

## ANTECEDENTS OF DIGITAL PAYMENT MANAGEMENT AMONG YEMENI MIGRANT STUDENTS IN INDONESIA: A UTAUT ANALYSIS

Saeed A.A. Saif<sup>1\*</sup>, Priyonggo Suseno<sup>2</sup>

<sup>1,2</sup>Department of Economics, Faculty of Business and Economics, Universitas Islam Indonesia,  
Yogyakarta, Indonesia

<sup>1</sup>[saeed.aa.saif.econ@gmail.com](mailto:saeed.aa.saif.econ@gmail.com) ; <sup>2</sup>[priyonggo.suseno@uii.ac.id](mailto:priyonggo.suseno@uii.ac.id)

### ABSTRACT

*Digital payment systems are increasingly being integrated into daily life. However, few studies have investigated whether migrant students can access these services in an overseas context. Although digital payments are available to international students, their usage varies across student groups in Indonesia. The objectives of this research are to determine the use of digital payment systems by Yemeni migrant students in Indonesia and to examine the factors supporting digital payment management. This study employs the Unified Theory of Acceptance and Use of Technology (UTAUT) model to investigate the influence of performance expectancy (PE), effort expectancy (EE), perceived risk (PR) of the technology on digital payment management (DPM), and the role of financial literacy (FL) as a moderation factor. The analysis was based on a multiple linear regression using data from 105 (50.2%) respondents who completed the survey. Results showed that PE and EE positively influenced DPM, but PR does not have a significant influence. However, when moderated by FL, PR negatively affects DPM, which implies that the higher the level of financial literacy of respondents, the more important the role of technology risk (PR) in the adoption of digital payments. This study has two novel contributions, including measuring technology adoption in the form of the effectiveness of digital payment management, not in the form of adoption intention. Second, it examines Yemeni migrant students, a sample that has rarely been studied. This study contributes to the development of literature and digital payment policies, especially the role of financial literacy for migrant students.*

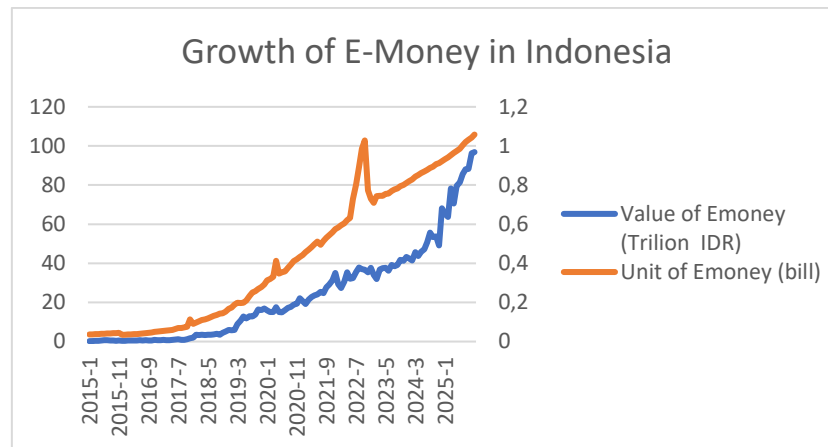
**Keywords:** Digital Payment Management, UTAUT, Financial Literacy, Perceived Risk, Yemeni Migrant Students

### INTRODUCTION

Digital payment systems have become an essential part of university students' daily financial transactions worldwide, providing ease, speed, and transparency for everyday payments for transport, food, tuition, and online purchases. The digital economy has expanded rapidly, and digital payments are an important aspect of students' everyday financial transactions, reducing the costs of these transactions (Niankara & Traoret, 2023; Shahan & Sharaf, 2025). There has been a massive development of the digital payments infrastructure in Indonesia, especially with the implementation of the Quick Response Code Indonesian Standard (QRIS) nationwide, resulting in a huge reduction in the manual use of cash payments and enabling an efficient and transparent manner of dealing with expenditures for everyday purchases and expenses (Astuti et al., 2024; Qolyubi & Munandar, 2025).

International students can benefit greatly from digital payment systems, as they can help them reduce the use of cash and make it easier to adapt financially to a foreign country. However, the advantages of digital payment services are not universal among users, with international students struggling to adapt to a new country, which hinders their full integration into the digital financial system (Niankara & Traoret, 2023). In Indonesia, digital payment systems have become popular very rapidly, but there are still some challenges faced by international students that may put them in a vulnerable group.

Figure 1. Growth of E-Money Transactions in Indonesia (2015–2025)



Source: Bank Indonesia (2026)

As shown in Figure 1, the use of electronic money in Indonesia has increased greatly in the last decade (Bank Indonesia, 2026). The value of e-money transactions increased from almost negligible in 2015 to nearly 100 trillion IDR in 2025. In the same period, the number of transactions rose from less than 0.05 billion to more than 1 billion transactions. This rapid increase reflects the expansion of digital payment infrastructure and the widespread adoption of mobile-based financial services in Indonesia.

However, the reality on the ground is more complex than such high adoption rates suggest. Recent evidence indicates that around 84% of people in Indonesia use mobile money, but only 49% have formal bank accounts. This suggests that around 35% of mobile money users are still unbanked (Putri et al., 2025). This shows that there is a large gap between the growth of digital payment systems and full financial inclusion. It may be an even greater challenge for migrant students. The lack of a local bank account or an Indonesian national identification number often results in limited access to some application features, transaction capabilities, and the verification process.

Although the significant contribution of digital payment services to facilitating daily financial transactions cannot be underestimated, no empirical research has yet analyzed the impact of managing digital payments on Yemeni migrant students in the Indonesian setting. This is an important research opportunity as many at-risk users are known to face challenges beyond initial technology adoption. Therefore, this research intends to examine the influence of behavior factors as identified by the Unified Theory of Acceptance and Use of Technology (UTAUT) and perceived risk and financial literacy on the management of digital payments for Yemeni migrant students. Empirical evidence proves that performance expectancy, effort expectancy, and social influence are the key factors shaping user behavior in technology-related environments for digital finance (Mensah & Khan, 2024; Venkatesh et al., 2003).

Mobile payments, mobile banking apps, and QRIS payments are some of the digital payment options available in Indonesia. However, international students are the most vulnerable group in the fast-growing digital payment system. Research in Indonesia has shown that international students struggle to use digital payment systems due to limited digital financial literacy and unfamiliarity with local financial systems (Fadli et al., 2024; Alzahrani & Bhunia, 2025). Similarly, perceptions of the appropriateness of digital financial technology with respect to its benefits have been recognized as influential in shaping the behavior of target individuals in several studies (Alzahrani & Bhunia, 2025).

The current studies on digital payments in Indonesia and other developing countries have been concentrated on intention to use and use behavior, not on the post-use outcomes of e-

financial systems in Indonesia. Although previous studies emphasize the role of reliability, facilitating conditions, and ecosystem preparedness in influencing the use of digital financial payments, especially QRIS use in Indonesia (Arwanto et al., 2025), the management of digital payments in Indonesia has not received particular attention. In addition, perceived risks associated with security, privacy, and the reliability of financial systems continue to emerge as a major factor in a systematic approach to the use of financial technology in Indonesia, especially among younger generations (Kiran & Vedala, 2025). However, financial knowledge continues to be a factor that reduces these risks by increasing students' capabilities to assess financial technological systems in Indonesia (Fadli et al., 2024; Khristian et al., 2024).

Following Malaysia and Nigeria, Yemen is the largest OIC member country that sends its students to Indonesia. Studies related to digital payments for migrant students from Yemen in Indonesia are interesting because these two countries have quite contrasting digital developments. The World Bank data shows that the percentage of individuals using internet access in 2019 in Yemen is only 17.5%, far below Indonesia, which reaches 47.7%, Malaysia, and Nigeria, which reach 84.2% and 29.7% respectively. Further, Digital Watch Observatory (2025) shows that internet penetration in Yemen in 2025 will remain low, 17.7%, while Indonesia has reached 72.8%. This indicates that Yemen's digital payment ecosystem remains at an earlier stage of development, relying primarily on a limited number of mobile wallet services, including Flousak and Jawali Wallet. Consequently, many Yemeni students may have had limited exposure to advanced digital payment ecosystems before arriving in Indonesia. This study is important for digital payment development policies in Indonesia, especially for migrant students from any countries whose digital infrastructure has not developed.

Given these gaps in the literature, this study focuses on Yemeni migrant students in Indonesia as a specific group that has not been adequately examined in previous research on financial technology usage in the Indonesian context. This research aims to evaluate the extent of the use of digital payment systems such as e-wallets, e-money, mobile banking applications, and QRIS by Yemeni students to perform their daily financial transactions. The study also examines the impact of essential components of the Unified Theory of Acceptance and Use of Technology (UTAUT), such as performance expectancy, effort expectancy, social influence, and perceived risk, on the effectiveness of digital payment management by such students. The study also investigates the practical challenges encountered when dealing with digital payment systems in Indonesia, in particular, usability problems, language issues, security problems, and the administrative requirements of Indonesian national identification. Therefore, the primary purpose of this research is to examine the determinants and challenges of digital payment management and to evaluate the contribution of digital payment services to the budgeting practices of Yemeni migrant students to pursue higher education in Indonesia. This study contributes to the literature on financial technology, migration, and financial inclusion in emerging digital economies by examining post-adoption digital payment management among migrant students.

## LITERATURE REVIEW

The drive for cashless economies has highlighted the significance of digital payment platforms in enhancing efficiency and speed in financial services. Digital payments have recently been linked to lower transaction costs, better financial management, and increased access to financial services for the unbanked (Niankara & Traoret, 2023; Shahen & Sharaf, 2025). QRIS is one of the digital payment infrastructures that has developed rapidly in Indonesia, which has led to a decline in the use of cash and increased access to financial services (Astuti et al., 2024; Qolyubi & Munandar, 2025). However, the apparent gaps in digital

literacy and access may indicate that the disadvantaged groups may have limited benefits from digital payments, and further study is needed.

International students often find it challenging to use digital payment solutions in foreign countries due to language barriers, local monetary rules and regulations, and limited availability of digitally integrated payment solutions at the national level. Language barriers, lack of localized support, and uneven digital readiness make it difficult for international students in Indonesia to use fintech and digital payment solutions to fully participate in digital financing systems (Alzahrani & Bhunia, 2025). This is also seen in other contexts where digital literacy, perceived usefulness, and ease of use are the key factors affecting the fintech adoption trends at the academic level, including international students (Alzahrani & Bhunia, 2025).

The present study utilizes the Unified Theory of Acceptance and Use of Technology (UTAUT) to explain such behaviors. The theory identifies performance expectancy, effort expectancy, and social influence as key determinants of technology acceptance (Venkatesh et al., 2003). Prior research has empirically demonstrated the importance of the determinants in a variety of contexts. In the Indonesian context, the performance expectancy influences the adoption of the QRIS system by the merchants (Arwanto et al., 2025). Performance expectancy and social influences shape the use of mobile wallet services by university-age users (Herzallah et al., 2025). At the international level, the adoption of mobile banking services is determined by performance expectancy and effort expectancy (Mensah & Khan, 2024).

In addition to the UTAUT model, two other important constructs associated with digital financial practices are perceived risk (PR) and financial literacy (FL). Perceived risk refers to the users' concern about security threats, privacy breaches, fraud, and potential system failures that can significantly obstruct the adoption and continued use of digital payment services (Kiran & Vedala, 2025). Recent studies indicate that security and privacy concerns continue to be significant barriers to digital payment adoption, particularly among Gen Z users who are more conscious of data protection and cyber threats (Shamsuddin et al., 2023). Financial literacy mitigates the risks by enabling individuals to comprehend financial products, evaluate potential risks, and make more informed choices when interacting with digital financial services (Fadli et al., 2024; OECD, 2020). Students with higher levels of financial literacy tend to manage digital payment technologies more effectively, thereby supporting the role of financial literacy as a moderating factor in digital payment adoption.

Despite the compressed timeframe for digital growth in Indonesia, the existing literature mostly focuses on domestic users and pays limited attention to the efficiency of the post-adoption digital payment management. The studies on migrants mostly focus on barriers to access but rarely consider the efficiency of the post-adoption process for digital payment management. Studies concerning students mostly consider variables related to behavior and perceptions, but less frequently in a combined form for the student group in question. The current literature focuses on Yemeni migrant students in Indonesia regarding the efficiency of the country's digital payment management process, where migrants face relatively unique challenges in this environment.

### **Digital Payment Management Framework**

This study investigates how individuals use digital payment technology from a post-adoption perspective rather than focusing on their motivation or intention to use them. Technology adoption intention is relevant before individuals use technology, but technology management is the post-adoption perspective. Many studies on adoption intention were conducted when digital technologies were still relatively new. However, nowadays digital payment technology has developed in many countries, so what is needed is to investigate the effectiveness and efficiency of the use of this technology.

Digital Payment Management (DPM) refers to an individual's capability to conduct digital payment activities effectively, efficiently, and securely (Calderon, 2025). It encompasses the ability to complete transactions quickly, accurately, conveniently, and at low cost while minimizing effort and errors. A person may already use a digital payment system but differ significantly in their ability to use it efficiently.

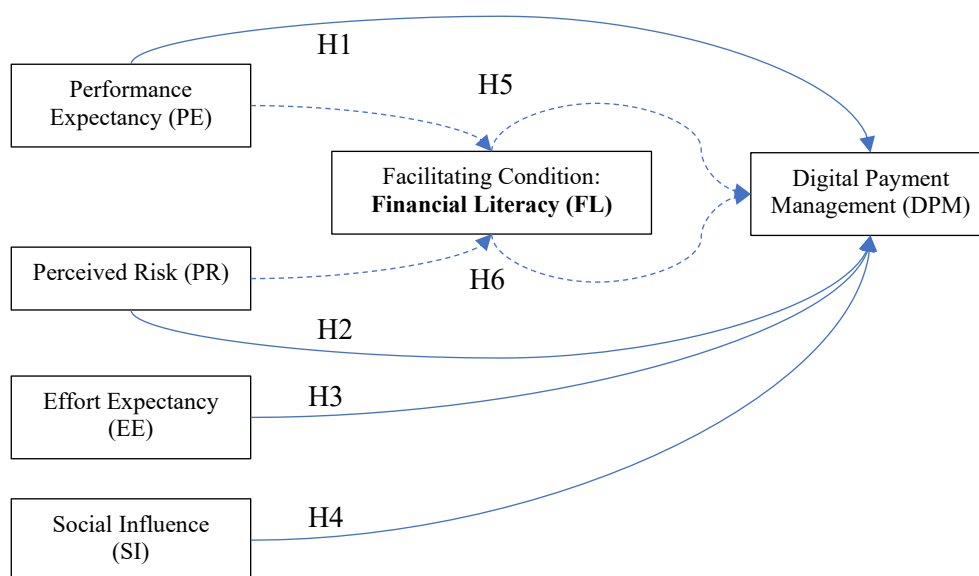
Drawing upon the Unified Theory of Acceptance and Use of Technology (UTAUT), DPM is influenced by users' perceptions regarding the benefits, ease of use, technological risk and social acceptance of the technology. The benefit is usually measured by performance expectancy (PE), which reflects the extent to which users believe that digital payment systems improve their financial transactions or daily activities. When users realize the presence of tangible benefits such as speed, convenience, and efficiency, they are more likely to manage digital payments effectively. Ease of use associated with learning and utilizing digital payment platforms is termed as effort expectancy (EE). Digital payment systems that are easy to understand and operate reduce operational burdens, thereby enhancing users' ability to perform digital transactions efficiently.

On the other hand, the risk of using digital technology (PR) could reduce the effectiveness and efficiency of digital payments. Users who are concerned about fraud, privacy violations, cybersecurity threats, transaction failures, or financial losses may be reluctant to fully utilize digital payment services. Consequently, higher perceived risk is expected to reduce the effectiveness of digital payment management.

In addition to the technological aspect, UTAUT introduces new variables compared to the previous model, consisting of the importance of social influence and facilitating conditions. Social influence (SI) represents the degree to which individuals perceive those important others, such as friends, family members, colleagues, or members of their community, who encourage the use of digital payment technologies, while the facilitating condition refers to the resources, support, infrastructure, and knowledge that enable a person to use a technology successfully. In this context, financial knowledge and literacy (FL) can play an important enabling factor (Venkatesh et al., 2003). Positive social influence can foster confidence and increase familiarity with digital payment systems, thereby improving users' digital payment management capabilities. Financial literacy is expected to directly enhance digital payment management and may also strengthen the positive effects of technology acceptance factors while mitigating the negative influence of perceived risk.

While most existing studies emphasize the relationship between digital payment systems and users' intention to adopt them, relatively little attention has been given to how digital payment management performs in real-world implementation and to its practical outcomes. Recent evidence suggests that improvements in digital payment processes positively influence user performance by increasing transaction speed and convenience (Sawaria & Patel, 2024). Moreover, empirical evidence in Sub-Saharan Africa indicates that well-managed digital payment systems are crucial in increasing access to financial services and promoting efficient payment management (Coffie et al., 2020).

Figure 2. Conceptual Model Linking UTAUT Factors to DPM



Source: Author (2026)

Based on the UTAUT and other technology acceptance models, this research framework is shown in Figure 2. It is a post-technology-adoption model. In the basic framework of the technology acceptance model, there are three main variables that affect digital technology management, namely performance expectancy (PE), effort expectancy (EE), and perceived risk (PR). Meanwhile, the UTAUT framework adds two other variables, namely social influence (SI) and a facilitating condition in the form of financial literacy (FL). As a facilitating variable, financial literacy (FL) is expected to affect an individual's ability to utilize technology, and in managing technology risks. Therefore, this study positions FL as a moderating variable, which may strengthen or weaken the influence of PE and PR on DPM.

### Hypotheses Development

Based on the conceptual framework and the Unified Theory of Acceptance and Use of Technology (UTAUT), this study proposes the following hypotheses:

Performance expectancy is the extent to which people feel that using technology will help them perform their tasks better (Venkatesh et al., 2003). In terms of digital payments, it is manifested in the perception of users that the use of digital payment tools enhances the effectiveness of a transaction, speeds up the process, and optimizes financial organization. The perceived usefulness construct has previously been found to have a significant influence on technology use behavior, particularly in financial technology settings like digital wallets and mobile banking (Mensah & Khan, 2024; Arwanto et al., 2025). If users feel that the digital payment system is useful for financial management, they will use it effectively. So, the following hypothesis is advanced:

*H1: Performance expectancy positively influences digital payment management.*

Perceived risk refers to users' expectations of potential negative outcomes associated with technology use, including financial loss, privacy breaches, fraud, or system failures. In digital finance, perceived risk is considered a major barrier to the use of financial technology services. The perceived insecurity of digital payment systems can dissuade users from adopting these systems for financial transactions. Previous studies have indicated that security, data security, and transaction safety can affect the attitude to use digital payment platforms (Kiran & Vedala, 2025; Shamsuddin et al., 2023). This concern may be especially salient for migrant students who are not familiar with local financial systems. Hence, the following hypothesis is put forward:

*H2: Perceived risk negatively influences digital payment management.*

Effort expectancy is the ease of use that technology is able to provide (Venkatesh et al., 2003). A system that is easily learned and easy to operate is more likely to be used efficiently. Usability is important to international students, as they may face barriers of use due to unfamiliarity with their environment and language. Ease of use has been found to improve the interaction with financial technologies and the users' experience in previous studies (Alzahrani & Bhunia, 2025). If digital payment applications are easy to use and user-friendly, then users can easily manage the transactions. It is therefore hypothesized that the following occurs:

*H3: Effort expectancy positively influences digital payment management.*

Social influence is the extent to which important others think that the technology is something that should be used (Venkatesh et al., 2003). In digital payments, social influence can be from peers, the family, other students, or institutions that advocate the use of digital financial instruments. Research indicates that social influence may impact conduct related to technology by inducing normative pressure or offering information regarding the advantages of DFIs (Herzallah et al., 2025; Mensah & Khan, 2024). If students see that digital payment methods are widely used in their social world, they might feel more confident about handling these digital tools. As such, the following hypothesis is put forward:

*H4: Social influence positively influences digital payment management.*

Financial literacy is the knowledge of financial concepts, risk assessment, and the capacity to make financial decisions. Financial literacy is an important factor in digital finance, helping users to better understand and use financial information and carry out digital financial transactions. Some previous studies show that higher financial literacy will allow individuals to utilize financial technologies and convert the perceived benefits into better financial practices (Fadli et al., 2024; Khristian et al., 2024). A positively strong relationship is expected between financial literacy and digital payment management. The above hypothesis is thus advanced:

*H5: Financial literacy moderates the relationship between performance expectancy and digital payment management, such that the positive effect becomes stronger at higher levels of financial literacy.*

Financial literacy can also limit the negative impacts of the perceived risks on the digital financial environment. People with more financial awareness have better knowledge of digital payment systems, such as security and transaction processes. Financial literacy has been shown to have a positive impact on users' objectivity in assessing financial technologies and a negative effect on excessive risk perception in the past (Fadli et al., 2024). In this setting, perceived risk

can have a negative effect on digital payment management, which financial literacy can counteract. The following hypothesis is proposed:

*H6: Financial literacy moderates the relationship between perceived risk and digital payment management, weakening the negative effect of perceived risk when financial literacy is high.*

## RESEARCH METHODOLOGY

### Research Design

The research used a quantitative research design with an online, structured questionnaire to determine the factors influencing digital payment management (DPM) practices among Yemeni migrant students in Indonesia. A cross-sectional design is used to develop an understanding of the perspectives and opinions of many people at one time, such as studies on the adoption and related behaviors of technology. The study was grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT), with financial literacy treated as a moderator and perceived risk included as an additional explanatory variable.

### Population and Sampling

The study employed convenience sampling to recruit survey participants. Of the 209 Yemeni Students in Indonesia invited to participate, 105 completed the survey, resulting in a response rate of 50.2%. The use of convenience sampling and the relatively moderate response rate may introduce selection and non-response bias. Specifically, respondents who completed the survey may possess characteristics, experiences, or attitudes that differ from those of non-respondents. As a result, the sample may not fully represent the target population, limiting the external validity and generalizability of the findings. However, the sample size is considered adequate for the analytical technique used, and the results provide valuable insights into the relationships among the study variables (Hair, 2019).

### Variables and Measurement

There was one dependent variable, three independent variables, and two additional explanatory variables. All constructs were assessed using validated instruments that were adapted to the context of the study. The responses were measured on a 5-point Likert scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

Table 1: Operationalization Variables

Variable	Definition	Measurement (Survey Items)	Source
Performance Expectancy (PE)	The extent to which Yemeni migrant students believe that using their selected digital payment tools will improve financial management by enhancing speed, accuracy, and overall effectiveness.	<ol style="list-style-type: none"> <li>1. Improve financial management</li> <li>2. Make the transactions faster</li> <li>3. Increased accuracy of financial activities</li> <li>4. Better income management.</li> <li>5. Improved financial performance and task efficiency.</li> </ol>	Venkatesh et al. (2003)
Effort Expectancy (EE)	The degree of ease associated with learning and using digital payment tools, including clarity of	<ol style="list-style-type: none"> <li>1. Easy to learn.</li> <li>2. Clear and simple process</li> <li>3. Using without help</li> <li>4. Requires little effort</li> </ol>	Venkatesh et al. (2003)

		procedures, effort required, and stability of internet access.	5. Ease to understand the interfaces. 6. Ease of becoming skillful 7. Ease of internet connection.	
Social Influence (SI)		The degree to which important people—friends, family, relatives, students, and institutions—encourage or influence the student’s use of digital payment tools.	1. Close friends encourage using digital payment tools. 2. Family members' support in using digital payment tools. 3. Relatives' encouragement to use the digital payment tools 4. Other Yemeni students influence usage 6. University in Indonesia in promoting digital payments 7. The benefit of digital payment.	Venkatesh et al. (2003)
Perceived Risk (PR)	Risk	The degree to which students perceive potential financial, privacy, or security risks when using the selected digital payment tools.	1. Concerns about potential financial loss. 2. Concerns about personal data and privacy exposure. 3. Concerns about transaction failure, errors, or delays. 4. Doubts regarding fraud protection and system security. 5. Discomfort with storing money in digital wallets.	Kiran & Vedala (2025)
Financial Literacy Moderator (FL)		The student’s ability to understand and apply financial knowledge when using digital payment tools, including budgeting, comparing options, and managing financial risks.	1. Basic financial knowledge (saving, budgeting). 2. Responsible use of digital payment tools. 3. Ability to compare and choose suitable payment options. 4. Confidence in managing money digitally. 5. Understanding of financial information in apps. 6. Awareness of digital payment risks. 7. Ability to track and control spending.	Khristian et al. (2024)
Digital Payment Management (DPM) Dependent Variable		The extent to which users are able to manage their financial transactions effectively through digital payment tools is reflected in faster transaction processing, reduced financial costs, improved accuracy, better organization of expenses, and overall enhancement of financial performance.	1. Speed Efficiency. 2. Cost Efficiency. 3. System Reliability 4. User Satisfaction. 5. Expense Tracking Capability 6. Financial Organization Quality. 7. Reduction of errors in financial transactions.	Calderon (2025)

### Data Collection Procedures

The research instrument was a questionnaire that was sent online through WhatsApp groups and social networking pages connected to the Yemen Students Union. The survey assessed

constructs of performance expectancy, effort expectancy, social influence, perceived risks, financial literacy, and the efficiency of online payment management on a 5-point Likert scale. Using Likert scaling is widespread in studies of the behavioral aspects of technologies.

### Model Specification and Data Analysis

The data analysis used a structured methodological approach to analyze the relationships between the variables in the study. First, descriptive statistics were conducted to gain insight into the main variables of the research, namely digital payment management, its characteristics, and determinants, which consisted of demographic characteristics of the subjects. Secondly, reliability and scale validity tests were carried out. These tests checked the consistency of the test and also the nature of the measurement scale. The consistency of the items used in the questionnaire was examined by the reliability coefficient, and the unidimensionality of the measurement scale was tested by Mokken scale analysis. Third, the correlation analysis was used to study the direction and strength of the variables prior to the regression analysis. The researchers then conducted multiple regression analyses after these preliminary tests to test the research hypotheses. In this study, two models were developed. Model 1 examined the direct effect of performance expectancy (PE), effort expectancy (EE), social influence (SI), perceived risk (PR), and financial literacy (FL) on digital payment management (DPM) to obtain direct influence, which explains the differences in DPM among Yemeni migrant students in Indonesia.

The base model is:

$$DPM = \beta_0 + \beta_1PE + \beta_2EE + \beta_3SI + \beta_4PR + \beta_5FL + \epsilon \dots \dots (1)$$

In order to ascertain the moderating effect of financial literacy on the above models, the following regression model with interaction terms was used. The regression model describes whether financial literacy has any impact on the relationship between the predictor variables and DPM.

The interaction model is specified as:

$$DPM = \beta_0 + \beta_1PE + \beta_2EE + \beta_3SI + \beta_4PR + \beta_5FL + \beta_6(PE \times FL) + \beta_7(PR \times FL + \epsilon \dots (2)$$

All the statistical tests were carried out using STATA. Before estimating the regression, necessary checks were done to ensure that the assumptions of multiple regression was fulfilled.

## RESULT

### Descriptive Findings

This section discusses the descriptive results of the research. These data come from 105 young migrants from Yemen in Indonesia. The findings reveal the characteristics of the respondents and their use of digital payment technologies. This section presents a demographic profile of the respondents and an examination of their use of digital payments.

## Demographic Profile and Digital Payments Usage.

The demographics of respondents are stated in Table 2. Most respondents were between 22 and 25 years, and most were male. As far as residency is concerned, most students have been living in Indonesia for over 2 years. Most of the respondents have used at least one digital payment instrument.

Table 2. Demographic Profile of Yemeni Migrant Students in Indonesia (n = 105)

No	Variable	Category	Frequency (n=105)	Percentage*(%)
1.	Age	18-21	21	20%
		22-25	52	50%
		26-30	22	21%
		Above 30	10	10%
2.	Gender	Male	97	92%
		Female	8	8%
3.	Years living in Indonesia	Less than 1 year	11	10%
		1–2 years	32	30%
		3–4 years	48	46%
		More than 4 years	14	13%
4.	Use of Digital Payment Tools	Yes	101	96%
		No	4	4%
5.	Most Used Digital Payment Tools*	QRIS	74	19%
		Mobile Banking	73	19%
		ShopeePay	66	17%
		GoPay	50	13%
		E–money card	42	11%
		Dana	42	11%
		OVO	40	10%

*\*Respondents were allowed to select more than one digital payment method; therefore, percentages are based on total responses rather than total respondents.*

*Source: Author (2026)*

Looking at usage, QRIS, mobile banking apps, and major e-wallet apps are the top three digital payment methods cited by respondents.

## Challenges in Using Digital Payment Systems

Using digital payment systems is not without challenges. The use of digital payment systems is not without its challenges. The descriptive results on experiences and challenges of the digital payment system among the respondents in Indonesia are presented in this subsection. The findings in Table 3 report students' attitudes towards the administration, technology, and usability of digital payment services. Table 3 reveals that there are several challenges in the process of using the digital payment system faced by Yemeni migrant students. Often

administrative needs, particularly account validation, are cited. Issues with language, such as not being able to access help in English and not understanding information in the app, were also reported. The technical aspects (slow transactions, errors, limits, etc.) are moderately experienced. While promotional features are seen as benefits, they are not challenges.

Table 3. Challenges and Experience Items Related to Digital Payment Use

Code	Description	Mean	Std. Deviation	Rank
C4	Digital apps requiring Indonesian ID	3.190	3.085	1
C8	Attractiveness of rewards (discounts, cashback)	3.138	2.850	2
C7	Lack of English customer support	3.071	2.885	3
C6	Difficulty completing verification requirements	3.038	2.836	4
C5	Limitations on transaction amounts	2.867	2.564	5
C1	Difficulty using apps due to Indonesian language	2.762	2.845	6
C2	Problems understanding the app interface/menus	2.552	2.682	7
C3	Technical issues during transactions	2.348	2.774	8

Source: Author (2026)

### Descriptive Statistics of Main Variables

The descriptive statistics of the major variables to be analyzed in this study are presented in this subsection. Table 4 presents the mean values and standard deviations of the performance expectancy, effort expectancy, social influence, perceived risk, financial literacy, and digital payment management of the Yemeni migrant students in Indonesia. The descriptive statistics give insights into the perception and experience of the respondents on digital payments. The results obtained reveal variations across constructs, as students have different perspectives on digital payment systems, perceived risk, and financial literacy.

Table 4. Descriptive Statistics of Main Study Variables (n = 105)

Variable	Obs	Mean	Std. Dev.	Min	Max
DPM	105	3.921	0.789	1.429	5.000
PE	105	3.792	0.761	1.4	5.000
EE	105	4.033	0.837	1.714	5.000
SI	105	3.703	0.811	1.286	5.000
PR	105	2.81	0.963	1.000	5.000
FL	105	3.691	0.85	1.429	5.000

Source: Author (2026)

### Reliability and Validity Assessment

This subsection presents the results of the reliability and validity of the reliability and validity of the measurement instruments used in this study. The findings of the internal consistency and scalability tests for all constructs in this study are presented in Table 5 for the following constructs, which are performance expectancy, effort expectancy, social influence, perceived risk, financial literacy, and digital payment management. In order to ensure the reliability within the items of measurements, the items were consistent across constructs, and for the validation, the Mokken scale analysis was used to assess the level of unidimensionality of the items. The results shown affirm that all the constructs have acceptable levels of reliability and validity.

Table 5. Reliability and Mokken Scale Validity Results (n = 105)

Construct (Dimension)	Cronbach's Alpha	H	Hj_min
DPM	0.88	0.55	0.47
PE	0.82	0.52	0.48
EE	0.92	0.67	0.60
SI	0.87	0.54	0.49
PR	0.85	0.57	0.50
FL	0.90	0.59	0.52

Source: Author (2026)

### Correlation Analysis

This subsection provides an overview of the results of the correlation analysis of the variables of interest. The correlation matrix for performance expectancy, effort expectancy, social influence, perceived risk, financial literacy, and digital payment management is presented in Table 6. Prior to regression analysis, the nature of the relationships between the variables is also known from the correlation analysis. This is an important step in investigating the possible relationship between the variables and checking for multicollinearity between the independent variables.

Table 6. Correlation Matrix

Variables	DPM	PE	EE	SI	PR	FL
DPM	1.000					
PE	0.731*** (0.000)	1.000				
EE	0.760*** (0.000)	0.658*** (0.000)	1.000			
SI	0.603*** (0.000)	0.578*** (0.000)	0.610*** (0.000)	1.000		
PR	-0.100 (0.308)	-0.001 (0.992)	-0.121 (0.217)	0.041 (0.677)	1.000	
FL	0.613*** (0.000)	0.676*** (0.000)	0.731*** (0.000)	0.627*** (0.000)	-0.007 (0.945)	1.000

Note: Values in parentheses represent p-values.

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Source: Author (2026)

### Baseline Regression Estimation

Below are the results of the baseline regression estimation, which tested the direct effect of the performance expectancy, effort expectancy, social influence, perceived risk, and financial literacy on the management of digital payments. The baseline regression results indicate that performance expectancy and effort expectancy have significant positive effects on digital payment management among Yemeni migrant students. In contrast, social influence, perceived risk, and financial literacy do not exhibit statistically significant direct effects. Specifically, perceived risk has a negative coefficient ( $\beta = -0.041$ ), but the effect is not statistically significant ( $p = 0.285$ ). The detailed regression estimates are presented in Table 7.

Table 7. Baseline Regression Results: Determinants of Digital Payment Management (DPM)

DPM	Coef.	St. Err.	t-value	p-value	[95% Conf Interval]	Sig	
PE	0.414	0.084	4.910	0.000	0.247	0.582	***
EE	0.443	0.107	4.120	0.000	0.230	0.656	***
SI	0.141	0.092	1.540	0.128	-0.041	0.324	
PR	-0.041	0.038	-1.070	0.285	-0.116	0.034	
FL	-0.085	0.105	-0.810	0.419	-0.294	0.123	
Constant	0.469	0.269	1.740	0.085	-0.066	1.003	*
Mean dependent var	3.921		SD dependent var	0.789			
R-squared	0.686		Number of obs.	105			
F-test	46.731		Prob > F	0.000			
Akaike crit. (AIC)	137.707		Bayesian crit. (BIC)	153.630			

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Dependent Variable: DPM

Source: Author (2026)

### Moderation Analysis: Full Interaction Model

This subsection presents the results of the moderation analysis conducted to examine the role of financial literacy in shaping the relationships between the selected predictors and digital payment management. In addition to the baseline model, interaction terms between performance expectancy and financial literacy, and between perceived risk and financial literacy, were included. The results reveal notable changes in the relationship between perceived risk and digital payment management. After incorporating the interaction terms, perceived risk becomes statistically significant and negatively associated with digital payment management ( $\beta = -0.592$ ,  $p = 0.024$ ), suggesting that its effect becomes more pronounced when financial literacy is considered. Hypothesis H5 proposed that financial literacy would strengthen the positive relationship between performance expectancy and digital payment management. However, the interaction term was negative and statistically significant ( $\beta = -0.193$ ,  $p = 0.009$ ), indicating that financial literacy weakens rather than strengthens this relationship; therefore, H5 is not supported. According to the model results, this model has a higher coefficient of determination ( $R^2$ ) which implies that this model could explain better to the reality. The complete moderation results are reported in Table 8.

Table 8. Full Moderation Model (Interaction Effects Included)

DPM	Coef.	St. Err.	t-value	p-value	[95% Conf Interval]	Sig	
PE	1.158	0.287	4.040	0.000	0.589	1.727	***
EE	0.342	0.091	3.770	0.000	0.162	0.522	***
SI	0.137	0.073	1.870	0.065	-0.009	0.282	*
PR	-0.592	0.257	-2.300	0.024	-1.103	-0.081	**
FL	0.368	0.264	1.390	0.167	-0.157	0.892	
PE_FL	-0.193	0.072	-2.680	0.009	-0.337	-0.050	***
PR_FL	0.127	0.061	2.080	0.040	0.006	0.247	**
Constant	-0.567	0.858	-0.660	0.510	-2.271	1.137	
Mean dependent var	3.921		SD dependent var	0.789			
R-squared	0.710		Number of obs	105			

F-test	33.908	Prob > F	0.000
Akaike crit. (AIC)	133.289	Bayesian crit. (BIC)	154.521

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

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Dependent Variable: DPM

Source: Author (2026)

The present study aimed to investigate digital payment management (DPM) of Yemeni migrant students in Indonesia by adopting an integrated model of Unified Theory of Acceptance and Use of Technology (UTAUT), perceived risk and financial literacy. The study examines the post-adoption management stage instead of just adoption intention, which can offer more insights regarding the interaction between migrant students and the digital financial system in their daily life and how the digital financial system affects financial management behavior in a foreign institutional environment.

The results showed that the digital payment adoption rate among the Yemeni migrant students is high, especially regarding e-wallets and mobile banking applications and QRIS-based transactions. This shows the increasing normalization and standardization of cashless transactions in the Indonesian financial system and supports the evidence of the significant growth of digital payment infrastructure and the decreasing use of cash transactions in Indonesia (Astuti et al., 2024; Qolyubi & Munandar, 2025). The results were also similar to those of Paramita & Cahyadi (2024), who found that QRIS is widely embedded in the daily activities of consumers due to its ease and efficiency. (Paramita & Cahyadi, 2024) also proposed that the rising trend of cashless modes of payment in developing countries is primarily because of their perceived usefulness and institutional digitalization. Similarly, (Sakib et al., 2025) suggested that the growing trend of using cashless modes of payment in developing countries is primarily attributed to their presumed usefulness and institutional digitalization.

What was notable is that there was a high level of engagement by Yemeni migrant students, which also mirrors the wider evidence of the use of mobile financial technologies by international users when they have less access to traditional banking services (Niankara & Traoret, 2023). The results of the present research, however, indicate a meaningful difference between technological adoption and institutional inclusion. Yemeni migrant students are very active in the digital payment system in Indonesia, but there are still structural issues that limit the full financial integration. This supports the idea that digital inclusion does not necessarily mean institutional inclusion, especially for migrants who are more likely to work within the foreign regulatory and banking framework.

Performance expectancy was the most powerful indicator of digital payment management. Students were more likely to effectively use digital payment systems when the system was perceived as useful, timesaving and improving efficiency in transactions. This finding aligns with many recent studies that have highlighted the dominant role of perceived usefulness in digital financial behavior (Arwanto et al., 2025; Mensah & Khan, 2024; Sakib et al., 2025). Similarly, (Paramita & Cahyadi, 2024) found that performance expectancy significantly improves QRIS usage behavior in Indonesia. Meanwhile, (Usman et al., 2025) discovered that younger users in digital payment decisions prioritize practical utility and behavioral control over normative pressures. Overall, the findings indicate that migrant students mainly assess fintech in terms of its functionality and efficiency, rather than symbolic or social motivations.

An important and relatively new finding of this study is that financial literacy has a small but significant effect in diminishing the marginal effect of performance expectancy on DPM. Contrary to H5, the interaction effect was negative and significant, suggesting that financial literacy weakens rather than strengthens the positive influence of performance expectancy on digital payment management. This suggests a skill-compensation mechanism, whereby

students with higher financial literacy may rely less on the perceived usefulness of digital payment technologies because they already possess greater financial confidence and decision-making skills. Conversely, students with lower financial literacy seem to value the functional benefits more which are provided by digital payment systems, such as ease of use, automation, and speed of transactions. This finding contributes to the prior literature by suggesting that financial literacy may not only enable fintech usage but also change the way users evaluate the usefulness of technology during financial management processes. Similar results were reported by Sawaria & Patel (2024) and Tirtha & Setiawan (2025), who found that financially literate users are generally more capable of managing digital transactions, monitoring expenditures, and evaluating financial risks effectively.

Effort expectancy was also significantly positively related to DPM, indicating that systems perceived as easier to use are more effective in digital payment management. This result is in line with previous studies that have found usability and simplicity to be important factors in the adoption and continued use of fintech, particularly among users in new institutional settings (Alzahrani & Bhunia, 2025; Sakib et al., 2025). Ease of use was also found to significantly improve the usage behavior of QRIS and digital wallet (Elasaria & Nurabiah, 2024; Paramita & Cahyadi, 2024). Similarly, Prawira & Ridanasti (2024) found that performance expectancy, effort expectancy, social influence, and perceived risk significantly affect digital wallet usage intention among users in Yogyakarta, which further strengthens the relevance of the Indonesian digital payment context to the current study. The findings indicate that the ease of transactions and user-friendly interfaces are especially important for migrant students who are adjusting to new financial and technology systems.

The effect of social influence on DPM was relatively weaker. This finding aligns with studies that indicate the use of digital payments among younger users is more influenced by functional utility than peer influence or social conformity (Arwanto et al., 2025; Usman et al., 2025). Another explanation is that Yemeni migrant students are relatively more self-sufficient in financial matters and thus value convenience and efficiency over social approval. This interpretation is also consistent with the argument of Pal et al. (2020), who found that mobile payment adoption in developing countries is driven more by practical necessity than social motivation. Therefore, the weak role of social influence reflects the adaptive and utility-oriented nature of the digital payment behavior of migrant users.

Perceived risk did not exhibit a statistically significant direct effect on digital payment management in the baseline model (Table 7). However, after incorporating the moderating role of financial literacy, perceived risk became significantly negative (Table 8), suggesting that concerns related to security, privacy, fraud, and transaction reliability become more influential when users' financial literacy levels are taken into account. This finding lends strong support to prior research that has identified perceived risk as a major barrier to digital financial engagement (Kiran & Vedala, 2025; Shamsuddin et al., 2023). Similarly, Prasetya and Shuhidan (2024) revealed that trust and perceived security play a significant role in e-wallet behavioral intention in Indonesia, whereas (Elasaria & Nurabiah, 2024) indicated that even the digitally experienced Generation Z users are still highly sensitive to cybersecurity concerns. (Sakib et al., 2025) also stressed that trust and institutional reliability are important factors in the adoption of cashless transactions in developing economies. Taken together, these findings point to the importance of trust-building mechanisms and secure financial systems in maintaining digital payment adoption, especially among migrant users who are outside of their home-country financial systems.

Generally, the findings indicate that functional, usability and capability factors appear to be the main factors that shape the digital payment management of Yemeni migrant students, whereas social influence seems to have a limited effect, and perceived risk emerged as a constraining factor only when the moderating role of financial literacy was considered. These

results further emphasize the relevance of UTAUT-related constructs in explaining post-adoption digital financial behavior and the importance of including financial literacy and institutional-context variables in migrant fintech research.

The study also highlighted some institutional and operational challenges faced by Yemeni migrant students in using digital payment systems in Indonesia. The primary challenges were account verification requirements, restrictions on Indonesian national IDs, limited access to banking, and language challenges. These findings are in line with other research that has demonstrated migrants' frequent institutional exclusion despite their active engagement in digital financial ecosystems (Niankara & Traoret, 2023). Similarly, Alzahrani and Bhunia (2025) reported that international students faced problems related to banking regulations, language barriers, and the financial practices of the host country. The challenges discussed in this study, therefore, appear to be more institutional than technological in nature.

The results also show that digital payment systems have a positive effect on the financial management practices of Yemeni migrant students. Digital payments help students to control spending, speed up transactions, track spending, and manage their finances better. These findings are consistent with Calderon (2025), and (Shahen & Sharaf, 2025), who found that digital payment systems enhance budgeting efficiency, financial transparency, and expenditure monitoring, especially for younger and financially constrained users. However, the efficiency of digital payment systems is dependent on the financial literacy of the users, institutional accessibility, and the ability to use the fintech systems efficiently.

In general, the study contributes to the literature on digital finance, migration, and financial inclusion by moving the interest from the adoption intention to the post-adoption digital payment management. This study differs from many previous studies that focused mainly on behavioral intention by exploring how migrant students embed digital payment systems into their daily financial practices after adoption. This contribution aligns with (Pal et al., 2020; Shanmugavel et al., 2024), who have highlighted the under-researched nature of continuance behavior and post-adoption engagement in the fintech research domain. Moreover, the study offers new evidence about the context of Yemeni migrant students in Indonesia, and broader implications for future research on migrant fintech adaptation, digital financial capability, and inclusive financial technology policies in developing economies.

The findings offer several practical implications for universities, fintech providers, and policymakers. Universities hosting international students should provide orientation programs and financial literacy workshops to help students better understand local digital payment systems and financial services. Such initiatives are particularly important for students from countries with relatively underdeveloped digital financial ecosystems, such as Yemen, who may face greater challenges in adapting to Indonesia's rapidly expanding cashless payment environment.

Fintech providers may improve financial inclusion by simplifying account registration and verification procedures for international students, particularly those who do not possess Indonesian national identity cards. Alternative verification mechanisms using passports, student identification cards, or residence permits could facilitate broader access to digital financial services. Furthermore, digital payment providers should consider offering multilingual interfaces and customer support services in both Bahasa Indonesia and English to reduce language barriers faced by international users. Such improvements may enhance user experience, increase trust, and encourage more effective financial management.

Fintech companies may also consider extending promotional benefits, discounts, cashback programs, and voucher campaigns to eligible international students, allowing them to enjoy the same advantages available to local users. At the policy level, regulators may support greater financial inclusion by encouraging financial institutions and digital payment providers to develop more accessible and inclusive services for international students and other migrant

populations. These measures could help reduce institutional barriers and ensure that active users of digital payment systems are able to participate fully in the host country's digital financial ecosystem.

In addition, universities and financial institutions may establish collaborative programs to facilitate digital financial onboarding for international students upon their arrival in Indonesia. Such initiatives could include guidance on opening bank accounts, accessing digital payment applications, understanding local financial regulations, and developing responsible financial management practices. Strengthening cooperation between universities, fintech providers, and financial institutions may help reduce the adjustment burden faced by international students and support their successful integration into Indonesia's digital financial ecosystem.

## CONCLUSION

This study examined the involvement, determinants, challenges, and financial management outcomes of digital payment systems among Yemeni migrant students in Indonesia. The findings indicate that Yemeni students are actively engaged in Indonesia's cashless economy through the use of e-wallets, mobile banking applications, and QRIS, suggesting that they are not digitally excluded at the usage level. Performance expectancy and effort expectancy were found to positively influence digital payment management, while social influence had a limited effect. Perceived risk became a significant constraint only when the moderating role of financial literacy was considered, indicating that financial literacy shapes how students assess and respond to digital payment risks. The study also revealed that identification requirements, language barriers, and administrative restrictions remain important structural challenges. These obstacles may be particularly relevant for students from countries with less developed digital financial ecosystems, such as Yemen, who must adapt to Indonesia's highly digitalized payment environment. Furthermore, digital payment systems contribute positively to students' financial management by improving transaction efficiency, expenditure tracking, and budgeting practices. This study contributes to the literature by shifting attention from adoption intention to post-adoption digital payment management and by providing evidence from an underexplored migrant student context. The findings highlight the importance of both technological factors and financial literacy in shaping digital financial behavior. From a practical perspective, universities, fintech providers, and policymakers should collaborate to reduce institutional barriers and improve financial inclusion for international students. Future research may employ longitudinal or qualitative approaches and compare different migrant student groups to provide deeper insights into digital financial adaptation.

## AI USAGE DECLARATION

The authors used ChatGPT by OpenAI only for English language editing, grammar refinement, and improving the clarity and readability of the manuscript. The AI tool was not used for data analysis, interpretation of findings, or generation of scientific conclusions. The authors remain fully responsible for the originality, accuracy, and integrity of the manuscript.

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