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DETERMINANTS OF BLOCKCHAIN ADOPTION INTENTION AMONG TECHNOPRENEURIAL SMEs IN INDONESIA

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ABSTRAK

Blockchain semakin diakui sebagai pendorong utama transformasi digital dan sumber keunggulan kompetitif bagi pelaku usaha modern. Namun, tingkat adopsi Blockchain di Indonesia masih rendah akibat keterbatasan literasi digital, infrastruktur yang belum memadai dan kurangnya dukungan ekosistem teknologi. Meskipun demikian, teknologi ini memiliki potensi besar dalam meningkatkan efisiensi, transparansi, dan perlindungan data, yang sangat menguntungkan bagi para pelaku usaha berbasis teknologi. Tujuan dari penelitian adalah mengkaji pengaruh ekspektasi kinerja, ekspektasi usaha, pengaruh sosial, dan kondisi pendukung terhadap niat UMKM technopreneur di Jakarta mengadopsi teknologi blockchain. Pendekatan kuantitatif digunakan dengan melibatkan 98 responden yang dipilih secara purposive. Data dikumpulkan melalui survei daring terstruktur dan dianalisis menggunakan PLS-SEM. Hasil penelitian menunjukkan bahwa keempat konstruk yang diuji berpengaruh positif dan signifikan terhadap niat adopsi blockchain. Temuan ini memperkuat relevansi model UTAUT dalam konteks UMKM technopreneur di negara berkembang, sekaligus memberikan implikasi praktis bagi pembuat kebijakan dan penyedia teknologi dalam membangun ekosistem digital yang inklusif untuk memperkuat kinerja operasional dan daya saing UMKM di Indonesia.

Kata Kunci: Ekspektasi Kinerja, Ekspektasi Usaha, Pengaruh Sosial, Kondisi Pendukung, Blockchain, UTAUT model.

ABSTRACT

Blockchain has increasingly been recognized as a key driver of digital transformation and a source of competitive advantage for modern businesses. However, the adoption rate of blockchain in Indonesia remains relatively low due to limited digital literacy, inadequate infrastructure, and insufficient technological ecosystem support. Despite these challenges, blockchain technology holds great potential to enhance efficiency, transparency, and data security that offering significant benefits for technology-based enterprises. This study aims to examine the influence of performance expectancy, effort expectancy, social influence, and facilitating conditions on the intention among technopreneurial MSMEs in Jakarta to adopt blockchain. A quantitative approach was employed, involving 98 purposively selected respondents. Data were collected through a structured online survey and analyzed using PLS-SEM. The findings reveal that all four constructs have a positive and significant effect on the behavioral intention to adopt blockchain technology. These results reinforce the applicability of the UTAUT model in the context of technopreneurial MSMEs in developing countries. Furthermore, the study provides practical implications for policymakers and technology providers to foster an inclusive digital ecosystem that supports innovation and adoption for enhancing the operational performance and competitiveness of Indonesian MSMEs in the digital era.

Keywords: *Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Blockchain, UTAUT model.*

1. INTRODUCTION

Small, and Medium Enterprises (SMEs) are widely recognized as one of the most influential pillars of national development. This sector not only drives economic growth but also acts as the primary source of employment for the population. However, as the backbone of national development, SMEs are increasingly confronted with rapid digital transformation, which demands adaptability and innovation to remain competitive.

Among the emerging digital technologies, blockchain stands out as a transformative innovation. As a decentralized system that ensures secure and transparent data transactions, blockchain has evolved beyond its origins in cryptocurrency (Li et al., 2022). Previous studies have demonstrated that blockchain can improve operational efficiency and transparency, especially in the public sector and small-scale businesses (Agi & Jha, 2022; Latif & Zakaria, 2020). Its application in SMEs includes secure payment systems, transparent supply chains, and smart contracts, all of which enchance efficiency and trust (Li et al., 2022; Shrestha & Vassileva, 2019). Despite these advantages, blockchain adoption among Indonesian SMEs remains limited, primarily due to low digital literacy, misconceptions linking it solely to cryptocurrency, and inadequate technological infrastructure (Iriyadi et al., 2023).

These challenges highlight the importance of understanding the behavioral factors influencing blockchain adoption, particularly among SMEs engaged in technopreneurship, where technology forms the core of business operations (Arifin & Soelaiman, 2024). Despite growing global interest, empirical research examining blockchain adoption within technopreneurial SMEs in developing countries remains scarce. This study adopts the Unified Theory of Acceptance and Use of Technology (UTAUT) proposed by Venkatesh et al. (2003), which provides a comprehensive framework for analyzing behavioral intention in technology adoption contexts. The UTAUT model is particularly relevant for technopreneurial SMEs, as technology adoption decisions in this sector are often shaped by perceived ease of use, expected performance gains, and ecosystem readiness rather than institutional mandates.

According to the UTAUT model, performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC) are the primary determinants of behavioral intention (BI). Performance expectancy refers to the degree to which a person perceives that adopting a specific technology can improve their work effectiveness. This variable is one of the most influential determinants of adoption intention. Uncertainty about blockchain's tangible benefits may decrease adoption intention (Nazim et al., 2021), whereas high performance expectations tend to encourage users to adopt and integrate the technology (Chen, 2023).

Effort expectancy, defined as the perceived ease of using a technology, also plays a crucial role. Adoption becomes less likely when technologies are perceived as complex, particularly by SMEs with limited technical expertise (Vijh et al., 2023). However, this influence may diminish when perceived benefits or social pressures are strong. Social influence captures the extent to which a person perceives that important others believe they should use a new technology. In SMEs, business owners are often influenced by peers, industry trends, and professional networks. Observing others successfully adopt blockchain can ncourage similar behavior, although concerns about transparency and data security may remain (Zhang et al., 2023).

Facilitating conditions, meanwhile, reger to the availability of resources, infrastructure, technical assistance, and regulatory frameworks that enable effective technology use. When these supports are lacking, prospective users are often reluctant to adopt unfamiliar technologies (Latif & Zakaria, 2020).

This study focuses specifically on technopreneur-based SMEs in Indonesia, a sector that remains underexplored in blockchain adoption research. Previous studies primarily examine blockchain adoption in developed economies or large-scale enterprises (Vijh et al., 2023; Zhang et al., 2023). By situating the UTAUT model in the Indonesian technopreneurial context, this research

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contributes to extending the theoretical understanding of technology adoption in resource-constrained environments.

Literature Review

In this study, the Unified Theory of Acceptance and Use of Technology (UTAUT) is employed as the primary theoretical foundation to explain the factors influencing individuals' behavioral intentions to adopt blockchain technology. UTAUT, developed by Venkatesh et al. (2003), identifies four core constructs that shape user behavior: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. These four constructs are believed to effectively explain the adoption of new technologies across various contexts, including blockchain.

Performance Expectancy (PE) on intention to adopt blockchain technology.

Performance expectancy refers to the extent to which an individual believes that using a particular technology will enhance their job performance. This belief is based on the perception that the technology provides tangible benefits in completing tasks more efficiently, more quickly, and with higher quality (Nazim et al., 2021). In the context of blockchain technology adoption, performance expectancy includes the perception that the system can support work execution through process automation, increased transparency, and reduced operational errors, thereby improving work efficiency and accuracy (Onyekwere et al., 2023).

Wamba et al. (2020) demonstrated that high performance expectancy toward the use of blockchain contributes significantly to improving supply chain performance. Consistent with these findings, Wong et al. (2020) also emphasized that performance expectancy motivates firms to adopt blockchain in their supply chain management, driven by expectations of increased productivity and operational efficiency. Based on this explanation, the first hypothesis of this study is formulated as follows:

H1: PE has a significant effect on technopreneurial SMEs intention to adopt blockchain technology.

Effort Expectancy (EE) on intention to adopt blockchain technology.

Effort expectancy refers to the degree to which an individual believes that a new technology can be learned and operated easily (Masa'deh et al., 2024). In the context of blockchain technology, effort expectancy encompasses intuitive interface features, a simplified system structure, and ease of understanding process flows, all of which can accelerate the adoption process (Kabir et al., 2021). The study by Woo & Yoo (2023) demonstrated that perceived ease of use of blockchain-based data management systems significantly increases the intention to adopt the technology.

Kabir et al. (2021) showed that the perceived ease of use of blockchain technology positively influences users' intention to adopt a blockchain-based taxation system in Bangladesh. In addition, Gruzd et al. (2024) found that the level of ease of use in blockchain-based social media platforms can encourage users' intention to switch to such platforms. Based on this explanation, the second hypothesis of this study is formulated as follows:

H2: EE has a significant effect on technopreneurial SMEs intention to adopt blockchain technology.

Social Influence on intention to adopt blockchain technology.

Social influence is understood as the extent to which an individual perceives that people around them expect or encourage the use of a particular technology (Clohessy et al., 2020). This concept refers to an individual's perception of social expectations and support related to the use of the

technology (Iranmanesh et al., 2023). Wamba et al. (2020) emphasized that in a business context, social pressure from colleagues and business partners has a significant positive effect on technology adoption decisions.

H3: SI has a significant effect on technopreneurial SMEs intention to adopt blockchain technology

Facilitating on intention to adopt blockchain technology.

Facilitating conditions refer to the availability of technological infrastructure, adequate technical support, user training, and organizational readiness to support the effective implementation and operation of a technology (Li et al., 2022). Organizational readiness and top management support have long been recognized as critical factors in the successful adoption of new technologies (Clohessy et al., 2020). Similar findings were reported by Wong et al. (2020), who showed that adequate technological infrastructure and supportive organizational policies have a positive and significant influence on firms' including SMEs' intention to adopt blockchain technology, particularly in supply chain management. Furthermore, Kabir et al. (2021) emphasized that sufficient technological infrastructure not only facilitates the technical adoption process but also enhances users' trust in blockchain technology itself.

H4: FC has a significant effect on technopreneurial SMEs intention to adopt blockchain technology.

Based on the theoretical discussion above, this study proposes the research model as figure 1.

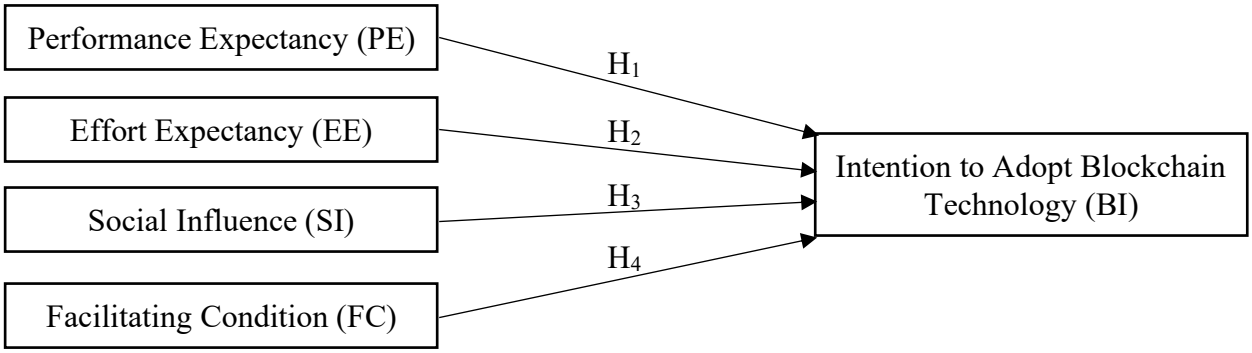

Figure 1. Research Model

2. RESEARCH METHOD

This study employed a descriptive research design to systematically capture the conditions of technopreneurship-based Small and Medium Enterprises (SMEs) in Jakarta with the potential to adopt blockchain technology. The descriptive approach is appropriate for identifying patterns, relationships, and underlying factors associated with technology adoption in the SME context.

A purposive sampling technique was employed to ensure the inclusion of respondents with relevant expertise and decision-making authority. The sampling criteria were as follows: (1) SMEs that integrate digital technology into their core business processes (products, services, or operations); (2) respondents occupying strategic decision-making roles, such as owners, co-founders, or managing directors; (3) Respondents familiar with technology adoption, particularly blockchain applications; (4) Businesses operating for at least one year to ensure contextual experience. Based on these criteria, a total of 98 valid responses were obtained. The sample size exceeds the minimum requirement suggested for PLS-SEM analysis. Following the "10-times rule" proposed by Hair et al. (2021), the minimum sample should be ten times the maximum number of structural paths pointing at a latent construct. With four paths leading to the dependent

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variable, the minimum required sample was 40, and the collected sample of 98 respondents therefore meets the recommended threshold. Furthermore, the sample satisfies the requirements for Partial Least Squares Structural Equation Modeling (PLS-SEM), which can accommodate small to medium sample sizes while maintaining robust estimation (Hair et al., 2021).

The study design distinguished between one outcome construct intention to adopt blockchain technology and four predictor constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy was measured using five indicators adopted from Zhang et al. (2023). Effort expectancy was assessed through five indicators adopted from Nazim et al., (2021) and Zhang et al., (2023). Social influence was measured using five indicators adopted from (Ruangkanjanases et al., 2023). Furthermore, facilitating conditions were measured using four indicators adopted from Nazim et al., (2021) and Zhang et al., (2023). Finally, behavioral intention to adopt blockchain was measured using five indicators adopted from Nazim et al., (2021); Pham & Thi Nguyet, (2023); Zhang et al., (2023). All indicators were evaluated using a Likert-type scale with five categories, where 1 represented complete disagreement and 5 indicated complete agreement.

Data collection was conducted through a structured online survey distributed via Google Forms and disseminated using professional and social media networks, including Instagram and LinkedIn, to effectively reach technopreneurial SME owners. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS version 4.1.1.2. PLS-SEM was selected due to its suitability for predictive modeling, complex structural relationships, and non-normal data distribution, making it appropriate for exploratory research within the SME and technology adoption domains (Hair et al., 2021).

3. RESULTS AND DISCUSSION

The following is Table 1, which describes the respondents' characteristics based on industry sector, business longevity, and position or role.

Table 1. Respondents' Characteristics
Source: Data Collected through Google Forms (2025)

Industry Sector	**Frequency**	**%**
Technology	35	35,7
Finance / Banking	11	11,2
Manufacturing	12	12,2
Retail	8	8,2
Real Estate	7	7,1
E-Commerce	6	6,1
Others	19	19,4
Business Longevity	**Frequency**	**%**
< 1 year	9	9,2
1 -2 years	15	15,3
3-4 years	49	50
More than 4 years	25	25,5
Position or Role	**Frequency**	**%**
Owner	39	39,8
Co-Founder	35	35,7
CEO	24	24,5
Total	**98**	**100.00**

Table 1 summarizes the respondents' characteristics, highlighting key dimensions such as sectoral distribution, business tenure, and organizational roles. The sample is predominantly composed of participants from technology-driven sectors, with 35.7% operating in IT, followed by manufacturing (12.2%), finance (11.2%), retail (8.2%), real estate (7.1%), and e-commerce (6.1%). In comparison 19.4% represent other diverse industries indicating a heterogeneous sample relevant to technopreneurial SMEs. Regarding business tenure, 50% have operated for 3–4 years, 25.5% for over four years, 15.3% for 1–2 years, and 9.2% for less than one year, reflecting a balanced distribution across different stages of business maturity. Most respondents hold strategic roles within their organizations, including Owners (39.8%), Co-Founders (35.7%), and CEOs or Managing Directors (24.5%), ensuring that the data reflects informed perspectives on technology adoption and enhances the credibility of the behavioral intention findings.

In assessing the outer model, the study applied statistical checks designed to determine whether each construct met the standards of measurement consistency and conceptual accuracy. Validity reflects the relationship between indicators and their constructs and ensures that the instrument accurately captures the phenomenon under investigation (Hair et al., 2021). The validity test was conducted with the criteria of outer loadings > 0.70. In SEM, convergent validity is confirmed once the AVE statistic rises beyond 0.50, reflecting the construct's ability to absorb and represent over half of the variance in its associated indicators (Hair et al., 2021). Construct reliability was evaluated using Composite Reliability with values ≥ 0.70 and Cronbach's Alpha with values ≥ 0.60 deemed adequate to demonstrate acceptable internal consistency ((Hair et al., 2021).

The following presents the operationalization of variables, which includes the five variables employed along with their respective indicators, as well as the results of validity and reliability tests, which are displayed in Table 2.

Table 2. Validity and Reliability Tests
Source: Data Processed through SmartPLS 4

Variable	*Indicator*	*Item*	*Outer Loading*	*AVE*	*Composite Reliability*	*Cronbach Alpha*
Performance Expectancy	Blockchain technology will be useful for business.	PE1	0.738	0.607	0.885	0.838
	Blockchain technology will provide benefits to business.	PE2	0.820			
	Blockchain technology can enhance business productivity.	PE3	0.772			
	Blockchain technology can contribute to the broader economy.	PE4	0.802			
	Blockchain technology can provide a competitive advantage for business.	PE5	0.762			
Effort Expectancy	Blockchain systems easy to learn and operate.	EE1	0.865	0.641	0.899	0.859
	Blockchain systems are easy to use.	EE2	0.783			
	Skills or external support needed to implement blockchain.	EE3	0.770			
	Blockchain technology is easy to implement in business activities.	EE4	0.799			

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Variable	*Indicator*	*Item*	*Outer Loading*	*AVE*	*Composite Reliability*	*Cronbach Alpha*
	Blockchain technology is easy to operate.	EE5	0.782			
Social Influence	People who are important believe that blockchain technology should be use in business.	SI1	0.849	0.728	0.930	0.906
	Business environment roles in spreading information about blockchain technology.	SI2	0.886			
	Social media is a useful source for learning about the benefits of blockchain technology.	SI3	0.868			
	Influential people support the adoption of blockchain technology.	SI4	0.846			
	People close to business think blockchain technology should be used.	SI5	0.875			
Facilitating Condition	Sufficient knowledge to use blockchain systems.	FC1	0.785	0.675	0.892	0.839
	Necessary resources to use blockchain systems.	FC2	0.840			
	Assistance is available when encountering difficulties in using blockchain for business.	FC3	0.807			
	Blockchain technology is compatible with current operational systems.	FC4	0.851			
Behavioral Intention to Adopt Blockchain	Intension to adopt blockchain technology in business in the future	BI1	0.734	0.617	0.889	0.844
	Willingness to accept blockchain technology.	BI2	0.838			
	Comfort in using blockchain systems when needed.	BI3	0.757			
	Willingness to implement blockchain as a complement to existing technologies.	BI4	0.828			
	Plan to use blockchain continuously in the future.	BI5	0.765			

Table 3 contains the evaluation of discriminant validity, implemented through the Fornell–Larcker method. The logic of this approach is that a construct demonstrates discriminant validity when the square root of its AVE is higher than its correlations with other latent variables (Hair et al., 2021). The evidence presented in the table confirms this condition, showing that for all constructs, the AVE square roots remain higher than the inter-construct correlation coefficients. These findings indicate that each construct within the model possesses strong discriminant validity and can reliably represent the specific variable it intends to measure without overlapping with other constructs.

Table 3. Validity and Reliability Tests
Source: Data Processed through SmartPLS 4

PE	**0.779**		
EE	0.489	**0.800**	
FC	0.487	0.691	**0.821**

BI	0.693	0.772	0.770	**0.785**	
SI	0.573	0.583	0.522	0.725	**0.853**

Table 4 presents the coefficient of determination, as indicated by the Adjusted R-square value for the behavioral intention variable (Y) in adopting blockchain technology, which is 0.821 or 82.1%, categorized as strong. These findings suggest that the model possesses high explanatory power and is relevant for identifying the key determinants of blockchain adoption intention among technology-based SMEs.

Table 4. R-Square
Source: Data Processed through SmartPLS 4

	R^2	R^2 Adjusted
BI	0.821	0.813

Table 5 presents the results of the predictive relevance (Q^2) test. As shown in the table, the Q^2 value obtained is 0.790 means the structural model employed in this study possesses strong predictive relevance for the endogenous variables.

Table 5. Q-Square
Source: Data Processed through SmartPLS 4

	Q^2 predict
BI	0.790

Table 6 presents the results of the f-square test values, indicating the individual effect size of each exogenous construct on behavioral intention. Following the guidelines by Henseler et al. (2015), FC ($f^2 = 0.283$) demonstrates a strong effect, while PE ($f^2 = 0.231$), EE ($f^2 = 0.196$), and SI ($f^2 = 0.182$) exhibit moderate effects. These results suggest that all exogenous constructs contribute meaningfully to predicting behavioral intention, with no construct falling below the minimum threshold for a weak effect ($f^2 = 0.02$).

Table 6. F-Square
Source: Data Processed through SmartPLS 4

Hypothesis	F-Square	Category
PE → BI	0.231	Strong
EE → BI	0.196	Moderate
SI → BI	0.182	Moderate
FC → BI	0.283	Moderate

Table 7 outlines the hypothesis evaluation using bootstrapping within the Partial Least Squares approach. The results indicate robust support for all proposed hypotheses, as the calculated t-values exceeded 1.96 and the probability levels were consistently under 0.05. Consequently, the analysis demonstrates that each of the four antecedent variables significantly and favorably shapes behavioral intention to implement blockchain technology.

Table 7. Hypothesis Test
Table Source: Data Processed through SmartPLS 4

Hypothesis	Original Sample (O)	T Statistics	P Values
PE -> BI	0.259	2,827	0.005
EE -> BI	0.279	3,733	0.000
SI -> BI	0.245	3,407	0.001
FC -> BI	0.323	4,519	0.000

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Discussion

The findings of this study reveal that performance expectancy exerts a significant positive influence on SMEs' behavioral intention to adoptblockchain technology (β = 0.259; t = 2.827; p = 0.005), thus supporting H1. This finding indicates that SME actors are more inclined to adopt blockchain when they clearly perceive it tangible benefits such as in improving efficiency, enhancing data security and supporting business continuity. This result aligns with prior studies (Nazim et al., 2021), who found that perceived usefulness consistently drives technology adoption. In Indonesia's highly competitive and cost-sensitive SME environment, entrepreneurs often evaluate new technologies based on perceived utility rather than novelty. Thus, the more blockchain is associated with concrete operational improvements, such as faster transactions and transparent record-keeping, the stronger the adoption intention. These findings reinforce the UTAUT framework by confirming the pivotal role of performance expectancy in tangible business benefits to encourage adoption in SME ecosystems.

The second hypothesis (H2) regarding effort expectancy is also supported, showing a positive and significant effect on behavioral intention to adopt blockchain technology (β = 0.279; t = 3.733; p = 0.000). This finding indicates that the perceived simplicity and user-friendliness of blockchain systems substantially influence SMEs' willingness to adopt. This supports Masa'deh et al. (2024), who emphasize that ease of use mediates technology acceptance in resource-constrained environments. This dimension carries heightened importance in the Indonesian SME context due to limited technical expertise and scarce access to specialized IT support. Unlike larger corporations, SMEs lack the capacity to invest heavily in training or absorb the risks of complex systems. Practically, these findings suggest that blockchain solutions targeting Indonesian SMEs should prioritize intuitive interfaces and localized support to lower the entry barrier for small entrepreneurs. These findings extend the UTAUT framework by underscoring that in resource-constrained environments, perceived ease of use is not merely a convenience but a prerequisite for adoption.

Furthermore, social influence also exhibits a significant positive relationship with behavioral intention (β = 0.245; t = 4.51933; p = 0.000), supporting H3. This result underscores the strong role of social networks, peer recommendations, and community norms in shaping entrepreneurs' attitudes toward technology. The study supports earlier research by (Clohessy et al., 2020) noted that social endorsement amplifies the perceived legitimacy of innovation adoption. In Indonesia's collectivist business culture, decisions are rarely made in isolation. Entrepreneurs often rely on input from trusted peers, industry groups, or business associations before adopting new technology. This cultural dynamic aligns with the relational orientation of Indonesian entrepreneurship, where social trust and reputation often substitute for formal institutional mechanisms. Thus, blockchain adoption may accelerate as more business communities, incubators, and trade associations endorse or model its use. Theoretically, these findings confirm UTAUT's prediction that social influence matters, highlighting that it may exert more potent effects in collectivist cultures than in individualist settings.

Finally, facilitating conditions show the strongest and most significant influence on behavioral intention (β = 0.323; t = 4.519; p = 0.000), supporting H4. This demonstrates that access to adequate infrastructure, institutional support, and technical assistance plays a critical role in enabling SMEs to adopt blockchain. These finding aligns with Pham & Thi Nguyet (2023), who emphasize that successful digital adoption in SMEs requires alignment between internal readiness and external ecosystem support. In Indonesia, technological readiness is not evenly distributed. SMEs outside major urban centers often face barriers related to unreliable internet connectivity,

limited digital payment integration, and unclear regulatory frameworks. These constraints make external facilitation like government initiatives, industry partnerships, or technology providers essential for sustained adoption. This suggests that adoption is a matter of individual or organizational readiness and external ecosystem support. Theoretically, this highlights the need to contextualize UTAUT in emerging economies, where infrastructural gaps amplify the importance of external support systems.

The results emphasize that blockchain adoption among Indonesian technopreneurial SMEs is shaped by both perceived utility and ecosystem readiness. Performance and effort expectancy represent the cognitive and operational dimensions of adoption, while social influence and facilitating conditions reflect the contextual enablers rooted in Indonesia's collectivist and infrastructure-limited environment. This integration of behavioral and structural factors offers a more nuanced understanding of how SMEs in developing economies approach technological innovation

4. CONCLUSION AND RECOMMENDATION

Conclusion

The study examines the main drivers behind Indonesian technopreneurial SMEs' intention to adopt blockchain technology through the lens of the UTAUT framework. Results show that performance expectancy, effort expectancy, social influence, and facilitating conditions are all significant predictors of blockchain adoption intention. Among these constructs, facilitating conditions emerged as the strongest predictor, underscoring that blockchain adoption is primarily driven by infrastructure readiness, technology accessibility, and supporting resources rather than solely by individual or social perceptions.

From a theoretical perspective, this research enriches the literature on technology adoption literature by validating the UTAUT framework in the context of blockchain adoption among SMEs in an emerging economy. It extends previous research by demonstrating the relative importance of facilitating in resource limited environments, highlighting the need to adapt existing models to account for infrastructural and institutional constraints in developing countries.

Recommendation

The results suggest that governments, policymakers and technology providers must collaborate to establish a supportive digital ecosystem that enables SMEs to adopt blockchain effectively. Key enablers include reliable digital infrastructure, user-friendly blockchain platforms, affordable access to technology, and continuous technical assistance. Moreover, policy frameworks that promote trust, data security, and interoperability are essential to building confidence among SME actors. Training programs and public–private partnerships can further enhance technological literacy and encourage experimentation with blockchain-based solutions across industries.

Despite its contributions, this study is limited by its sample size of 98 technopreneurial SMEs located in Jakarta, which may restrict the generalizability of the results. Future research should broaden the scope by incorporating SMEs from various geographical regions and examining additional factors such as perceived risk, trust in technology, or organizational readiness as moderators or mediators. By addressing both behavioral and infrastructural determinants, this research strengthens the discourse on digital transformation in emerging economies and offers actionable insights for fostering a conducive environment for blockchain integration.

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