

Financial Literacy, Behavioral Control, and Intention in Digital Payment Adoption: A Theory of Planned Behavior Perspective

Mochamad Taupik Ridwan¹, Budi Sutiono Pratama Nugraha²

¹²Univeristas Nahdlatul Ulama Yogyakarta, Indonesia

Email: budispn@unu-jogja.ac.id

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Abstract

The growth of digital payments highlights the need to understand the factors influencing usage behavior. This study aims to analyze the impact of financial literacy, subjective norms, and perceived behavioral control on the intention and behavior regarding digital payment usage, as well as to examine the mediating role of intention based on the Theory of Planned Behavior (TPB). A quantitative approach with a cross-sectional survey design was employed, involving 149 respondents in the Special Region of Yogyakarta. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4, utilizing a bootstrapping procedure with 5,000 resamples. The results indicate that financial literacy, perceived behavioral control, and intention have a positive and significant effect on digital payment usage behavior, whereas subjective norms do not have a direct significant effect. Financial literacy does not significantly influence intention, while subjective norms and perceived behavioral control have a positive and significant impact on intention. Mediation analysis reveals that intention does not mediate the effect of financial literacy on digital payment usage behavior but does mediate the effects of subjective norms and perceived behavioral control on such behavior. These findings demonstrate that intention plays a distinct mediating role for each antecedent factor and reinforce the relevance of the TPB in explaining digital payment adoption.

Keywords

Financial Literacy; Subjective Norms; Perceived Behavioral Control; Intention; Digital Payments; PLS-SEM



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INTRODUCTION

The rapid development of digital payment technology has transformed the way consumers conduct financial transactions, particularly with the increasing use of mobile banking, electronic wallets, QR-based payments, and various cashless platforms in everyday economic activities (Tian et al., 2023; Linh & Huyen, 2025). Digital payment systems provide greater transaction speed, accessibility, convenience, and efficiency, gradually shifting consumer preferences from cash-based transactions toward digital transactions (Tian et al., 2023; Sebayang et al., 2023). This

transformation is particularly evident among young consumers and university students, as this group has a high intensity of mobile device and digital financial platform use in their daily lives (Shehadeh et al., 2024; Lai, 2023). Various studies in developing countries have shown that perceived usefulness, perceived ease of use, digital financial literacy, social influence, and perceived behavioral control are associated with young people's willingness to use digital payment services (Tian et al., 2023; Shehadeh et al., 2024; Lai, 2023). Thus, digital payments no longer function merely as a technological alternative but have developed into an essential component of modern consumer financial behavior (Tian et al., 2023; Sebayang et al., 2023).

Digitalization supported by the government and the development of cashless transaction infrastructure have contributed to the increased use of digital payments, while QR-based payment systems have increasingly facilitated everyday consumer transactions (Bank Indonesia, 2020; Utomo et al., 2024). Their close familiarity with technology also makes university students a relevant group for examining how behavioral intentions develop into actual usage (Shehadeh et al., 2024; Usman et al., 2025). Therefore, understanding digital payment adoption among young people requires attention not only to technological convenience but also to the financial and psychological capabilities that influence individual decision-making (Usman et al., 2025).

One of the main issues in the digital payment literature concerns the imbalance between the rapid diffusion of payment technology and consumers' ability to use it appropriately, consciously, and responsibly (Usman et al., 2025; Shehadeh et al., 2024). Digital financial literacy can help users understand transaction procedures, financial risks, security, costs, and the practical benefits of financial technology; however, empirical evidence indicates that the contribution of each literacy dimension is not necessarily the same across different user groups (Shehadeh et al., 2024; Linh & Huyen, 2025). Trust and perceived risk also add complexity, as users may perceive digital payments as practical means of transaction while still having concerns about fraud, privacy, security, and transaction uncertainty (Linh & Huyen, 2025; Sebayang et al., 2023). Theoretical issues are also important because the relationships among variables predicted by behavioral models have not produced consistent findings across different digital payment contexts (Usman et al., 2025; Linh & Huyen, 2025). The Theory of Planned Behavior (TPB) explains that attitudes, subjective norms, and perceived behavioral control contribute to the formation of intentions, while intentions increase the likelihood of actual behavior (Ajzen, 1991). However, research in the field of digital finance indicates that these relationships may vary according to demographic,

cultural, technological, and institutional characteristics (Musa et al., 2024; Usman et al., 2025). Subjective norms, for example, have been identified as an important factor in several studies, while other studies have shown that subjective norms do not significantly influence intentions when personal preferences and individual considerations are more dominant (Amalia, 2018; Usman et al., 2025).

Perceived behavioral control also holds an important position because individuals' beliefs regarding their ability to manage digital transactions can influence both their intentions and actual behavior (Ashour et al., 2023; Usman et al., 2025). Several previous studies have addressed these issues through the development of behavioral and technology acceptance theories in various contexts (Tian et al., 2023; Sebayang et al., 2023; Shehadeh et al., 2024). Tian et al. (2023) integrated the Technology Acceptance Model and TPB in a study of Alipay usage and found that perceived usefulness and perceived ease of use were important predictors of usage intentions. Research among university communities in Jordan demonstrated that digital financial awareness, experience, and skills significantly encouraged the use of cashless payments, while gender differences could influence the strength of certain relationships among variables (Shehadeh et al., 2024).

In the Indonesian context, Sebayang et al. (2023) extended the planned behavior approach by incorporating trust and various dimensions of perceived risk into the analysis of mobile banking adoption. Other studies have indicated that market conditions in developing countries may introduce additional contextual factors into the relationship between behavioral intentions and actual digital financial behavior (Kamal et al., 2024; Linh & Huyen, 2025). Linh and Huyen (2025) integrated trust with TAM and TPB in Vietnam and found that trust influenced several mechanisms underlying digital payment adoption. These findings indicate that technological benefits do not necessarily automatically generate positive attitudes when concerns regarding security and continued cash-use habits remain strong. Research on digital zakat payments in Indonesia has also shown that knowledge embedded in cultural and religious contexts can interact with technology acceptance constructs. Effort expectancy, social influence, hedonic motivation, and knowledge of zakat fiqh can influence both intentions and actual digital zakat payment behavior (Kamal et al., 2024). These findings broaden the study of digital payments by demonstrating that intentions can be influenced by contextual knowledge and social meanings, in addition to conventional technology acceptance variables (Kamal et al., 2024; Linh & Huyen, 2025). Meanwhile, Usman et al. (2025) found that financial literacy and perceived behavioral control significantly influenced intentions, whereas subjective norms did

not have a significant effect. Intentions also mediated only the relationship between perceived behavioral control and digital payment usage behavior. This finding raises an important question as to whether intention is a universal mediator or rather a mechanism whose influence depends on its antecedent variables (Usman et al., 2025).

Although the literature on digital payments continues to develop, several research gaps remain. First, TPB and its various extensions have been applied in Malaysia, Indonesia, Jordan, Vietnam, China, and other emerging markets, but the strength and consistency of the effects of attitudes, subjective norms, perceived behavioral control, trust, risk, and financial literacy remain highly dependent on the research context (Tian et al., 2023; Sebayang et al., 2023; Shehadeh et al., 2024; Lai, 2023; Linh & Huyen, 2025). Second, most studies still employ cross-sectional surveys, limiting their ability to explain behavioral development and the transition from intention to sustained actual usage (Tian et al., 2023; Sebayang et al., 2023; Shehadeh et al., 2024). Third, although many studies examine behavioral intentions, studies that explicitly test the mediating role of intention across multiple relationships between antecedent variables and actual behavior within an integrated model remain limited (Usman et al., 2025). Fourth, financial literacy and perceived behavioral control remain important variables that have not yet been fully integrated into various applications of TPB to digital payment behavior among young people in emerging markets (Zhu et al., 2024; Usman et al., 2025). These gaps indicate the need for a model that simultaneously examines the direct effects on behavior, the factors shaping intentions, and the specific mediating role of intention in digital payment adoption (Usman et al., 2025).

Based on these gaps, this study revisits the Theory of Planned Behavior in the context of digital payment adoption among young people by examining financial literacy, subjective norms, perceived behavioral control, intention, and actual digital payment usage behavior within an integrated framework (Usman et al., 2025). The theoretical novelty of this study lies in integrating financial literacy as a relevant factor in financial decision-making while examining whether intention functions as a mechanism linking financial literacy, subjective norms, and perceived behavioral control to actual digital payment usage behavior (Usman et al., 2025). Based on these objectives, this study explicitly formulates three research questions: RQ1: How do financial literacy, subjective norms, perceived behavioral control, and intention influence digital payment usage behavior among young people? RQ2: How do financial literacy, subjective norms, and perceived behavioral control influence young people's intentions to use digital payments? RQ3: To what extent does intention

mediate the relationships between financial literacy, subjective norms, perceived behavioral control, and digital payment usage behavior? By addressing these questions, this study aims to strengthen the explanatory capacity of TPB in the context of digital finance while providing relevant empirical evidence for financial education, user empowerment, and the development of digital payment services in emerging markets.

METHODS

The study employs a quantitative cross-sectional approach to examine the relationships among financial literacy, subjective norms, perceived behavioral control, intention, and digital payment usage behavior. A quantitative approach was selected because the study focuses on testing structural relationships among variables formulated based on the Theory of Planned Behavior. Data were collected during a single observation period; therefore, the study describes respondents' perceptions and behaviors at the time of the survey rather than changes in behavior over a longitudinal period. The use of a cross-sectional survey is consistent with the methodological tendency in TPB-based digital payment adoption research. Several previous studies have employed quantitative cross-sectional surveys to examine behavioral intention and adoption behavior using SEM or PLS-SEM, including studies conducted in Malaysia, Indonesia, Jordan, and Vietnam (Tian et al., 2023; Sebayang et al., 2023; Shehadeh et al., 2024; Linh & Huyen, 2025). The research model consists of five constructs, namely financial literacy (X1), subjective norms (X2), perceived behavioral control (X3), intention (Z), and digital payment usage behavior (Y). All constructs are treated as reflective constructs and are measured using a total of 32 indicators. The model examines ten direct and indirect relationships as formulated in the conceptual framework of the study. Figure 4. Research Model. The study uses primary data obtained directly from respondents through questionnaires. Data collection was conducted from June to July 2026. The population of the study consisted of residents of the Special Region of Yogyakarta (DIY). The sample size was determined using G*Power through an a priori power analysis with an effect size of 0.30 (medium category), a significance level of $\alpha = 0.05$, a statistical power of 0.95, and a one-tailed test (Cohen, 1988; Faul et al., 2007). The calculation indicated a minimum sample requirement of 111 respondents. This study involved 149 respondents, thereby exceeding the minimum required sample size. Data were collected through an online questionnaire using Google Forms. The questionnaire link was distributed through Facebook, Instagram, WhatsApp groups, and Telegram. The use of multiple digital

platforms was intended to broaden access to respondents with diverse academic levels and backgrounds. Evans and Mathur (2018) also identified online surveys as a method that can improve respondent accessibility and engagement.

FINDINGS AND DISCUSSION

5.1 Financial Literacy and Digital Payment Usage Behavior

The results show that financial literacy has a positive and significant effect on digital payment usage behavior. The hypothesis testing produced a coefficient of $\beta = 0.373$, a t-value of 5.565, and $p = 0.000$, indicating that H1 is supported. This finding demonstrates that the better an individual's level of financial literacy, the greater the individual's tendency to use digital payment services.

This finding indicates that the ability to understand financial concepts does not stop at the level of knowledge but can be reflected in actual decisions to use digital payment services. From the perspective of the Theory of Planned Behavior (TPB), financial literacy can be positioned within an evaluative dimension that helps individuals develop positive assessments of a particular behavior. Users who understand the benefits, costs, security, and risks of digital transactions have a more adequate informational basis for selecting and using such services rationally (Ajzen, 1991; Mishra et al., 2024).

5.2 Subjective Norms and Digital Payment Usage Behavior

The results show that subjective norms do not have a positive and significant effect on digital payment usage behavior. The hypothesis testing produced a coefficient of $\beta = -0.035$, a t-value of 0.825, and $p = 0.409$, indicating that H2 is not supported. These results demonstrate that perceptions of support, approval, or expectations from significant others are not sufficiently strong to directly encourage digital payment usage behavior.

This finding indicates that digital payment usage among the respondents is more likely to be based on personal considerations than on pressure or encouragement from the social environment. Although subjective norms reflect the influence of peers, family, and the broader social environment, the decision to use digital payments may be more strongly influenced by other factors, such as convenience, security, perceived benefits, user experience, and individual technological competence. Thus, social influence does not always result in changes in actual behavior when individuals have more dominant personal considerations.

This finding differs from Ruiz-Herrera et al. (2023), who demonstrated the importance of social influence in Go-Pay usage, and Khan and Abideen (2023), who identified the role of social expectations in electronic money adoption. These differences may indicate that the strength of subjective norms is contextual and depends on user characteristics and the

environment in which digital payments are used. In this study, the social environment was not sufficiently strong to explain digital payment usage behavior. Previous literature also emphasizes that the influence of subjective norms may vary depending on context, trust levels, personal preferences, and population characteristics.

5.3 Perceived Behavioral Control and Digital Payment Usage Behavior

The results show that perceived behavioral control has a positive and significant effect on digital payment usage behavior. The hypothesis testing produced a coefficient of $\beta = 0.220$, a t-value of 2.665, and $p = 0.008$, indicating that H3 is supported.

This finding indicates that individuals who perceive themselves as having sufficient ability, skills, resources, and control over digital payment use are more likely to implement such usage in their actual behavior. In the context of digital payments, perceived behavioral control is associated with the ability to operate applications, complete transactions, control expenditures, and overcome various obstacles during the payment process.

This finding supports the position of perceived behavioral control as a representation of an individual's ability, resources, and confidence to perform a particular behavior. Jain et al. (2022) associated digital payment adoption with perceived ease of use, convenience, and security. Broader literature also indicates that PBC consistently emerges as an important predictor of intention and usage because it reflects self-efficacy and the supporting conditions required to conduct digital transactions. Therefore, control functions not only as a psychological perception but also reflects users' practical readiness to translate their evaluation of technology into action.

5.4 Intention and Digital Payment Usage Behavior

The results show that intention has a positive and significant effect on digital payment usage behavior. The hypothesis testing produced a coefficient of $\beta = 0.433$, a t-value of 4.911, and $p = 0.000$, indicating that H4 is supported.

This finding demonstrates that the stronger an individual's intention to use digital payments, the greater the individual's tendency to translate that intention into actual usage. In other words, an individual's readiness and willingness to use digital payments constitute important factors that encourage actual usage behavior.

This finding supports the main proposition of TPB that intention is a proximal determinant of actual behavior (Ajzen, 1991). The stronger an individual's readiness to use digital payments, the greater the likelihood that such readiness will be translated into actual usage. This finding is also consistent with Khan et al. (2017), Zhang et al. (2018), Zhu et al. (2024), and Tian et al. (2022), who position intention as an important predictor in the process of technology acceptance and usage.

5.5 Financial Literacy and Intention to Use Digital Payments

The results show that financial literacy does not have a significant effect on intention to use digital payments. The hypothesis testing produced a coefficient of $\beta = 0.146$, a t-value of 1.765, and $p = 0.078$, indicating that H5 is not supported.

These results demonstrate that individuals' understanding of financial concepts does not necessarily directly increase their intention to use digital payments. Although individuals may possess knowledge regarding the benefits, costs, security, and risks of digital transactions, such knowledge may not necessarily constitute the primary factor shaping their willingness or readiness to use digital payments.

This finding differs from Priyono (2017), Tian et al. (2023), and Shehadeh et al. (2024), who associated financial knowledge with confidence and intention to use payment technologies. This difference may indicate that financial literacy plays a stronger role in supporting actual behavior than in forming intention among the respondents in this study. Thus, financial literacy in this study has been shown to directly influence digital payment usage behavior but is not sufficiently strong to significantly shape intention. The literature also conceptually positions financial literacy as a factor that can shape psychological readiness, although the strength of this relationship may depend on user context.

5.6 Subjective Norms and Intention to Use Digital Payments

The results show that subjective norms have a positive and significant effect on intention to use digital payments. The hypothesis testing produced a coefficient of $\beta = 0.289$, a t-value of 4.298, and $p = 0.000$, indicating that H6 is supported.

This finding demonstrates that support, approval, and expectations from the social environment play a role in shaping individuals' intentions to use digital payments. When individuals perceive that people who are important to them support or consider the use of digital payments to be normal and beneficial, these conditions can increase their tendency to form an intention to use digital payments.

This study supports the TPB concept, which positions subjective norms as one of the factors shaping intention. The finding also demonstrates that social influence can operate at the intention-formation stage even though its influence on actual behavior was not statistically significant in this study. Therefore, subjective norms play a greater role as a psychological factor shaping individuals' readiness or willingness before they engage in digital payment usage.

This finding is consistent with studies that position social influence as one of the factors contributing to the formation of intention to use financial technology. It also demonstrates that the relationship between subjective norms and the behavioral process is not necessarily the same at every stage, because subjective norms may contribute to intention formation without directly producing actual behavior.

5.7 Perceived Behavioral Control and Intention

The results show that perceived behavioral control has a positive and significant effect on intention to use digital payments. The hypothesis testing produced a coefficient of $\beta = 0.538$, a t-value of 6.164, and $p = 0.000$, indicating that H7 is supported.

This finding demonstrates that users' beliefs regarding their ability to control transactions constitute an important factor in shaping their readiness to use digital payments. Individuals who perceive themselves as possessing adequate skills, abilities, resources, and control are more likely to develop an intention to use digital payments.

This result is consistent with Ashour et al. (2023) and Niswah et al. (2019), who demonstrated a positive relationship between PBC and intention in the context of financial technology. The finding reinforces the TPB mechanism whereby individuals who perceive themselves as having adequate skills, control, and resources are more likely to develop stronger intentions.

The coefficient of $\beta = 0.538$ also indicates that perceived behavioral control is one of the relatively strong factors shaping intention in this research model. This means that improving individuals' abilities and sense of control in using digital payments has the potential to strengthen their willingness to use such services.

5.8 The Mediating Role of Intention

5.8.1 Financial Literacy through Intention

The results show that intention does not mediate the relationship between financial literacy and digital payment usage behavior. The hypothesis testing produced an indirect-effect coefficient of $\beta = 0.060$, a t-value of 1.678, and $p = 0.093$, indicating that H8 is not supported.

This finding demonstrates that the effect of financial literacy on digital payment usage behavior does not necessarily occur through the formation of intention. Financial knowledge and understanding can be directly applied when individuals make digital transaction decisions. Thus, individuals with good financial literacy may use digital payments based on their ability to understand the benefits, risks, security, and consequences of transactions without first developing a strong intention as an intermediary stage.

This finding supports Kennedy (2013), who demonstrated that financial knowledge can encourage financial activities without necessarily passing through intention as an intermediary. The finding also demonstrates that intention is not a universal mediator in the relationship between antecedent factors and digital payment usage behavior.

5.8.2 Subjective Norms through Intention

The results show that intention significantly mediates the relationship between subjective norms and digital payment usage behavior. The hypothesis testing produced an indirect-effect coefficient of $\beta = 0.119$, a t-value of 3.260, and $p = 0.001$, indicating that H9 is supported.

This finding demonstrates that the influence of subjective norms on digital payment usage behavior can occur through the formation of intention. When individuals receive support, approval, or positive expectations from their social environment, these conditions can increase their intention to use digital payments, which subsequently encourages actual usage behavior.

This finding demonstrates that although the direct effect of subjective norms on usage behavior is not significant, subjective norms can still play a role through intention. Therefore, intention serves as a mechanism that connects social environmental influences with digital payment usage behavior. The finding demonstrates that the influence of subjective norms does not necessarily have to take the form of a direct effect but can operate through a psychological process involving intention formation.

5.8.3 Perceived Behavioral Control through Intention

The results show that intention significantly mediates the relationship between perceived behavioral control and digital payment usage behavior. The hypothesis testing produced an indirect-effect coefficient of $\beta = 0.222$, a t-value of 3.681, and $p = 0.000$, indicating that H10 is supported.

This finding demonstrates that individuals who perceive themselves as having sufficient abilities, skills, resources, and control over digital payment usage develop stronger intentions, which are subsequently translated into actual usage. Therefore, perceived behavioral control influences behavior not only directly but also through intention as a psychological mechanism.

This finding is consistent with Tian et al. (2022) and demonstrates that the mediating function of intention is specific rather than universal. Overall, the pattern of results indicates that financial literacy, subjective norms, and perceived behavioral control operate through different mechanisms in generating digital payment usage behavior.

CONCLUSION

This study demonstrates that financial literacy, perceived behavioral control, and intention play important roles in encouraging digital payment usage behavior. Financial literacy has a positive and significant effect on digital payment usage behavior but does not have a significant effect on intention. This finding indicates that an understanding of financial benefits, costs, security, and risks can be directly applied to decisions regarding digital payment usage without necessarily passing through the formation of intention (Ajzen, 1991; Mishra et al., 2024).

Subjective norms do not have a significant direct effect on digital payment usage behavior but have a positive and significant effect on intention. Meanwhile, perceived behavioral control has a positive and significant effect on both intention and digital payment usage behavior, indicating that individuals' abilities, skills, resources, and sense of control are important factors in digital payment adoption (Ashour et al., 2023; Niswah et al., 2019). Intention is also found to have a positive and significant effect on actual behavior, thereby reinforcing the Theory of Planned Behavior that intention represents a proximal determinant of behavior (Ajzen, 1991).

The mediation analysis shows that intention does not mediate the relationship between financial literacy and digital payment usage behavior but does mediate the relationships between subjective norms and perceived behavioral control and digital payment usage behavior. This finding confirms that the mediating function of intention is specific and does not apply uniformly to all factors shaping behavior (Tian et al., 2022). Overall, this study reinforces the relevance of the Theory of Planned Behavior in explaining digital payment usage while demonstrating that financial literacy, social influence, perceived behavioral control, and intention operate through different mechanisms in shaping actual usage behavior.

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