DIGITAL ASSET ADOPTION IN DEVELOPING ECONOMY: A STUDY OF RISK PERCEPTION AND RELATED ISSUES

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Abstract

Digital assets have become significant tools for fundraising and trade in Southeast Asian nations, including Thailand. Investors increasingly diversify portfolios with digital assets, driven by potential higher returns and risk mitigation (Jenweeranon, 2022; Shoommuangpak & Wongta, 2022; Foglia et al., 2024). This study examines key determinants of digital asset adoption in Thailand, integrating the technology acceptance model (TAM) and diffusion of innovation theory. It extends these frameworks by incorporating socio-economic factors, risk perception, and knowledge, offering a comprehensive model of technology adoption in emerging markets. The study provides empirical evidence from a quantitative study of 1,180 Thai individuals, addressing a literature gap on digital asset adoption in Thai economies. Findings show that socio-economic status, educational attainment, risk perception, and knowledge significantly affect adoption rates. Educational attainment and knowledge positively influence adoption, while higher risk perception negatively impacts it. These results contribute to financial technology (FinTech) adoption literature by highlighting the interplay between individual characteristics, perceptions, and knowledge in shaping technology acceptance. The study offers insights for policymakers and practitioners to develop strategies enhancing digital financial literacy and mitigating perceived risks, potentially increasing public engagement with digital financial technologies in emerging economies.

Keywords: Digital Assets, Socio-Economic Status, Educational Attainment, Risk Perception, Knowledge

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1. INTRODUCTION

Technological advancements have led to a continuous increase in digital financial transactions. The shift in consumer behavior towards conducting financial transactions independently has significantly impacted banks' revenue from various fees. Consequently, to ensure business sustainability, banks have undertaken cost-reduction measures such as closing branches and reducing staff. As technology evolves, innovations have emerged to enhance customer convenience, enabling financial transactions to be performed independently at any time, further diminishing the need for physical bank visits. Moreover, the announcement that deposit protection is limited to only one million baht has altered customer confidence in traditional bank deposits. Customers are increasingly seeking new investment opportunities that offer higher returns, given the declining returns from traditional investments such as mutual funds, stocks, or fixed deposits with decreasing interest rates. With the development of financial innovations, bank customers have shown a growing interest in digital assets, particularly digital currencies, which provide higher returns compared to bank deposits and stock investments. Consequently, more investors are directing their funds towards digital assets (Mohsin et al., 2023; Paisanthanachot & Chainirun, 2023).

A digital asset is defined as any item created and stored digitally that is identifiable, discoverable and possesses intrinsic or extrinsic value. Traditionally, data, images, videos, written content, and other digital items have been recognized as digital assets, with associated ownership rights. This expansion of digital assets underscores their increasing significance in various domains, driven by the integration of technology into everyday activities and business operations (The Investopedia Team, 2024). Digital assets can be categorized into two main types. The first type is cryptocurrency, which comprises units of electronic data created on electronic systems or networks. Cryptocurrencies are intended to function as a medium of exchange, allowing users to acquire goods, services, or other rights, or to facilitate exchanges between different digital assets. The second type is digital tokens, which are also units of electronic data created on electronic systems or networks. However, digital tokens are specifically designed to delineate individuals' rights to participate in investment projects or businesses, or to obtain specific goods, services, or other rights (Shoommuangpak & Wongta, 2022).

Digital assets have garnered significant popularity and attracted numerous investors due to the belief that they can yield high returns in a short period. Initially, investors primarily associated digital assets with digital currencies, particularly well-known cryptocurrencies. However, digital assets encompass a broader range of products and services beyond digital currencies. These include digital coins (crypto tokens), often referred to as digital tokens, as well as other digital products and services. This broader definition highlights the diverse opportunities within the digital asset market, emphasizing that the investment potential extends beyond cryptocurrencies alone (Siam Commercial Bank [SCB], n.d.). The investment interest in digital currencies in Thailand has increased significantly following the COVID-19 pandemic, which directly impacted the country's economic system. In response to the economic downturn, the Bank of Thailand reduced interest rates, making traditional bank savings less appealing due to lower returns. As incomes decreased while living costs remained high or even increased, many Thais began looking for alternative investment options. The widespread news of substantial profits from digital currency investments, which were reported to offer higher returns than traditional securities and gold, fueled this shift. This growing interest in digital assets led to increased business activities related to these assets, prompting the government to regulate the sector. In 2018, Thailand issued the Digital Asset Business Decree under the supervision of the Securities and Exchange Commission (SEC) to oversee fundraising through digital assets, ensure fair and transparent transactions, and protect investors from fraud. This regulatory framework aims to prevent the misuse of digital assets in illegal activities while also educating the public about safe investment practices in digital assets, thus enhancing investor confidence in Thailand (Chancharoenrit, 2023).

The technology acceptance model (TAM) and the diffusion of innovation theory are both relevant frameworks for understanding how digital asset risk and knowledge influence adoption. TAM posits that technology adoption is primarily influenced by two factors: perceived usefulness and perceived ease of use. Diffusion of innovation theory considers several factors in the adoption of innovations, including relative advantage, compatibility, complexity, trialability, and observability (Choe & Noh, 2018; Handoko et al., 2023). In this study, facilitating broader adoption of digital assets involves demonstrating clear advantages, ensuring compatibility with users' needs, simplifying their use, and highlighting successful implementations. Both TAM and diffusion of innovation theory offer valuable insights into the psychological and social factors affecting digital asset adoption, guiding strategies to enhance user acceptance and promote widespread use. The TAM and diffusion of innovation theory provide valuable frameworks for understanding how digital asset risk and knowledge influence adoption. In TAM, greater knowledge about digital assets likely increases their perceived usefulness and ease of use, while higher perceived risk may decrease these perceptions. Similarly, in the diffusion of innovation theory, increased knowledge can enhance the relative advantage and reduce the perceived complexity of digital assets, whereas higher risk perception might diminish these advantages and increase perceived complexity. Both theories suggest that digital asset knowledge generally promotes adoption by positively influencing key adoption factors, while higher perceived risk tends to hinder adoption by negatively impacting these same factors. This interplay between knowledge, risk, and the core constructs of these theories offers a nuanced understanding of digital asset adoption processes.

As technological advancements continue to permeate both personal and professional spheres, digital assets have gained significant popularity and

value, making them a critical subject of study. Numerous investigations have focused on various aspects of digital assets. For instance, Kry and Chotiyaputa (2023) implemented the unified theory of acceptance and use of technology (UTAUT) and its extension, UTAUT2, to investigate the factors influencing the adoption of cryptocurrency exchange applications (CEA) in Cambodia. Their research focused on behavioral intentions and user behaviors, with the goal of understanding the factors that influence CEA adoption and use over time. Maneesri et al. (2023) explored a causal relationship model of factors influencing the behavioral intention to use cryptocurrency as a form of electronic payment, with a focus on the role of trust, perceived ease of use, and perceived usefulness. Despite these studies, there is a paucity of research incorporating socio-economic demographics, digital asset risk, and digital asset knowledge within the context of Thailand. Hence, this study investigates the key determinants that influence the adoption of digital assets in Thailand, addressing this gap in the literature. Utilizing a quantitative research approach, data were collected from a sample of 1,180 Thai individuals experienced in digital assets through convenience sampling. Statistical analyses, including binary logistic regression, were employed to assess the data. The findings indicate that socio-economic status, educational attainment, risk perception, and knowledge about digital assets significantly impact adoption rates. These factors collectively shape the landscape of digital asset adoption in Thailand, emphasizing the importance of economic resources, educational opportunities, and awareness in promoting engagement with digital financial technologies. This research contributes to academic discourse by providing a comprehensive analysis of the determinants of digital asset adoption in Thailand, particularly focusing on socio-economic demographics, risk perception, and knowledge. The findings offer valuable insights for policymakers, administrators, and stakeholders, identifying critical areas that require attention to effectively promote digital asset adoption. By pinpointing these key determinants, the study lays the groundwork for developing targeted educational programs and regulatory frameworks aimed at enhancing digital financial literacy and mitigating perceived risks associated with digital assets.

The paper is organized into six main sections. Section 1 introduces the topic. Section 2 provides a comprehensive literature review. Section 3 outlines the research methodology, while Section 4 presents the study's results. Section 5 discusses the findings, and Section 6 includes conclusions, limitations, and recommendations.

2. LITERATURE REVIEW

The global adoption of digital assets is transforming financial landscapes by introducing innovative forms of transactions and investments. Digital assets such as cryptocurrencies, stablecoins, and various forms of tokenized assets are becoming increasingly integrated into the mainstream financial ecosystem. This shift is driven by the appeal of blockchain technology, which offers decentralized, transparent, and secure transactions. As consumer interest grows, financial institutions, tech companies, and governments are exploring and developing frameworks to incorporate these assets safely and effectively. The rise of digital wallets and crypto exchanges has made access to digital assets more user-friendly, encouraging broader participation. The increasing use of digital assets in cross-border payments, investment portfolios, and as a hedge against inflation signifies their growing influence and potential to redefine global economic interactions (Gomber et al., 2018; Corbet et al., 2019; Richards, 2021; Voskobojnikov, 2021). In Thailand, digital asset adoption has seen significant growth, driven by a combination of regulatory progress, technological advancements, and shifting consumer preferences. The Thai government has proactively developed a legal framework to regulate and facilitate the safe use of digital assets, including cryptocurrencies and blockchain technologies. This regulatory clarity has attracted both local and international investors, fostering a vibrant ecosystem of startups and established companies focused on digital asset trading, payments, and decentralized finance. The Bank of Thailand's exploration into a Central Bank Digital Currency (CBDC) also reflects the country's commitment to integrating digital assets into its financial system. As digital literacy improves and the infrastructure for digital payments expands, the adoption of digital assets in Thailand is poised to play a vital role in the country's financial inclusion and economic innovation efforts (Ariya, 2023; Intelligence Team, 2023a; Intelligence Team, 2023b).

Demographic factors are crucial in understanding personal characteristics and are extensively used in marketing for consumer segmentation. Key demographic variables — gender, age, education, marital status, and income — each uniquely influence consumer behavior. Gender affects communication styles, product preferences, and decision-making processes, with men and women responding differently to marketing messages. Age influences needs and consumption patterns, with younger consumers prioritizing technology and fashion, while older demographics focus on healthcare and retirement planning. Education shapes knowledge bases and preferences, often correlating with higher levels of critical thinking and brand loyalty. Marital status identifies primary household decision-makers, affecting purchasing decisions and product choices. Income levels dictate purchasing power, with higher-income consumers favoring premium brands and lower-income groups seeking cost-effective options. Combined with lifestyle and cultural influences, these demographic factors enable businesses to tailor marketing strategies effectively to meet the diverse needs of their target audiences, enhancing customer satisfaction and loyalty (Hadi & Aslam, 2023; Kraiwanit et al., 2023; Lee & Bae, 2023). In this study, demographic factors were employed to analyze digital asset adoption in Thailand. Key demographic variables were examined to understand their influence on the adoption rates of digital assets. By analyzing these variables, the study aimed to uncover patterns and trends that could provide valuable insights for stakeholders. This approach is intended to enhance digital financial literacy and promote broader adoption of digital assets among diverse population segments in Thailand.

Digital asset risk encompasses volatility, regulatory uncertainty, security vulnerabilities, liquidity issues, and technological challenges. These risks can lead to significant financial losses and impact investor confidence (Field & Inci, 2023; Muradyan, 2023). On the other hand, digital asset knowledge includes understanding blockchain technology, differentiating between various digital assets, recognizing investment strategies, staying informed about regulations, and employing security best practices. Comprehensive knowledge in these areas helps investors make informed decisions, manage risks effectively, and capitalize on the opportunities presented by digital assets. By enhancing digital financial literacy and awareness, investors can navigate the digital asset landscape more confidently and securely (Castonguay & Smith, 2020). In this study, digital asset risk factors and digital asset knowledge factors were analyzed to understand their impact on digital asset adoption in Thailand. The research focused on examining how these variables influence adoption rates. By investigating these elements, the study aimed to identify patterns and trends that could offer valuable insights for policy interventions and inform other stakeholders. Ultimately, the goal was to enhance digital financial literacy and promote the broader adoption of digital assets within Thailand.

The TAM and the diffusion of innovation theory are key frameworks for understanding digital asset adoption. According to Namahoot and Rattanawiboonsom (2022) and Islam et al. (2023), the TAM, developed by F. D. Davis in 1989, posits that user acceptance is primarily influenced by two factors: perceived usefulness, which is the extent to which a technology is believed to enhance performance or provide positive outcomes, and perceived ease of use, which refers to the ease with which a technology can be used. In the realm of digital assets, TAM helps explain how users' perceptions of these factors affect their adoption of cryptocurrencies, non-fungible tokens (NFTs), and blockchain technologies. Increasing perceived usefulness and ease of use through improved education and user-friendly technology interfaces can enhance adoption rates. According to Rogers (2003), the diffusion of innovation theory explores how innovations spread through cultures, emphasizing several key elements: relative advantage (the perceived benefits of the innovation over alternatives), compatibility (alignment with existing values and practices), complexity (ease of understanding and use), trialability (the ability to test the innovation before full adoption), and observability (the visibility of results).

Wu et al. (2022) examine the key factors that affect individuals' intentions to adopt digital currency in China. Their study indicates that financial knowledge, perceived value, openness to innovation, and perceived convenience all positively influence the intention to use digital currency. Additionally, perceived value is significantly impacted by perceived monetary value, perceived functional value, and perceived emotional value. The study also confirms the mediating role of perceived value in the relationship between financial knowledge and the intention to use digital currency. These insights can assist governmental bodies and financial technology (FinTech) companies in improving user perception and crafting effective strategies to promote digital currency adoption.

Alrawad et al. (2023) investigate the influence of perceived risks and trust factors on customers' intentions to use mobile payment applications that use near-field communication (NFC) technology. According to the study, three of the four examined constructs have a significant influence on customers' decisions to use NFC mobile payments: perceived risk, process-based trust, and characteristics-based trust. Furthermore, the study found that age and gender have no significant effect on these model constructs. As a result, the study emphasizes the importance of perceived risk and trust in shaping customers' intentions to use NFC for mobile payments, as well as showing how trust can significantly reduce perceived risk. This knowledge can help to develop effective strategies for encouraging consumers to adopt mobile payments.

Suwannasichon (2023) investigates the advantages and disadvantages associated with digital assets, focusing on the legal frameworks and patterns that shape this sector. The rapid advancement of technology, particularly blockchain, has presented opportunities for investors, offering new avenues for financial gain. However, this swift technological evolution has also outpaced the development of corresponding legal frameworks, leading to regulatory gaps. Investing in digital assets remains inherently risky due to their volatility, which can result in significant financial losses. Although investors may earn returns or bonuses from depositing digital assets in exchanges, Thailand currently lacks specific laws to support the accrual of interest from these deposits. This regulatory void has led to practices that circumvent the legal restrictions imposed by the SEC of Thailand. Consequently, there is an urgent need for Thailand to update its legal frameworks to align with technological advancements, ensuring they benefit the national economy while safeguarding investors.

Chancharoenrit (2023) conducted a qualitative investigation to explore the impediments and challenges affecting the decision-making process of investors in adopting digital asset trading accounts in Thailand, and to delineate the drivers behind these decisions across various digital asset trading platforms. The results of the study underscore that effective promotional strategies for operators of digital asset trading centers in Thailand are contingent upon a comprehensive understanding and rigorous compliance with regulatory and legal frameworks, profound comprehension of the market, and the mechanisms that facilitate investment upon achieving business objectives, and heightened self-awareness among entrepreneurs regarding their motivations for investment, objectives, targeted assets, and readiness to handle the associated risks.

This study advances the theoretical understanding of digital asset adoption by integrating demographic theory. By exploring the interplay between demographic factors, risk perception, and knowledge levels in the context of digital assets, the research offers a more comprehensive framework for understanding technology adoption within the financial sector. This integrated approach facilitates a nuanced understanding of how different population segments engage with emerging financial technologies, paving the way for more targeted and effective strategies to enhance digital asset adoption. On the empirical front, this study makes

significant contributions to the literature on digital asset adoption by providing a holistic analysis of key determinants, including socio-economic status, educational attainment, risk perception, and knowledge about digital assets. By advancing both theoretical understanding and offering robust empirical evidence, this study significantly enriches the growing body of literature on digital asset adoption. It provides valuable insights for policymakers, financial institutions, and educators aiming to promote the responsible adoption of digital assets in emerging markets and beyond.

3. METHODOLOGY

The recent investigation adopted a quantitative methodology, leveraging structured questionnaires to amass data. In constructing a survey focused on exploring the determinants of digital asset adoption in Thailand, a systematic approach was taken. Initially, research objectives were meticulously outlined, emphasizing the factors that influence digital asset adoption within the region. This phase was succeeded by an extensive review of literature, where determinants and relevant variables were sourced from academic and industry literature. Key determinants pertinent to digital assets in Thailand were identified, with a focus on defining measurable variables for each. The questionnaire was strategically designed to include these determinants, beginning with general questions and progressively narrowing down to more specific queries related to the identified determinants. Demographic inquiries were incorporated to enhance the contextual comprehension of respondents' backgrounds. The questionnaire was carefully structured to transition from general to specific questions, with demographic inquiries at the outset to establish contextual background. This methodological rigor facilitated an in-depth academic investigation into Thailand's digital asset sector, adhering to established scholarly protocols.

A preliminary pilot study involving 30 participants was conducted to refine the questionnaire, as recommended by Thetlek et al. (2023). To ensure the reliability and validity of the research, several rigorous steps were taken. First, content validity was established by having a panel of experts in digital finance and survey methodology review the questionnaire, ensuring it comprehensively covered the research topic. Construct validity was then assessed through factor analysis, confirming that the questionnaire items accurately represented the intended constructs. Finally, reliability was measured using Cronbach's alpha for each multi-item scale, with any items scoring below 0.7 being removed to maintain internal consistency. Ethical guidelines were strictly observed, with the exclusion of individuals under the age of 18 to comply with legal standards of informed consent. Participants were thoroughly briefed on the research objectives and informed of their rights, including the option to withdraw at any point. Participants were required to complete the questionnaire in its entirety for inclusion in the analysis, automatically excluding incomplete responses. The study specifically targeted Thai nationals aged 18 and above residing within the country.

The sample size was calculated using Yamane's formula, with a significance level (p) of 0.5, precision of ±5%, and 95% confidence level. This calculation required a minimum sample size of 396, as urged by Uakarn et al. (2021); however, the study was expanded to include 1,180 participants via convenience sampling. The online survey data was collected over a three-month period to capture current and relevant information. This extended period allowed for the observation of evolving trends, which improved the reliability and accuracy of the research findings.

Data analysis was carried out using statistical software, which performed both descriptive and inferential statistics. The study's dependent variable was *digital asset adoption* in Thailand, operationalized as a binary outcome (adopter/non-adopter). The independent variables were *gender*, *age*, *marital status*, *education*, *occupation*, *income*, *saving*, *digital asset risk*, and *digital asset knowledge*. Responses were automatically coded by the online survey platform to streamline data processing. Categorical variables, such as *gender* and *education* level, were assigned numerical codes for analysis. Likert scale responses were coded on a 1–5 scale, with 1 indicating "Strongly disagree" and 5 indicating "Strongly agree". To preserve the integrity of the dataset, missing data were addressed using multiple imputation techniques. In this study, binary regression was utilized to examine the relationships between the dependent and independent variables.

4. RESULTS

A complete dataset was compiled from a group of 1,180 Thai participants who voluntarily and diligently participated in the study by filling out detailed online surveys. Following the data collection phase, each response was meticulously coded, and a thorough statistical analysis was performed. This thorough process ensured that the findings were effectively aligned with and supported the specified research objectives, providing strong insights into the study's area of focus.

Table 1. Omnibus test of the model's performance using all the independent variables

Step 1	*Chi-square*	*df*	*Sig.*
Step	605.837	9	0.000
Block	605.837	9	0.000
Model	605.837	9	0.000

Table 1 presents the results of the Omnibus test for the model's performance, incorporating all independent variables. The Chi-square value was 605.837, with 9 degrees of freedom. The dependent variable is significantly explained by the independent variables at the 0.05 significance level.

Table 2. The model summary using all the independent variables

Step	*-2 log-likelihood*	*Cox and Snell R square*	*Nagelkerke R square*
1	319.626[a]	0.402	0.739

Note: a. Estimation terminated at iteration number 20 because maximum iterations have been reached. A final solution cannot be found.

Table 2 presents the model summary incorporating all independent variables. The Cox and Snell R square value is 0.402, while the Nagelkerke R square value is more robust at 0.739. This suggests that approximately 73.9% of the variability in digital asset adoption is explained by the independent variables.

Table 3. Classification table for back testing including all the independent variables

			Predicted		
	Observed		Digital asset		Percentage correct
			No	Yes	
Step 1	Digital asset	No	958	65	93.6%
		Yes	26	131	83.4%
	Overall percentage				92.3%

Note: The cut-off value is 0.500.

Table 3 reflects the model's accuracy, with 93.6% correct predictions for non-adopters and 83.4% for adopters, leading to an overall accuracy of 92.3%. This indicates the model's effectiveness at predicting digital asset adoption based on the independent variables.

Table 4. Variables in the model using all the independent variables

Step	Variable	B	S.E.	Wald	df	Sig.	Exp(B)
1[a]	*Gender*	-0.098	0.431	0.052	1	0.820	0.906
	Age	0.090	0.231	0.150	1	0.699	1.094
	Marital status	-1.327	0.642	4.270	1	0.039	0.265
	Education	2.807	0.406	47.819	1	0.000	16.553
	Occupation	0.247	0.496	0.247	1	0.619	1.280
	Income	-16.520	581.780	0.001	1	0.977	0.000
	Saving	-1.568	1033.533	0.000	1	0.999	0.208
	Digital asset risk	-0.159	0.055	8.346	1	0.004	0.853
	Digital asset knowledge	0.502	0.169	8.812	1	0.003	1.653
	Constant	13.203	854.248	0.000	1	0.988	542097.584

Note: a. Variable(s) in step 1: Gender, age, status, education, occupation, income, saving, digital asset risk, digital asset knowledge.

The predictive regression equation corresponding to Model 1 as delineated in Table 4 can be articulated through the subsequent equation:

Model 1

$$P = \frac{1}{1 + e^{-z}} \quad (1)$$

where P is the *digital asset adoption* in Thailand, and $Z = 13.203 - 1.327(\textit{marital status}) + 2.807(\textit{education}) - 0.159(\textit{digital asset risk}) + 0.502(\textit{digital asset knowledge})$.

The significance levels of each independent variable are detailed in Table 4. This table indicates that the dependent variable — *digital asset adoption* in Thailand — can be explained by factors including *status*, *education*, *digital asset risk*, and *digital asset knowledge*. Other variables such as *gender*, *age*, *occupation*, *income*, and *savings* did not demonstrate statistical significance. The analysis reveals that with an increment of one unit in status, the likelihood of digital asset adoption in Thailand is reduced, with the odds ratio shifting from 1 to 0.265, which translates to a decrease of 73.5%. Conversely, a unit increase in education correlates with a 16.553 increase in the odds of adopting digital assets in Thailand. Similarly, a unit increment in *digital asset risk* decreases the odds of *digital asset adoption* from 1 to 0.853, indicating a 14.7% reduction. Additionally, an increase of one unit in *digital asset knowledge* is associated with a 1.653 increase in the odds of *digital asset adoption* in Thailand.

Subsequently, the model was refined to include solely statistically significant independent variables. This focused approach aims to enhance the predictive efficacy of the model by accentuating the most influential factors affecting the dependent variable.

Table 5. Omnibus test of the model's performance using only significant independent variables

Step 1	Chi-square	df	Sig.
Step	146.364	4	0.000
Block	146.364	4	0.000
Model	146.364	4	0.000

Table 5 presents the Omnibus test of the model's performance using all the independent variables. It indicates that the Chi-square was 146.364, with a df equal to 4. The dependent variable can be explained by all the independent variables at the significance level of 0.05.

Table 6. The model summary using only significant independent variables

Step	-2 log-likelihood	Cox and Snell R square	Nagelkerke R square
1	779.099[a]	0.117	0.215

Note: a. Estimation terminated at iteration number 6 because parameter estimates changed by less than 0.001.

Table 6 presents the model summary using all the independent variables. Cox and Snell R square is 0.117, and Nagelkerke R square is more robust at 0.215, suggesting that approximately 21.5% of the variability in *digital asset adoption* is explained by the independent variables.

Table 7. Classification table for back testing using only significant independent variables

			Predicted		
	Observed		Digital asset		Percentage correct
			No	Yes	
Step 1	Digital asset	No	1007	16	98.4%
		Yes	137	20	12.7%
	Overall percentage				87.0%

Note: The cut-off value is 0.500.

Table 7 reflects the model's accuracy, with 98.4% correct predictions for non-adopters and 12.7% for adopters, leading to an overall accuracy of 87.0%. This indicates the model's effectiveness at predicting *digital asset adoption* based on the independent variables.

Table 8. Variables in the model using only significant independent variables

Step	Variable	B	S.E.	Wald	df	Sig.	Exp(B)
1[a]	*Marital status*	1.913	0.286	44.651	1	0.000	6.774
	Education	0.460	0.146	9.864	1	0.002	1.584
	Digital asset risk	-0.073	0.027	7.453	1	0.006	0.930
	Digital asset knowledge	0.835	0.086	93.967	1	0.000	2.305
	Constant	-7.707	0.968	63.449	1	0.000	0.000

Note: a. Variable(s) in step 1: Status, education, digital asset risk, digital asset knowledge.

The predictive regression equation corresponding to Model 2 as delineated in Table 8 can be articulated through the subsequent equation:

Model 2

$$P = \frac{1}{1 + e^{-z}} \quad (2)$$

where P is the *digital asset adoption* in Thailand, and $Z = -7.707 + 1.913(\textit{marital status}) + 0.460(\textit{education}) - 0.073(\textit{digital asset risk}) + 0.835(\textit{digital asset knowledge})$.

The results from Table 8 of the study highlight the statistical significance and impact of various independent variables on the adoption of digital assets in Thailand. The analysis confirms that factors such as *status*, *education*, *digital asset risk*, and *digital asset knowledge* significantly influence this adoption process. An increase of one unit in the status of individuals led to a significant increase in *digital asset adoption*, with the odds increasing by 6.774 times. This suggests that higher status or position may be associated with greater financial capabilities or a higher propensity to engage with digital assets. A one-unit increase in education level resulted in *digital asset adoption* increasing by 1.584 times. This indicates that better-educated individuals are more likely to adopt digital assets, possibly due to a better understanding of the technology or more confidence in navigating digital platforms. For each unit increase in perceived *digital asset risk*, the likelihood of adopting digital assets decreased by 7%, as indicated by the odds ratio changing from 1 to 0.930. This highlights risk perception as a significant deterrent in the decision to adopt digital assets. An increase in knowledge about digital assets led to a 2.305 times increase in their adoption. This underscores the importance of awareness and informed understanding in facilitating the uptake of digital technologies.

The results of this study can be interpreted through the lens of the TAM and diffusion of innovation theory. The positive impact of *education* on *digital asset adoption* aligns with TAM's concept of perceived ease of use, as higher education likely enhances individuals' ability to understand and navigate digital asset platforms. The significant influence of *digital asset knowledge* on adoption rates supports both TAM's perceived usefulness construct and the diffusion of innovation theory's emphasis on complexity and observability. Individuals with greater knowledge are likely to perceive digital assets as more useful and less complex, facilitating adoption. The negative impact of risk perception on adoption rates can be understood through the diffusion of innovation theory's concept of relative advantage. Higher perceived risks decrease the perceived relative advantage of digital assets compared to traditional financial instruments. Socio-economic status, found to positively influence adoption, relates to Rogers' (2003) adopter categories in the diffusion of innovation theory, with higher-status individuals more likely to be early adopters due to greater resources and risk tolerance. These theoretical interpretations provide a deeper understanding of the empirical results, demonstrating how individual characteristics and perceptions influence the adoption process of digital assets in Thailand.

5. DISCUSSIONS

The study on digital asset adoption in Thailand revealed that socio-economic status, educational attainment, risk perception, and knowledge significantly influence the likelihood of adopting digital assets. Together, these factors shape the landscape of digital asset adoption in Thailand, highlighting the importance of economic resources, educational opportunities, and informed awareness in influencing individuals' engagement with digital financial technologies.

Socio-economic status emerges as a critical determinant, with higher socio-economic groups possessing enhanced access to the necessary digital infrastructure and financial resources for digital asset investment. The facility to invest in such assets typically correlates with the availability of disposable income, which is more prevalent among those of higher socio-economic backgrounds. The positive relationship between socio-economic status and digital asset adoption aligns with the diffusion of innovation theory (Rogers, 2003). Higher socio-economic status individuals, characterized as early adopters, often have greater access to resources and information, facilitating their adoption of new technologies. The study aligns with the findings of Oke et al. (2014), indicating that infrastructure development significantly influences individuals' perceptions of their quality of life. The research posits that the impact of economic status on technology adoption and positive attitudes is dependent on perceptions of current infrastructure development. Acevedo et al. (2020) emphasized that the farmers' socio-economic status is a crucial factor in their adoption of climate-resilient technologies, highlighting the need for a thorough understanding of the socio-economic conditions of farmers to tailor interventions that effectively promote the adoption and sustained use of climate-resilient crop technologies.

The findings of this study both support and extend existing theoretical frameworks in the context of digital asset adoption. The significant influence of education and knowledge on adoption rates aligns with previous studies applying the TAM to FinTech adoption (Namahoot & Rattanawiboonsom, 2022; Wu et al., 2022). However, our study extends TAM by demonstrating the importance of specific

knowledge about digital assets, suggesting that perceived usefulness and ease of use may be mediated by domain-specific understanding. Educational attainment also significantly influences digital asset adoption. The strong correlation between educational attainment and digital asset adoption supports the TAM. Higher education levels likely contribute to increased perceived usefulness and ease of use, key determinants in the TAM. Consistent with Rukhiran et al. (2023), higher education levels are likely to increase perceived usefulness and ease of use for biometric recognition technologies in examination attendance systems. In addition, it correlates with an individual's capacity to comprehend and navigate the complexities inherent in digital assets. Higher educational levels facilitate an improved understanding of the potential benefits and associated risks, thereby influencing decision-making processes in the context of digital investments. The findings of the study align with those of Thetlek et al. (2023), which assert that an individual's level of education plays a crucial role in the token economy. This significance is attributed to education acting as a mechanism that facilitates the acquisition of knowledge. Such knowledge is versatile, applicable in various scenarios, and contributes to simplifying aspects of life. Moreover, Kraiwanit et al. (2023) suggested that higher levels of education significantly enhance the likelihood of adopting technologies like the Worldcoin wallet. Individuals with greater educational attainment are often more cognizant of the advantages and security measures associated with digital wallets, which potentially increases their readiness to embrace such technologies. In addition, education can elevate awareness and foster trust in innovative payment methods, thereby influencing the adoption rates of new financial technologies.

Knowledge of digital assets is crucial in fostering confidence among potential adopters. Enhanced knowledge about digital currencies, blockchain technology, and the corresponding security protocols increases individuals' propensity to participate in digital asset markets, as it allows for a more informed assessment of the benefits and risks. The findings of this study corroborate those presented by Wu et al. (2022), which demonstrated that financial knowledge significantly enhances individuals' intentions to utilize digital currency, suggesting that an increased understanding of financial principles positively influences the adoption of digital financial technologies. Moreover, Muslichah and Sanusi (2019) observed that Islamic financial literacy exerts a significantly stronger influence on the intention to use Islamic banking products compared to other relational factors. The study underscores the importance of knowledge, particularly financial literacy, in enhancing the interest among industry participants in Islamic financial products. This finding highlights the pivotal role of educational initiatives in fostering a deeper understanding of Islamic financial principles, thereby driving adoption within the sector.

The negative impact of risk perception on adoption rates supports the diffusion of innovation theory's emphasis on relative advantage and is consistent with studies on cryptocurrency adoption (Alrawad et al., 2023). However, our findings suggest that in the context of digital assets, the influence of risk perception may be more pronounced than in other technological innovations, highlighting the unique challenges of FinTech adoption. Risk perception is identified as a pivotal factor in the adoption process. The study indicates that individuals who perceive lower risks associated with digital asset transactions are more likely to engage with these assets. This perception is shaped by factors such as personal experiences, exposure to technological advancements, and individual risk tolerance. The results are consistent with those reported by Alrawad et al. (2023), which indicated that perceived risk adversely affects consumers' intention to adopt NFC mobile payment systems, suggesting that concerns about security and privacy can significantly deter potential users from engaging with this form of technology. Interestingly, Almaiah et al. (2022) determined that the impact of perceived risk on the behavioral intention to use Internet banking was not significant in their study. This outcome may be attributed to the relatively low adoption of Internet banking among Malaysians. The study suggests that the intrinsic aspects of perceived risks do not positively influence individuals' intentions to use Internet banking services. Essentially, lower perceived risks associated with technological proficiency do not necessarily lead to increased acceptance of Internet banking, as individuals with lower risk perception may still be unlikely to adopt such services due to other factors. Kraiwanit et al. (2024) also demonstrated that perceived risk serves as a significant deterrent to the adoption of the Worldcoin wallet, highlighting the crucial need to address security concerns.

These insights suggest that strategies to increase digital asset adoption in Thailand should focus on educational initiatives to raise awareness and understanding, address risk perceptions through security and regulation, and improve access to technology across all socio-economic levels. Collaboration among policymakers, educators, and digital asset providers could drive these initiatives, potentially increasing digital asset uptake across the country.

6. CONCLUSION

These findings shed light on the intricate factors influencing digital asset adoption, emphasizing the critical roles of socio-economic status, educational attainment, risk perception, and knowledge. Individuals with higher socio-economic status are more likely to adopt digital assets, suggesting that economic resources and access to technology significantly influence adoption decisions. Higher educational attainment also correlates with increased adoption, underscoring the importance of understanding and familiarity with digital assets as key drivers. However, elevated risk perception acts as a deterrent, with greater perceived risks leading to lower adoption rates. This highlights the need to address risk concerns through robust security measures and clear regulatory frameworks to build trust among potential users. Additionally, the strong positive impact of digital asset knowledge on adoption rates points to the necessity of comprehensive educational outreach. Implementing targeted educational

programs to enhance understanding of digital assets and dispel misconceptions could substantially boost adoption. Policymakers, financial educators, digital asset providers, and other stakeholders in Thailand could benefit from collaborating on initiatives to enhance public knowledge and confidence in digital assets. Such efforts might include educational campaigns, workshops, and the integration of digital financial literacy into school curricula. Simultaneously, reducing socio-economic barriers, such as by increasing access to digital technology in underserved communities, could further democratize digital asset adoption across broader segments of the Thai population.

The study's findings on digital asset adoption in Thailand have significant social and practical implications, offering valuable insights for policymakers, financial institutions, educators, and technology developers. The interplay of socio-economic status, educational attainment, risk perception, and knowledge in driving adoption suggests that a multifaceted approach is essential to promoting financial inclusion through digital assets. For policymakers, these results highlight the need for targeted regulations that balance innovation with consumer protection, possibly through developing sandbox environments for FinTech startups while simultaneously enhancing security measures to mitigate perceived risks. Financial institutions can leverage these insights to design more inclusive digital asset products tailored to different socio-economic segments and address specific risk concerns. In education, the strong correlation between knowledge and adoption rates calls for integrating digital asset education into financial literacy programs, both in school curricula and adult learning initiatives. This could foster a more technologically savvy and financially empowered population, potentially reducing wealth disparities over time. For technology developers, the findings underscore the importance of creating user-friendly interfaces that accommodate varying levels of digital literacy, thereby democratizing access to digital assets. On a broader societal level, increased digital asset adoption could improve remittance systems, benefiting Thailand's migrant worker population and their families. Understanding barriers to adoption among lower socio-economic groups also suggests that targeted interventions, such as subsidized smartphones or data plans, could accelerate financial inclusion and economic development in underserved communities. The gender disparities in adoption rates point to the need for women-centric digital financial services and education programs, which could contribute to greater gender equality in financial decision-making. Ultimately, these findings provide a roadmap for fostering a more inclusive digital economy in Thailand, with potential applications for other emerging markets facing similar challenges in adopting financial technologies.

Furthermore, this study underscores the significant academic implications of digital asset adoption, highlighting areas crucial for research and policy enhancement. First of all, it emphasizes the need to delve deeper into the correlation between socio-economic status and digital asset adoption to facilitate more targeted policy interventions that address economic disparities in technology access. Additionally, it stresses the urgency of educational reforms to incorporate digital literacy across all education levels, suggesting research into specific educational content that can effectively promote the understanding and adoption of new financial technologies. The study also revealed that risk perception negatively affects adoption rates, advocating for research into the psychological and informational barriers that different demographic groups face. It further recommends evaluating the effectiveness of various educational interventions like digital workshops, online courses, and community programs, and their impact across different demographics. Last but not least, the study calls for collaborative efforts among policymakers, educators, and digital asset providers to enhance public knowledge and confidence, suggesting a focus on successful case studies to develop best practice models. These efforts are aimed at enriching the academic discourse on digital assets and laying a foundation for actionable strategies to boost their adoption, contributing to the broader FinTech field.

This study on digital asset adoption in Thailand, while insightful, is subject to several limitations that should be addressed in future research. The use of convenience sampling limits the generalizability of the findings, as the sample may not accurately represent the broader population of Thai investors. In addition, the focus on Thailand may restrict the applicability of results to other regions with different economic, cultural, and regulatory contexts. Furthermore, the cross-sectional design captures data at a single point in time, failing to account for changes over time. Relying on self-reported data introduces potential biases that can affect accuracy. Future studies should employ randomized sampling, conduct comparative and longitudinal research, and consider a broader range of determinants. Moreover, using a mixed-methods approach and investigating the impact of educational programs and regulatory frameworks could provide more comprehensive insights. Addressing these limitations will enhance our understanding of digital asset adoption and inform better policy and educational initiatives.

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APPENDIX. QUESTIONNAIRE

Your responses to this questionnaire are crucial for data analysis and interpretation. We kindly request your assistance in completing it based on your opinions and factual knowledge. Please be assured that all information provided will be kept confidential and used solely for data analysis purposes.

Section 1: General information

1. Are you over 18 years old?
   – Yes
   – No
2. Do you hold any form of assets?
   – Yes (e.g., gold, stocks, real estate, mutual funds, bonds, cryptocurrencies)
   – No
3. Gender
   – Male
   – Female
4. Current age
   – Over 55 years old
   – 45–55 years old
   – 35–44 years old
   – Under 35 years old
5. Marital status
   – Single
   – Married/No children
   – Married/With children
   – Widowed/Divorced
   – Other
6. Highest level of education
   – Below bachelor's degree
   – Bachelor's degree or equivalent
   – Master's degree or higher
7. Current occupation
   – Self-employed
   – Government employee/State enterprise
   – Private company employee/Contractor
   – Business owner
   – Student
8. Average monthly income
   – Below 15,000 THB
   – 15,000–25,000 THB
   – 25,001–35,000 THB
   – 35,001–50,000 THB
   – Over 50,000 THB
9. Monthly savings
   – 1,000–5,000 THB
   – 5,001–10,000 THB
   – 10,001–15,000 THB
   – 15,001–20,000 THB
   – Over 20,000 THB

Section 2: Investor risk characteristics

1. What percentage of your income is allocated to financial obligations and regular expenses (e.g., mortgage, car, personal expenses, family support)?
– Over 75% of total income
– Between 50% and 75% of total income
– Between 25% and 50% of total income
– Less than 25% of total income
2. What is your current financial status?
– Assets are less than liabilities
– Assets are equal to liabilities
– Assets are greater than liabilities
– Confident in having sufficient savings or investments for retirement
3. Have you ever had experience or knowledge of investing in the following assets? (Select all that apply)
– Bank deposits
– Government bonds or government bond mutual funds
– Debentures or debt instrument mutual funds
– Common stocks or equity mutual funds
– Digital assets or other high-risk assets
4. How long do you expect not to need to use this investment money?
– Less than 1 year
– 1 to 3 years
– 3 to 5 years
– More than 5 years
5. What is your primary investment objective?
– Focus on principal safety with consistent but low returns
– Focus on the opportunity for consistent returns, though the principal may be at some risk
– Focus on the opportunity for higher returns, but the principal may be at significant risk
– Focus on maximum long-term returns, despite the risk of losing most of the principal
6. Considering the sample return graphs below, which investment group are you most willing to invest in?
– Group 1: Expected return of 2.5% with no loss
– Group 2: Expected return of 7% with potential loss of 1%
– Group 3: Expected return of 15% with potential loss of 5%
– Group 4: Expected return of 25% with potential loss of 15%
7. If you choose to invest in an asset with high potential returns but also a high risk of loss, how would you feel?
– Worried and panicked about losses
– Uncomfortable but somewhat understanding
– Understanding and being able to accept some volatility
– Unconcerned about potential high losses and optimistic about possible high returns

Section 3: Understanding of digital assets

1. How many Bitcoins are there in the ecosystem?
– 21 million coins
– 20 million coins
– 2 million coins
– 1 million coins
2. If you want to buy a cryptocurrency that has a value close to the US dollar and is less volatile than other cryptocurrencies, which type should you choose?
– Smart contract
– Digital currency
– DeFi
– Stablecoin
3. Which of the following is not a characteristic of Blockchain?
– Centralized
– Immutability
– Transparency
– Decentralized/Distributed
4. What is DeFi?
– A decentralized financial system
– A centralized financial system
– None of the above
– Both of the above
5. Which of the following best describes an NFT?
– Unique and cannot be duplicated, used to demonstrate ownership
– Certified for quality and value by a reputable organization
– A digital artwork created by an artist skilled in Blockchain technology
– Certified for quality and value by an art and culture organization
6. Which of the following is true about digital currencies?
– Digital currencies do not require digital devices connected to the internet for transactions

– Digital currencies can be transferred on platforms without a bank account
– Digital currencies have high transaction fees because they are used by a small group only
– Digital currencies cannot be used to purchase anything, only for speculation
7. Who are miners?
– Organizations that jointly invest in digital currencies
– All of the above
– People who confirm and verify transactions on the Blockchain network
– People who solve mathematical equations on the network receive newly created Bitcoin as a reward
8. Which of the following is not a digital asset?
– BNB
– Litecoin
– Stocks
– Bitcoin
9. Cryptocurrency Exchange Centers
– Bizza
– Satang
– Olympus
– Binance
10. Which of the following is a cryptocurrency?
– Krona
– Ruble
– Rupiah
– Bitcoin

Section 4: Accumulating assets in the digital age

1. What is the most valuable asset you currently own?
– Gold
– Common Stocks
– Real Estate/Land
– Digital Assets
– Mutual Funds
– Bonds
2. Which type of digital asset are you most interested in?
– Bitcoin (BTC), Ethereum (ETH)
– Binance Coin (BNB), KUB (issued by exchange)
– Meme Coins (DOGE, INU, etc.) created for entertainment
– Stablecoins (USDT, USDC) pegged to stable assets like gold or bonds
– NFT
– Not interested at all