out in this study using SPSS software. The test results show that all variables have a Cronbach's Alpha value of more than 0.5. Therefore, all instruments in this study are considered reliable.

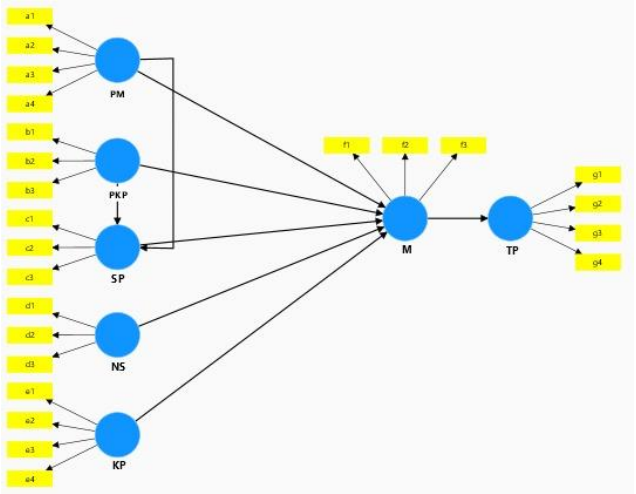

Figure 1. Reflective research model

Table 1.
Outer loading value

Factor	Item	Loading Factor	Conclution
Perceived Benefits	a1	0.760	Accepted
	a2	0.700	Accepted
	a3	0.720	Accepted
	a4	0.817	Accepted
Perceived Ease of Use	b1	0.778	Accepted
	b2	0.836	Accepted
	b3	0.736	Accepted
Attitude	c1	0.771	Accepted
	c2	0.781	Accepted
	c3	0.697	Accepted
Subjective Norm	d1	0.724	Accepted
	d2	0.993	Accepted
	d3	0.566	Accepted
Behavioral Control	e1	0.797	Accepted
	e2	0.779	Accepted
	e3	0.741	Accepted
	e4	0.581	Accepted
Interest	f1	0.782	Accepted
	f2	0.788	Accepted
	f3	0.795	Accepted
Purchase Level	g1	0.201	Eliminated
	g2	0.943	Accepted
	g3	0.905	Accepted
	g4	0.799	Accepted

Table 2.
AVE value

No	Factor	AVE	Description
1	Perceived Benefits (PB)	0.563	Valid
2	Perceived Ease of Use (PEU)	0.616	Valid
3	Attitude (A)	0.563	Valid
4	Norma Subyektif (SN)	0.614	Valid
5	Behavioral Control (BC)	0.532	Valid
6	Interest (I)	0.622	Valid
7	Purchase Level (P)	0.796	Valid

4.2. Measurement model analysis (Outer model)

In this study, the measurement model used is reflective, which assesses the reliability and validity of the measurement of latent variables. The reflective model assumes that latent variables affect indicators, with causal relationships directed from latent variables to indicators [26]. The model shown in Fig. 1 will be used for Outer model analysis. The result is to determine the influence between factors. It begins with conducting Composite Reliability, Discriminant Validity, and Convergent Validity tests.

4.2.1. Convergent validity

Measurement of convergent validity can be known based on the correlation between the indicator score and its construct score (loading factor). An indicator is valid if its loading factor value is more significant than 0.70. Indicators with a loading factor value between 0.40 and 0.70 can be considered for deletion if the deletion helps to increase internal reliability or convergent validity; indicators below 0.40 will permanently be eliminated [6]. The following are the outer loading values shown in Table 1.

Based on Table 1, item g1 ("I use digital payments more than three times a month for transactions") must be removed/eliminated because it has a loading factor value of 0.201, which is below the minimum threshold of 0.40. This low value is likely due to differences in the characteristics of indicator g1 compared to the other indicators. While g2 and g3 measure the impact of digital payments on the increase in purchase amount and purchasing tendency, g1 only measures the frequency of digital payment usage without considering how it influences user purchasing behavior. Additionally, respondents may have diverse patterns of digital payment usage, making the interpretation of "more than three times a month" not always aligned with the concept of purchase level measured in this study. Therefore, the elimination of g1 aims to improve convergent validity.

The next step in evaluating convergent validity and looking at the loading factor is checking the Average Variance Extracted (AVE) value. The AVE value is said to be valid if it exceeds 0.50.

Table 3.
Cross loading value

	PB	PEU	A	SN	BC	I	P
a1	0.760	0.232	0.475	-0.050	0.319	0.502	-0.175
a2	0.700	0.303	0.428	-0.094	0.272	0.419	-0.189
a3	0.720	0.423	0.462	-0.047	0.441	0.385	-0.119
a4	0.818	0.371	0.608	0.139	0.411	0.555	-0.097
b1	0.278	0.778	0.427	-0.099	0.478	0.413	-0.239
b2	0.404	0.836	0.515	-0.046	0.485	0.415	-0.193
b3	0.352	0.736	0.365	-0.052	0.381	0.370	-0.149
c1	0.510	0.488	0.771	-0.127	0.469	0.542	-0.253
c2	0.549	0.398	0.781	0.150	0.454	0.645	-0.146
c3	0.428	0.375	0.697	0.017	0.565	0.464	-0.138
d1	0.006	-0.104	-0.032	0.727	-0.059	0.005	0.570
d2	-0.008	-0.092	0.011	0.994	-0.030	0.070	0.563
d3	-0.037	-0.126	-0.085	0.571	0.013	-0.011	0.527
e1	0.441	0.503	0.570	-0.010	0.797	0.533	-0.172
e2	0.407	0.356	0.475	0.014	0.779	0.459	-0.137
e3	0.285	0.418	0.468	0.003	0.741	0.391	-0.134
e4	0.207	0.419	0.353	-0.193	0.581	0.247	-0.190
f1	0.413	0.498	0.620	-0.040	0.502	0.781	-0.214
f2	0.558	0.385	0.551	0.106	0.372	0.788	-0.161
f3	0.516	0.318	0.579	0.116	0.503	0.796	-0.157
g2	-0.210	-0.264	-0.246	0.515	-0.241	-0.255	0.950
g3	-0.127	-0.188	-0.192	0.463	-0.167	-0.194	0.913
g4	-0.158	-0.205	-0.199	0.518	-0.108	-0.100	0.808

Table 1.
Fornell-Larcker test results

	PB	PEU	A	SN	BC	I	P
PB	0.751						
PEU	0.440	0.785					
A	0.665	0.561	0.751				
SN	-0.002	-0.083	0.022	0.784			
BC	0.481	0.574	0.651	-0.037	0.730		
I	0.627	0.509	0.740	0.075	0.583	0.789	
P	-0.188	-0.248	-0.239	0.546	-0.209	-0.225	0.892

Table 2.
HTMT value test

	PB	PEU	A	SN	BC	I	P
PB							
PEU	0.634						
A	0.860	0.780					
SN	0.120	0.109	0.102				
BC	0.652	0.826	0.892	0.113			
I	0.846	0.695	1.025	0.144	0.773		
P	0.232	0.248	0.290	0.720	0.229	0.274	

The following are the AVE values for each factor. In Table 2, it can be seen that the Average Variance Extracted (AVE) value for all factors has a value >0.50, which means that all factors are valid and meet the AVE value requirements for convergent validity.

4.2.2. Discriminant validity

Discriminant validity measures how far a construct differs from others (i.e., how unique a construct is). This test aims to assess the extent to which a latent variable in the model is unique and different from other latent variables. There are three tests recommended for this stage [6]. The first test is cross-loadings, which consider the outer loading value. In this test, the outer loading value of the indicator related to the construct must be greater than the value of its relationship to other latent variables in the model. Table 3 is a table of cross-loading test results for the research model. Based on the results of this test, discriminant validity has been determined. This shows that the indicators measured in this study are different and reflect aspects not represented by other constructs in the model.

The second test is the Fornell-Larcker criterion, which compares the square root of each construct from the Average Variance Extracted (AVE) with the correlation between latent variables. The criteria in this test is that the square root of AVE for each construct must exceed the correlation value with other constructs. Table 4 presents the results of the Fornell-Larcker test of the research model. Based on Table 4 of the discriminant validity test using the Fornell-Larcker criteria, it was found that the latent variables met the requirements of this test.

Table 3.
Cronbach's alpha and composite reliability values

Variable	Cronbach's alpha	Composite reliability
PB	0.743	0.837
PEU	0.688	0.827
A	0.614	0.794
NS	0.864	0.819
BC	0.712	0.818
I	0.696	0.831
P	0.879	0.921

Table 4.
R^2 value

Variable	R^2
A	0.531
I	0.604
P	0.051

Table 5.
AVE and R^2

Variable	AVE	R^2
PB	0.563	
PEU	0.616	
SN	0.563	
BC	0.614	
A	0.532	0.531
I	0.622	0.604
P	0.796	0.051
Average	0.572	0.395

The third test is the Heterotrait Monotrait Ratio (HTMT), which considers whether the correlation between indicators that cross the latent variables measures other constructs. The threshold limit of the criteria that must be adjusted is <0.9. Table 5 shows the results of the HTMT value test.

4.2.3. *Composite reliability*

Reliability tests in Partial Least Squares (PLS) analysis can be assessed using composite reliability and Cronbach's alpha. Composite reliability with a value above 0.60 is still acceptable [24]. Cronbach's alpha with a value of more than 0.60 also indicates acceptable reliability. In conclusion, the construct is considered reliable if the composite reliability value and Cronbach's alpha exceed 0.60. Table 6 shows that Cronbach's alpha value and composite reliability in all constructs are more than 0.60. This explains that respondents are consistent in answering questions. Therefore, it is concluded that all constructs have good reliability.

4.3. *Structural Model Analysis (Inner model)*

Inner model analysis aims to assess the accuracy of the structural model using the R^2, Q^2, and Goodness of Fit (GoF) criteria. R^2 measures the strength of the model, while Q^2 and GoF assess the level of model accuracy.

4.3.1. *Coefficient of determination (R^2)*

The indicator used is the R^2 value to conduct the determination coefficient test. By looking at the R^2 value, the variance explained can be measured based on the relationship of the latent dependent variable relative to the total variance [6]. The following are the results of the determination coefficient test for the model used in this study. The assessment criteria used to interpret the R^2 value, the *R*-Square value is categorized as substantial if it is more than 0.67, moderate if it is more than 0.33 but lower than 0.67, and weak if it is more than 0.19 but lower than 0.33 [25]. The following is the calculation of the results of the Determination Coefficient test in Table 7.

Based on Table 7, it is obtained that the Usage Attitude Variable (A) has an R^2 value of 0.531 and the Interest Variable (I) has an R^2 value of 0.604, both of which indicate moderate predictive power, explaining 53.1% and 60.4% of the variation in the latent dependent variables A and M, respectively. In contrast, the Purchase Level Variable (P) shows weak predictive power with an R^2 value of 0.051, meaning that only 5.1% of the latent dependent variable P variation can be explained by the independent variables in the model.

4.3.2. *Q-Square Predictive Relevance (Q^2)*

Q^2 for structural models assesses the suitability produced by parameter estimates and models. A model is considered to have predictive relevance if the Q^2 value is greater than 0. The criteria used to interpret the Q^2 value, the *R*-Square value is categorized as substantial if it is more than 0.35, moderate if it is more than 0.15 but lower than 0.67, and weak if it is more than 0.02 but lower than 0.33 [6]. The following is the calculation of the results of the predictive relevance test contained in Table 8.

Based on the Q^2 values listed in Table 8, the predictive power of each variable can be concluded as follows: The Usage Attitude (A) variable has a Q^2 value of 0.290, indicating moderate predictive power, meaning the model can predict this variable with reasonably good accuracy. The Interest (I) variable with a Q^2 value of 0.342 also has moderate predictive power, indicating adequate prediction. In contrast, the Purchase Level (P) variable has a Q^2 value of 0.032, indicating weak predictive power, indicating that the model is less accurate in predicting this variable.

4.3.3. *Goodness Of Fit (GoF)*

The final step in evaluating the inner model is to determine the Goodness of Fit (GoF) value, which indicates the overall model fit. GoF ≥ 0.36 indicates a large model fit, GoF ≥ 0.25 indicates a moderate model fit, and GoF ≥ 0.10 indicates a small model fit [27]. The GoF calculation for this research model is shown in Table 9.

Table 6.
Hypothesis testing

	Original sample (O)	*P*-values	Conclution
PB -> I	0.223	0.004	Significantly Influential
PB -> A	0.518	0.000	Significantly Influential
PEU -> I	0.086	0.269	Not Significantly Influential
PEU -> A	0.333	0.000	Significantly Influential
A -> I	0.456	0.000	Significantly Influential
SN -> I	0.078	0.186	Not Significantly Influential
BC -> I	0.133	0.097	Not Significantly Influential
I -> P	-0.225	0.000	Significantly Influential

From the evaluation results, the GoF value of 0.475 indicates that the model fit is above 0.36, indicating a good or high model fit. This indicates that the data sample used is by the studied model and can explain the influence between factors in the model well. The last step after model evaluation is hypothesis testing, which will be discussed in the next section.

4.4. Hypothesis testing

The formulated hypothesis will be tested at this stage using the Bootstrapping method, where the path coefficient value in the inner model indicates the level of significance. Bootstrapping can produce *P*-values for all path coefficients, which are recommended by Hair [6] to use 5000 bootstraps in SEM-PLS analysis. In this study, the researcher compared the significance value that had been set with the P value obtained from the analysis, which is listed in Table 9.

4.5. Analysis and discussions

Based on the hypothesis testing results, Perceived Benefits (PB) has a positive and significant influence on Interest (I) with a p-value of 0.004, meaning that the greater the perceived benefits, the higher the students' interest in using digital payments. This finding aligns with the study by Teka [17] and Budyastuti [4], which states that convenience and efficiency are crucial factors in increasing user interest.

Furthermore, Perceived Benefits (PB) also influences Attitude (A) with a *p*-value of 0.00. This indicates that a high perception of usefulness enhances students' positive attitudes toward digital payment usage, consistent with the study by Rachmawati [28].

However, Perceived Ease of Use (PEU) does not significantly affect Interest (I), as indicated by a p-value of 0.269. This contrasts with the findings of Teka, who revealed a positive relationship between ease of use and interest. On the other hand, PEU significantly influences Attitude (A) (p-value 0.00), suggesting that ease of use enhances a positive attitude toward the service, in line with Rachmawati [28] and Arthana & Rukhviyanti [18].

Attitude (A) also shows a significant influence on Interest (I) with a *p*-value of 0.00, meaning that a positive attitude toward digital payments increases user interest, supporting Ariffin [29] findings. Meanwhile, Subjective Norms (SN) and Behavioral Control (BC) do not significantly affect Interest (I), with p-values of 0.186 and 0.097, respectively. This suggests that social factors and perceived self-control are not the primary determinants in adopting digital payments among students in Malang City. These findings differ from the research by Ajouz [5] and Ariffin [29], which found a significant relationship between PBC and interest.

The analysis results also indicate that Interest (I) has a significant negative influence on Purchase Level (P), with a p-value of 0.00 and a path coefficient of -0.244. This suggests that students in Malang City who have a high interest in digital payments tend to be more selective in making purchases, meaning that a high level of interest does not necessarily correlate with increased usage. In other words, although they have a strong interest in digital payment technology, students apply stricter standards when deciding to use these services.

This tendency may be influenced by factors such as financial caution and financial literacy, which encourage students to be more prudent in managing their expenses. Additionally, demographic factors such as education level, income, and age also play a crucial role in determining financial literacy levels, which in turn affect financial behavior. According to Morgan and Trinh [30], the higher an individual's financial literacy, the better their financial planning, including decision-making regarding saving and expense management. Students with better financial literacy tend to be more selective in their spending, even if they have a high interest in digital payment technology.

5. Conclusions

This study identifies five key factors influencing students' interest in adopting digital payment services in Malang City, based on the TAM and TPB theories. The analysis results show that Perceived Benefits (PB) and Attitude (A) have a significant impact on students' interest (I) in using digital payments. Based on the SEM-PLS results, Perceived Benefits (PB) has a path coefficient of 0.252 with a *P*-value of 0.00, indicating a significant positive influence on students' interest in using digital payments. Additionally, Attitude (A) has a path coefficient of 0.434 with a *P*-value of 0.00, also showing a significant positive influence on interest. Additionally, Perceived Benefit (PB) has a path coefficient of 0.473 with a *P*-value of 0.00, indicating a

significant impact on Attitude (A), while Perceived Ease of Use (PEU) has a path coefficient of 0.319 with a *P*-value of 0.00, also significantly affecting Attitude (A).

Interestingly, this study shows a significant influence between students' Interest (I) in using digital payment services and Purchase level (P), with a path coefficient of -0.244 and a *P*-value of 0.00, indicating a significant negative relationship. Although students' interest in digital payments increases,

However, this study has several limitations, particularly in its geographic scope, which is focused only on students in Malang City, meaning the findings may not fully reflect the behavior patterns of students in other regions. It is recommended that future research expand its geographic coverage and use a more complex and diverse sample to provide a more comprehensive understanding of the factors influencing the adoption of digital payment services among students.

Declaration statement

Nathania Nabilla Azah'ra: Conceptualization, Methodology, Writing Manuscript, Collecting Data. Aisyah Larasati: Research Framework, Supervise Data Collection and Manuscript Writing, Results Discussions and Valuable Feedback throughout the research and writing process. Chintia Kuswardani: Writing, Supervise Data Collection and Manuscript Writing.

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Data availability statement

The data used in this study were collected through questionnaires filled out by respondents. These data cannot be published widely to maintain the confidentiality and privacy of respondents, but can be obtained from the author upon appropriate request.

AI Usage Statement

Generative AI and AI-assisted tools were used to enhance the language and readability of this manuscript. The authors have reviewed and revised all AI-generated content to ensure its accuracy and alignment with the research. The authors remain fully responsible for the work's scientific content, conclusions, and integrity, and disclose the use of AI to ensure transparency and adherence to publisher guidelines.

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