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ASSESSING THE IMPACT OF BLOCKCHAIN ON THE PERFORMANCE AND SECURITY OF DIGITAL CONSUMER LENDING SYSTEMS

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ABSTRACT

As the digital economy rapidly develops, quick access to capital has become a critical survival factor for individuals intending to start a new business. However, under traditional bank lending systems, these aspiring entrepreneurs face significant barriers due to complex financial documentation requirements and stringent credit history checks. Drawing on the Technology Acceptance Model (TAM), this study investigates factors influencing users' adoption of blockchain-enabled digital lending platforms among individual customers with startup intentions in Vietnam. The empirical model examines the effects of Perceived Ease of Use and Perceived Usefulness on Attitude Toward Using, and the effect of Attitude on Behavioral Intention to Use. The results show that both perceived ease of use and perceived usefulness positively influence users' attitudes, while attitude strongly affects behavioral intention. Blockchain-related characteristics, including decentralization, data immutability, and smart contracts, are discussed as technological mechanisms that may improve lending efficiency, transparency, and users' confidence in digital lending systems. The study provides practical implications for banks and FinTech firms seeking to design user-friendly and secure digital lending platforms for underserved entrepreneurial users.

Keywords: Blockchain, digital lending, startup intention, financial proof, trust, TAM.

1. INTRODUCTION

In the era of the Fourth Industrial Revolution, the rapid growth of Financial Technology (FinTech) and smart mobile devices has fundamentally transformed the financial services industry [1, 2]. In Vietnam, banking digitalization is accelerating significantly, with digital consumer lending services gradually replacing traditional credit models to meet customers' demand for rapid disbursement [3]. The integration of advanced technologies enables banks and financial institutions to expand their customer base and improve operational efficiency by reducing processing time and minimizing manual intervention [4, 5]. Moreover, these technologies also raise important issues related to financial security, authentication, and the protection of sensitive customer information [5].

However, traditional lending procedures continue to present significant barriers, particularly for startups and small and medium-sized enterprises (SMEs). Securing a bank loan typically requires extensive financial documentation, complex legal procedures, and prolonged manual verification processes (Know Your Business - KYB). Due to the lack of

established credit histories, startups often face stringent scrutiny, resulting in delayed disbursement that may hinder their operational growth [6-8]. Furthermore, the centralized database systems commonly used by financial institutions to verify corporate information are not only inefficient but also susceptible to data loss, unauthorized modification, and cyberattacks [5, 9]. Consequently, startups have an urgent need for financial solutions that enable fast and frictionless access to capital while maintaining the high security standards required by traditional banking systems.

To address the dual challenges of efficiency and security, blockchain technology has emerged as a promising solution. As a decentralized data storage system, blockchain ensures transparency, immutability, and secure data sharing, thereby enhancing system reliability and facilitating automated decision-making in lending processes [10, 11]. In financial services, blockchain has been widely recognized for its potential to automate transactions, reduce transaction costs, improve auditability, and reduce the need for intermediaries [12-15].

Although prior studies have explored blockchain adoption in the banking sector, limited empirical evidence exists on how users perceive the integration of blockchain into digital lending platforms, particularly in emerging markets such as Vietnam. Most existing studies have primarily focused on technical aspects or examined adoption at the organizational level [14, 15]. As a result, there remains a significant research gap regarding the user-centered perspective, especially in understanding how users evaluate efficiency, privacy, trust, and security when interacting with blockchain-enabled digital lending systems.

Addressing these practical and theoretical gaps, this study aims to investigate the factors influencing the adoption of blockchain-enabled digital lending platforms, focusing on a critical yet underserved group: aspiring entrepreneurs, startup founders, and SMEs in Vietnam. To highlight the novelty of this approach, the study contextualizes the Technology Acceptance Model (TAM) [16] within blockchain-enabled digital lending, where trust and security are important theoretical considerations in digital financial services [17, 18]. This TAM-based model evaluates how users perceive the usefulness and ease of use of blockchain-enabled lending platforms in simplifying complex, paper-intensive financial verification and KYB processes for startups lacking traditional credit histories. Furthermore, the study empirically examines how these user perceptions shape attitude and behavioral intention when accessing capital through digital lending systems.

Ultimately, this research provides practical implications for commercial banks by demonstrating how blockchain-based smart contracts can be leveraged to safely expand lending portfolios to new entrepreneurs. In doing so, it contributes to promoting financial inclusion while maintaining stringent security standards and mitigating risks related to corporate identity fraud and non-performing loans [19, 20].

2. THEORETICAL BACKGROUND

2.1. Conceptual foundations of blockchain-based lending and technology adoption models

2.1.1. Blockchain Technology in Banking and Lending

Blockchain is a decentralized and secure data-sharing technology that utilizes cryptographic hash functions to ensure data integrity and immutability, making it extremely difficult to alter recorded information without network consensus [10, 11]. In the context of financial services, particularly credit operations, Decentralized Finance (DeFi) has emerged as a novel technological paradigm that operates through smart contracts on blockchain networks, enabling the automation of financial transactions without the need for intermediaries [12].

The integration of blockchain technology into the banking system has introduced significant improvements in lending processes. Specifically, blockchain enables the automated execution of loan agreements through smart contracts, thereby reducing reliance on manual verification procedures. This technological capability provides substantial advantages, including faster cross-border payments, lower transaction costs, enhanced fraud detection, and improved transparency in financial operations [12-14]. Furthermore, blockchain systems can facilitate regulatory compliance by providing immutable and auditable transaction records, contributing to more secure and reliable financial services [14, 15].

2.1.2. Technology Acceptance Model (TAM) and Extended TAM

The Technology Acceptance Model (TAM), introduced by Davis (1989), is one of the most widely applied theoretical frameworks for explaining user acceptance of information systems. Derived from the Theory of Reasoned Action (TRA), TAM provides a structured explanation of how individuals develop behavioral intentions to adopt new technologies. According to the model, users' intention to use a system is primarily determined by their perceptions of its usefulness and ease of use, which subsequently influence their attitudes and actual usage behavior [16].

Perceived Usefulness refers to the extent to which an individual believes that using a particular system will enhance their performance or improve task efficiency, while Perceived Ease of Use reflects the degree to which an individual believes that using the system will require minimal effort. These two constructs are considered fundamental determinants of technology adoption, as users are more likely to accept systems that are both beneficial and easy to operate.

However, with the increasing complexity of digital technologies, particularly in the domains of FinTech and digital financial platforms, the original TAM framework has been extended to incorporate additional variables in order to better capture user behavior in modern contexts [21, 22]. One important extension involves the inclusion of system and information quality as external factors influencing users' perceptions. High-quality systems that provide accurate, reliable, and timely information can significantly enhance both perceived usefulness and perceived ease of use, thereby increasing the likelihood of adoption [23].

In addition, issues related to safety and security have become increasingly critical in financial technology adoption. Because financial services involve sensitive personal and transactional data, users tend to exhibit strong concerns regarding privacy and data protection. As a result, constructs such as Perceived Trust, Perceived Privacy, and Perceived Security have been widely incorporated into extended TAM models to explain user behavior in digital financial environments. These factors play a crucial role in shaping users' attitudes and intentions, particularly in high-risk contexts such as digital lending [17, 18, 25].

Another important factor influencing technology adoption is relative advantage, which refers to the extent to which a new technology is perceived as offering superior benefits compared to existing solutions. In the context of blockchain-based lending platforms, features such as automation, transparency, and cost efficiency provide clear advantages over traditional banking systems. These perceived benefits significantly increase users' willingness to adopt new technologies, as they directly address inefficiencies associated with conventional financial processes [13, 14, 24].

Overall, the extended TAM framework provides a comprehensive theoretical foundation for analyzing user adoption behavior in digital lending systems. By incorporating additional constructs such as trust, security, and relative advantage, the model is particularly suitable for examining the adoption of blockchain-enabled financial technologies in emerging markets

such as Vietnam, where both technological innovation and user trust play critical roles in shaping adoption decisions.

2.2. Empirical research

2.2.1. Technology Adoption in FinTech and the Extended TAM

The transition from traditional banking systems to digital consumer lending platforms necessitates a comprehensive understanding of user behavior in technology adoption. The Technology Acceptance Model (TAM), originally proposed by Davis (1989), provides a foundational framework suggesting that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are the primary determinants of users' intention to adopt new technologies [16, 21]. While TAM has been widely validated in various information system contexts, its explanatory power becomes limited when applied to modern FinTech environments. Digital lending platforms process highly sensitive personal and financial data, which introduces significant psychological concerns beyond mere system functionality. In this context, technology adoption is no longer driven solely by efficiency or convenience but is strongly influenced by users' perceptions of risk, trust, and security [17, 18, 25]. Therefore, extending the original TAM is essential to capture the complex behavioral dynamics associated with digital financial services [21, 22].

2.2.2. Blockchain in Banking and Lending

Blockchain technology has attracted increasing attention in the banking and lending sectors due to its ability to enhance transparency, data integrity, and system security [10, 11, 15]. In lending operations, blockchain facilitates secure transaction recording, improves auditability, and enables automated loan processing through smart contracts [12, 14]. These features not only increase operational efficiency but also reduce dependence on manual verification processes, which are often time-consuming and prone to human error. Furthermore, studies examining technology adoption in financial services emphasize the critical role of users' trust and security perceptions in influencing adoption decisions [17, 18, 25].

2.2.3. TAM Extensions in Digital Financial Services

The Technology Acceptance Model has been extensively applied to explain user adoption behavior across various digital service environments. However, as financial technologies become increasingly sophisticated and involve sensitive personal information, researchers have extended TAM by integrating additional constructs such as trust, privacy, and security [21]-[23]. In digital financial services, these factors are particularly critical because users are highly concerned about data misuse, financial risks, and cyber threats. Empirical studies consistently demonstrate that perceived trust and perceived privacy significantly enhance users' confidence in digital platforms, thereby increasing their intention to adopt financial technologies [17, 18, 25]. Moreover, integrating external variables into TAM has been shown to improve its predictive accuracy in explaining user behavior [21, 22]. In the Vietnamese context, research has also emphasized the importance of usefulness, ease of use, and user perceptions in shaping adoption of digital banking services [30].

2.3. Bridging theoretical gaps in blockchain-based digital lending: The Role of Trust, Security, and User Perception

2.3.1. The Role of Trust and Security in Digital Lending

In the context of financial technology, trust and security function not only as technical attributes but also as fundamental psychological determinants of user behavior. Digital financial transactions inherently involve risks related to privacy breaches, cyberattacks, and

financial loss, making users highly sensitive to system reliability and data protection [5, 25]. This study argues that even if a digital lending platform is perceived as useful and easy to use, adoption will not occur unless users trust the system and perceive it as secure. Trust and security therefore serve as critical mechanisms that link technological features to users' behavioral intentions [17, 18]. Evidence from digital banking research in Vietnam further supports this argument, showing that user perceptions strongly influence adoption decisions in digital financial services [30].

2.3.2. Blockchain vs. Centralized Systems: Anchoring 'Usefulness and Security'

Traditional corporate lending systems rely heavily on centralized databases and manual auditing processes to verify legal and financial documentation. This centralized approach often leads to inefficiencies, bureaucratic delays, and vulnerabilities to data manipulation [6, 7]. Blockchain technology offers a transformative alternative by introducing a decentralized and immutable data structure. Through distributed ledger systems, startups can securely store and share financial records, tax data, and legal credentials without the risk of unauthorized alteration [9, 10]. Smart contracts further enhance this system by automating verification and loan approval processes [12]. From a user perspective, blockchain fundamentally shifts the lending paradigm from manual verification to automated trust. This transformation reduces the need for repetitive documentation and simplifies the borrowing process, thereby enhancing both Perceived Ease of Use and Perceived Usefulness [16]. Simultaneously, blockchain improves system security and reduces fraud risks in financial services [13, 14].

2.3.3. Research Gap and Novelty of the Study

Despite the growing body of literature on blockchain applications in financial services, most existing studies have primarily focused on macro-level infrastructure or general consumer lending [15]. A significant research gap remains in examining a specific and critical demographic: individuals who intend to start a business but lack an established credit history. This study addresses this gap by explicitly focusing on aspiring entrepreneurs and startup founders as the primary research subjects. These individuals face substantial barriers in accessing capital under traditional banking systems due to stringent documentation requirements and limited financial history [8, 29]. The novelty of this research lies in proposing blockchain technology as a solution to this structural bottleneck. By leveraging decentralized ledgers and smart contracts, blockchain enables users to verify their financial credibility and access capital more efficiently and securely [13, 14].

2.3.4. Contradictions in Existing Literature

Although blockchain technology offers significant advantages, existing literature reveals notable limitations and contradictions. Previous studies have predominantly examined blockchain adoption from a macro-organizational or technical perspective, focusing on institutional implementation rather than user perception [15]. At the same time, traditional technology adoption research emphasizes functional utility, particularly Perceived Usefulness, as the primary driver of adoption [16]. However, recent developments in FinTech suggest a shift in user priorities, where trust and security play a more prominent role in shaping user behavior [17, 18, 25]. This study addresses these contradictions by adopting a user-centered perspective and contextualizing the TAM framework within blockchain-enabled digital lending, where trust and security are treated as important theoretical considerations rather than additional independent constructs in the empirical model. Evidence from Vietnam further reinforces this approach, highlighting the importance of user perceptions in driving adoption of digital banking services [30].

3. METHODOLOGY

3.1. Research design

This study adopts a mixed-methods research design that integrates both qualitative and quantitative approaches to ensure the robustness of the research model and measurement scales. Mixed-methods approaches are widely recommended in technology adoption research, as they allow for both exploratory insights and empirical validation [26]. In the preliminary stage, qualitative methods were employed to refine the measurement items and ensure their contextual relevance. Specifically, focus group discussions and in-depth interviews were conducted with a small group of potential users, including individuals with prior experience in digital financial services.

This stage aimed to explore participants' perceptions of blockchain-enabled digital lending platforms and to adjust the wording of survey items to improve clarity and content validity [27, 28]. In the context of Vietnam's financial sector, prior empirical studies have highlighted the importance of integrating behavioral and technological perspectives when examining financial innovation and user adoption [30]. These studies emphasize that user perceptions and psychological factors play a critical role in shaping technology adoption outcomes. Following the qualitative phase, the study proceeded with a quantitative survey to test the proposed research model and hypotheses. A structured questionnaire was developed based on validated measurement scales and adapted to the blockchain-enabled digital lending context [28].

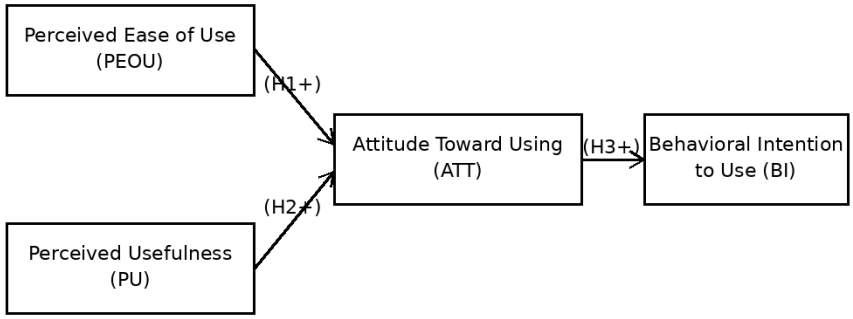

Figure 1. The research model (*Source: own research*)

3.2. Sample and data collection

The study focuses on a highly specific target population: individual customers who intend to start a business and require access to capital through digital lending platforms. This group represents a critical segment in the financial ecosystem, as they often face significant barriers in accessing traditional bank loans due to limited credit history and insufficient financial documentation [8, 29]. A non-probability convenience sampling method was employed, and data were collected through an online survey administered via Google Forms. This approach is commonly used in technology adoption research when targeting specific user groups [27]. Previous studies in the Vietnamese banking context have also utilized survey-based approaches to analyze user behavior and financial decision-making processes, demonstrating the suitability of this method in emerging markets [30]. A total of 252 responses were initially collected. After a rigorous data screening process, incomplete and invalid responses were removed, resulting in 186 valid observations for the final analysis. This sample size is considered adequate for Partial Least Squares Structural Equation Modeling (PLS-SEM) [31].

3.3. Measurement scales

All measurement items in the proposed model were adapted from well-established studies and tailored to the context of blockchain-enabled digital lending platforms. A five-point Likert scale was used for all constructs, ranging from 1 (strongly disagree) to 5 (strongly agree) [32]. Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) were derived from the Technology Acceptance Model [16], while Attitude Toward Using (ATT) and Behavioral Intention to Use (BI) were adapted from extended TAM studies [21, 22]. Although Perceived Trust, Perceived Security, and Perceived Privacy are widely recognized as important considerations in digital financial services [17, 18, 25], these constructs are not specified as independent variables in the present empirical model. Instead, they are treated as contextual factors associated with blockchain-enabled digital lending systems and are discussed in relation to users' perceptions of usefulness, ease of use, and behavioral intention. This approach allows the study to maintain model parsimony while preserving the theoretical relevance of trust and security in blockchain-based financial services [31].

Table 1. Measurement Scales

Item	Construct	Measurement Items	Source
I	Perceived Usefulness (PU)		[24], [29]; adapted by qualitative research
PU1		Using blockchain-enabled digital lending platforms helps me track financial transactions more efficiently and accurately.	
PU2		The platform helps me save time and reduce costs when processing my loan application.	
PU3		The use of blockchain improves the overall quality of the lending service I receive.	
PU4		Blockchain enhances the overall performance of the loan approval process.	
PU5		Blockchain enables faster completion of financial transactions.	
PU6		Blockchain helps me manage my financial data more securely.	
II	Perceived Ease of Use (PEOU)		[24], [30]
PEOU1		Learning to use the blockchain-enabled lending system is easy for me.	
PEOU2		Using blockchain in banking operations is clear and understandable.	
PEOU3		I can easily become proficient in using this digital lending platform.	
PEOU4		Integrating blockchain into the banking system is not complex for users.	
III	Attitude Toward Using (ATT)		[29], [25]
ATT1		I think that applying blockchain in digital lending is a good idea.	
ATT2		I have a positive attitude toward using blockchain in banking operations.	

ATT3		Using blockchain provides significant benefits to users like me.	
IV	Behavioral Intention to Use (BI)		[24], [30]
BI1		I intend to use blockchain-enabled lending platforms in the future.	
BI2		I will consider using blockchain in my financial activities.	
BI3		I am willing to use blockchain when suitable conditions are available.	

Source: own research

3.4. Data analysis strategy

The collected data were analyzed using SPSS and SmartPLS software. The Partial Least Squares Structural Equation Modeling (PLS-SEM) technique was employed due to its suitability for prediction-oriented research and its ability to handle complex models with relatively small sample sizes [31]. The analysis was conducted in three stages. First, descriptive statistics were used to summarize the demographic characteristics of the sample. Second, the measurement model was evaluated in terms of reliability and validity, including indicator reliability, internal consistency reliability, convergent validity, and discriminant validity [31]. Finally, the structural model was analyzed using bootstrapping to test the significance of the hypothesized relationships among constructs. Model explanatory power was assessed using R^2 and effect size indicators [31].

4. RESULTS AND DISCUSSION

For consistency with the SmartPLS output, the following abbreviations are used in the results section: AT denotes Attitude Toward Using (ATT), EU denotes Perceived Ease of Use (PEOU), IT denotes Behavioral Intention to Use (BI), and UF denotes Perceived Usefulness (PU).

4.1. Measurement model evaluation

The measurement model was evaluated to assess the reliability and validity of the constructs, including Perceived Ease of Use (EU), Perceived Usefulness (UF), Attitude (AT), and Intention to Use (IT). First, internal consistency reliability was assessed using Cronbach's Alpha and Composite Reliability (CR). As presented in Table 5, all Cronbach's Alpha values range from 0.729 to 0.813, exceeding the recommended threshold of 0.70 (Hair et al., 2017). Similarly, Composite Reliability values (rho_c) range from 0.834 to 0.866, confirming that all constructs demonstrate satisfactory internal consistency.

Second, convergent validity was evaluated through outer loadings and Average Variance Extracted (AVE). The outer loadings of all measurement items, as shown in Table 2, range from 0.672 to 0.870. Although item UF6 (0.672) is slightly below the recommended threshold, it was retained because the overall AVE remains acceptable. As reported in Table 5, the AVE values range from 0.519 to 0.665, exceeding the minimum threshold of 0.50, which confirms adequate convergent validity. Additionally, the AVE results are visually illustrated in Figure 2, further supporting that each construct explains more than 50% of the variance in its indicators.

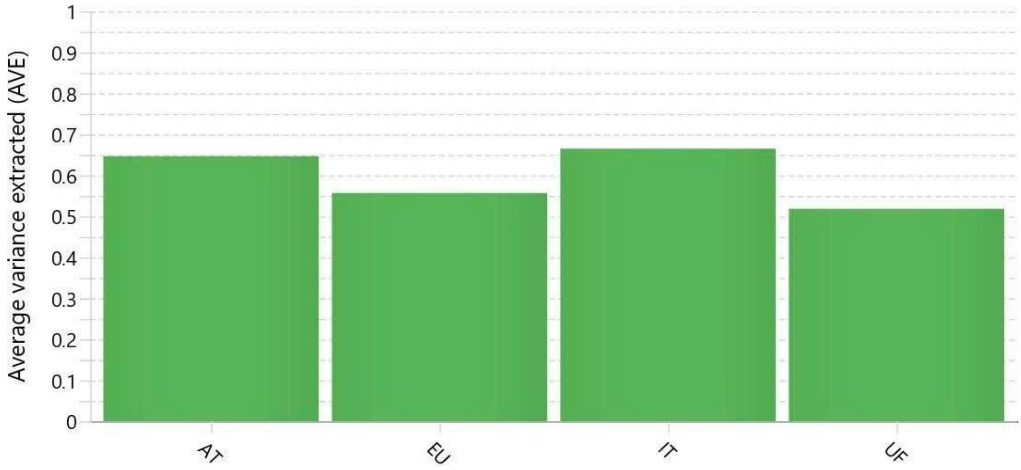

Figure 2. Average variance extracted (AVE).

Source: own research

Third, discriminant validity was assessed using the Fornell-Larcker criterion. As shown in Table 4, the square root of AVE for each construct, including Attitude (AT = 0.804), Perceived Ease of Use (EU = 0.746), Intention to Use (IT = 0.816), and Perceived Usefulness (UF = 0.720), is higher than its correlations with the other constructs. These results indicate that the constructs are empirically distinct and confirm satisfactory discriminant validity, as recommended in PLS-SEM guidelines [31]. Overall, the measurement model demonstrates adequate reliability and validity, supporting its suitability for structural model analysis.

Table 2. Outer Loadings

Item	AT	EU	IT	UF
AT1	0.833			
AT2	0.734			
AT3	0.842			
EU1		0.702		
EU2		0.769		
EU3		0.772		
EU4		0.741		
IT1			0.870	
IT2			0.792	
IT3			0.783	
UF1				0.708
UF2				0.722
UF3				0.701
UF4				0.801
UF5				0.712
UF6				0.672

Source: own research

4.2. Structural model and hypothesis testing

After validating the measurement model, the structural model was evaluated to examine the explanatory power and test the hypothesized relationships. The coefficient of determination (R^2), presented in Table 3, indicates that Perceived Ease of Use and Perceived Usefulness jointly explain 44.0% of the variance in Attitude ($R^2 = 0.440$). In turn, Attitude explains 33.3% of the variance in Intention to Use ($R^2 = 0.333$). These values indicate a moderate level of explanatory power. The structural relationships are further illustrated in Figure 3, which presents the path coefficients and R^2 values of the model. The results confirm the following hypotheses:

H1: Perceived Ease of Use positively affects Attitude Toward Using (β = 0.390): Perceived Ease of Use → Attitude (β = 0.390)

H2: Perceived Usefulness positively affects Attitude Toward Using (β = 0.332): Perceived Usefulness → Attitude (β = 0.332)

H3: Attitude Toward Using positively affects Behavioral Intention to Use (β = 0.577): Attitude → Intention to Use (β = 0.577)

These findings demonstrate that Attitude plays a central role in translating users' perceptions of ease of use and usefulness into behavioral intention.

Table 3. R-square

Construct	R-square	R-square adjusted
AT	0.440	0.434
IT	0.333	0.330

Source: own research

Table 4. Fornell-Larcker

	AT	EU	IT	UF
AT	0.804			
EU	0.618	0.746		
IT	0.577	0.612	0.816	
UF	0.599	0.686	0.612	0.720

Source: own research

Table 5. Convergence validity and construct reliability results

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AT	0.729	0.748	0.846	0.647
EU	0.736	0.740	0.834	0.557
IT	0.747	0.753	0.856	0.665
UF	0.813	0.814	0.866	0.519

Source: own research

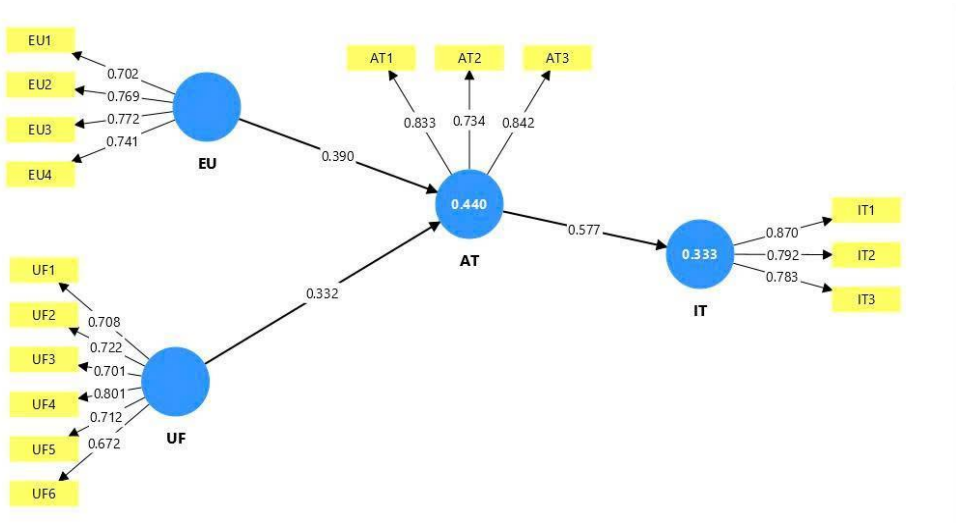

Figure 3. Path analysis and R-square results (*Source: own research*)

The empirical results strongly support the Technology Acceptance Model (TAM) in the context of blockchain-enabled digital lending. Notably, Perceived Ease of Use exerts a slightly stronger influence on Attitude than Perceived Usefulness, as illustrated in Figure 3. This finding suggests that users prioritize system simplicity and ease of interaction when forming attitudes toward digital lending platforms. Blockchain technology contributes to this by reducing procedural complexity and automating verification processes. At the same time, blockchain may enhance perceived usefulness by improving transparency, ensuring data immutability, and enabling smart contract execution. These benefits can contribute to faster loan processing and reduced fraud risk [12]-[14]. The strong relationship between Attitude and Intention to Use, as reflected in both Table 3 and Figure 3, highlights the importance of psychological evaluation in technology adoption. Overall, the findings emphasize that user adoption is driven by a combination of usability, functionality, and security-related considerations.

Table 6. Model Fit

	Saturated model	Estimated model
SRMR	0.081	0.109
d_ULS	0.893	1.623
d_G	0.353	0.404
Chi-square	368.779	400.924

Source: own research

The model fit indices are presented in Table 6. The Standardized Root Mean Square Residual (SRMR) value of the estimated model is 0.109, which is slightly above the recommended threshold but still acceptable for exploratory PLS-SEM analysis [31]. Additional indicators, including d_ULS, d_G, and Chi-square values reported in Table 6, further confirm that the model demonstrates an acceptable level of fit.

5. CONCLUSION

5.1. Conclusion and managerial implications

This study provides both theoretical and practical contributions to the field of blockchain-enabled digital consumer lending. From an academic perspective, the research extends the Technology Acceptance Model (TAM) by contextualizing it within blockchain-based digital lending systems. Unlike prior studies that primarily focus on technological infrastructure or organizational adoption, this study shifts the analytical focus toward user perception and behavioral intention in an emerging market context. By empirically validating the relationships among Perceived Ease of Use, Perceived Usefulness, Attitude, and Intention to Use, the study contributes to a deeper understanding of how users evaluate and adopt innovative financial technologies.

From a practical perspective, the findings offer actionable insights for commercial banks and FinTech institutions. As Vietnam's digital economy continues to expand, financial institutions face increasing pressure to simultaneously enhance operational efficiency and ensure system security. The results indicate that both Perceived Ease of Use and Perceived Usefulness significantly influence users' attitudes, which in turn strongly determine their intention to adopt digital lending platforms. Notably, ease of use emerges as the more influential factor, highlighting the critical role of user experience in financial technology adoption.

These findings suggest that banks should not only invest in advanced technologies such as blockchain but also prioritize user-friendly system design. In particular, optimizing front-end processes—such as eKYC (electronic Know Your Customer) procedures through fast and seamless identity verification—can significantly reduce user friction during loan applications. At the same time, the back-end system should leverage blockchain's decentralized ledger and smart contract capabilities to automate credit assessment, enhance transparency, and secure sensitive financial data.

By effectively balancing front-end simplicity with back-end technological sophistication, financial institutions can improve customer trust, accelerate loan processing, and reduce risks related to fraud and non-performing loans. Ultimately, this integrated approach enables banks to expand their digital lending portfolios while maintaining high standards of security and operational efficiency.

5.2. Limitations and future research

Despite its contributions, this study has several limitations that should be acknowledged. First, although the theoretical framework discusses the importance of Perceived Trust, Perceived Security, and Perceived Privacy in blockchain-enabled digital lending, these factors were not explicitly modeled as independent variables in the structural model. The present study focused on the core TAM relationships in order to maintain model parsimony and ensure suitability for the available sample size (N = 186). Future research should incorporate Perceived Trust, Perceived Security, Perceived Privacy, and Perceived Risk as independent, mediating, or moderating constructs to provide a more comprehensive understanding of blockchain adoption in digital lending.

Second, the model fit index (SRMR = 0.109) indicates that there is room for improvement in model specification. Future studies may refine measurement items or introduce additional mediating and moderating variables—such as financial literacy, perceived risk, or regulatory support—to enhance model fit and explanatory power.

Third, the sample size and scope of this study are relatively limited, focusing primarily on a specific user group within Vietnam. Expanding the sample to include a broader

demographic across different regions or conducting cross-country comparisons would improve the generalizability of the findings.

Finally, future research could explore the integration of advanced analytical approaches, such as multi-group analysis (MGA) or longitudinal studies, to examine differences in user behavior over time and across diverse user segments. Such extensions would provide a more comprehensive understanding of blockchain adoption in digital lending ecosystems.

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