



SMART CONTRACTS IN CROWDFUNDING: A SYSTEMATIC REVIEW OF USER TRUST

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Abstract

Digital technology has made crowdfunding an accessible alternative financing method, but concerns about transparency, fraud, and weak verification systems continue to undermine user trust. Blockchain and smart contracts offer potential solutions through transparent, secure, and automated transactions. This study examines their application in crowdfunding platforms and their impact on user trust using a Systematic Literature Review (SLR) based on PRISMA 2021 guidelines. A total of 35 articles published between 2021 and 2025 were selected for analysis. The findings indicate that blockchain and smart contracts can enhance transparency, accountability, transaction security, and fund management efficiency, including in Sharia crowdfunding. However, regulatory uncertainty, implementation costs, limited digital literacy, and inadequate infrastructure remain significant challenges. Effective regulation, digital literacy development, and regular smart contract audits are therefore essential to building a more trustworthy and sustainable crowdfunding ecosystem.

Keywords: *smart contract, crowdfunding, user trust, systematic literature review.*

INTRODUCTION

The development of digital technology has given birth to various fundamental innovations in the global financial ecosystem, one of which is the platform *Crowdfunding*. *Crowdfunding* It is a digital-based fundraising method that allows individuals, entrepreneurs, and non-profit organizations to obtain capital from a large group of contributors through online media without relying on conventional financial institutions. Market value *Crowdfunding* global reach USD 24.05 billion by 2024 and is projected to grow by *Compound Annual Growth Rate* (CAGR) of 18.24% to reach USD 108.64 billion by 2033. The World Bank (2023) recorded more than 1,500 platforms *Crowdfunding* operating in more than 100 countries, indicating that this alternative financing instrument has transformed into a legitimate financial channel at the global level. (Ould Ali et al. 2024)

Despite the positive growth, there are significant structural problems, namely low levels of user trust due to weak transparency, high risk of fraud, and lack of a reliable verification system. The International Cyber Security Protection Alliance (2024) report reveals the platform *Crowdfunding* experienced a 43% increase in cyberattacks between 2021 and 2023, covering schemes *Phishing*,



account acquisitions, and *Ransomware*. About 30% of potential contributors are reluctant to participate due to concerns about fake campaigns and misuse of funds. This condition creates a serious information asymmetry between funders and contributors that threatens the sustainability of the digital finance industry. (Lusardi and Mitchell 2014)

Blockchain technology and mechanisms *Smart Contract* present as a potential solution to these problems. *Smart contract* is a computer program that is *self-executing*, stored on a decentralized, transparent, and immutable blockchain network (*Immutable*), thus enabling automatic execution of the agreement without a third party. Market value *Smart Contract* globally recorded at USD 3.69 billion by 2025 and is projected to grow at a CAGR of 76.25% to reach USD 1,073.24 billion by 2035. The PwC report (2022) estimates that blockchain technology has the potential to reduce financial services infrastructure costs between USD 15–20 billion per year and reduce fraud rates through transaction records *Immutable*. (Kannan et al. 2026)

Technically, *smart contracts* allow contributor funds to be automatically locked in blockchain-based *escrow* and can only be disbursed when an agreed *milestone* is reached, eliminating the risk of misuse of funds. As proof of real implementation, in October 2023, the Indiegogo platform introduced a blockchain-based milestone verification system for high-value tech campaigns, allowing contributors to track the progress of projects through immutable *smart contracts*. The study of Tiwari et al. (2024) concluded that *blockchain-based crowdfunding platforms* that integrate *smart contracts* have been proven to be able to increase transparency, transaction security, and user trust at the same time. This is in line with the findings of Kumar et al. (2023) who affirm that *blockchain-based crowdfunding platforms* are able to eliminate the limitations of traditional platforms such as high transaction fees and lack of transparency.

Despite the progress of existing research, there is a gap (*Research gap*) substantial in the academic literature. First, most studies focus on the technical aspects of partial implementation without integrating a holistic analysis of the impact on public trust. Second, a bibliometric study by Rejeb et al. (2023) published in the journal *Financial Innovation* explicitly identifies that a comprehensive analysis of the intersection between blockchain and *Crowdfunding* It is still very limited. Third, there has not been a study that systematically synthesizes the findings of previous research in a format *Systematic Literature Review* (SLR) covering the full spectrum of technical implementations, user trust impacts, and regulatory contexts in different jurisdictions. Fourth, the majority of research is still dominated by the context of developed countries, while the context of developing countries, including Indonesia, is very underrepresented. (Rejeb et al. 2025)

The urgency of this research is strengthened by the acceleration of the adoption of blockchain technology in the global financial sector. The Finastra survey (2023) revealed that 48% of financial institutions have implemented *Blockchain-as-a-Service* (BaaS), up from 35% in 2022. The global blockchain market was recorded at USD 17.60 billion in 2023 and is projected to surpass USD 1,879.30 billion by 2034. This extraordinary growth momentum, combined



with increasing public awareness of the importance of transparency in digital financial transactions, makes this research topic very relevant and has a significant scientific contribution to the development of an inclusive and trusted digital financial ecosystem.(Terziyska et al. 2024)

Based on the background and identification of *the research gap* above, this study aims to: Identify and map the technical mechanism of implementing *smart contracts* on *crowdfunding* platforms based on academic literature published in the range of 2020–2025, in order to obtain a comprehensive picture of *the state-of-the-art* implementation of this technology in the context of digital collective financing. Analyze the impact of the implementation of *smart contracts* on the dimension of *public trust* in participating in *crowdfunding platforms*, especially aspects of transparency, transaction security, fund management accountability, and user risk perception based on empirical findings that have been documented in the literature reviewed. Evaluate the challenges and limitations of smart contract implementation on *crowdfunding platforms* from both technical (scalability, interoperability, and code vulnerability) and non-technical (regulatory framework, user adoption, and technology literacy) perspectives based on evidence in the analyzed literature. Identify *research gaps* that still exist and formulate relevant future research agendas, especially in the context of the implementation of *smart contracts* on *crowdfunding platforms* in developing countries that have different characteristics of digital ecosystems and regulations from developed countries.

This research is expected to provide a theoretical contribution in the form of a synthesis of systematic knowledge about the intersection between *smart contracts* and *crowdfunding*, as well as a practical contribution in the form of implementation guidelines that can be used as a reference for various stakeholders in building *a more transparent, secure, and reliable crowdfunding ecosystem in the digital era*.

LITERATURE REVIEW

1. Smart Contract Theory

Concept *Smart Contract* It was first introduced by Nick Szabo in 1997, who defined it as a computerized transaction protocol that executes the terms of a contract automatically. In its development, Vitalik Buterin (2014) operationalized this concept through the Ethereum platform by describing *Smart Contract* as scripts that are stored on the blockchain and executed deterministically when preset conditions are met, without third-party intervention. Main characteristics *Smart Contract* Includes: (1) *self-executing* code-based automated execution; (2) *Immutability* cannot be changed after application; (3) *transparency* all transactions are recorded publicly; and (4) *Decentralization* does not depend on a centralized authority. Ante (2021) in a bibliometric study of 1,600 publications confirmed that the last three decades have witnessed a massive expansion of adoption *Smart Contract* to various sectors ranging from finance, supply chain, to public services.(Mollick 2022)

2. Crowdfunding Theory



Crowdfunding defined by Mollick (2014) as the effort to obtain resources in the form of money or other resources from a large number of individuals through internet platforms, in exchange for various forms of return. Schwienbacher and Larralde (2012) classify the *Crowdfunding* into four main categories: (1) donation-based (*donation-based*); (2) reward-based (*Reward-based*); (3) equity-based (*equity-based*); and (4) loan-based (*debt-based*). Each model has a different incentive structure, risk level, and regulatory framework. However, the entire model fundamentally relies on trust between funders and contributors as a prerequisite for campaign success. The absence of adequate verification mechanisms on traditional platforms is a weak point that consistently encourages campaign failures and misuse of funds. (Schwienbacher and Larralde 2012)

3. Theory of Trust in Digital Transactions

Trust in the context of digital transactions (*Digital Trust*) is a multidimensional construct that is theoretically built on three main pillars. McKnight and Chervany (2001) identified the dimensions of trust including: *Benevolence* (belief that the transaction partner is acting in the best interests of the user), *integrity* (confidence in honesty and adherence to applicable principles), and *Competence* (confidence in the ability of the other party to fulfill its obligations). Gefen et al. (2003) in *Integrated Trust-TAM Model* extend this framework by proving that trust directly influences intent to use the service *E-commerce* and reduce risk perception. Kim et al. (2008) further developed a trust-based consumer decision model that affirms that system transparency, security assurance, and positive transaction experience are the main determinants of trust formation in the digital environment. This theoretical framework is relevant in understanding how integration *Smart Contract* on the platform *Crowdfunding* theoretically capable of (Kim et al. 2008)

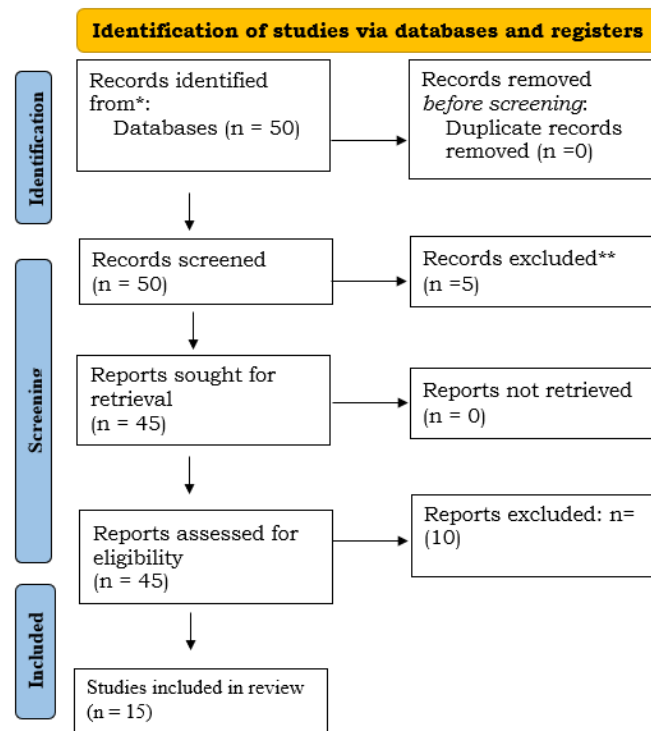
METHODS

This research method uses the Systematic Literature Review (SLR) approach with reference to the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. This approach was chosen because the research aims to synthesize literature in a systematic, transparent, and replicable manner related to the implementation of smart contracts on crowdfunding platforms and its impact on user trust. The use of the SLR method allows researchers to comprehensively identify, evaluate, and interpret various previous research results relevant to the research topic.

The initial stage of the research began by formulating a research question that focused on how the implementation of smart contracts on crowdfunding platforms can improve transparency, transaction security, fund management accountability, and public trust in the digital financial ecosystem. The research questions are the basis for determining the literature search strategy and the scope of the study. Literature search is carried out through academic databases relevant to the fields of financial technology, blockchain, and crowdfunding. Keywords used in the search process include "smart contract", "crowdfunding", and "user trust".

The literature selection process is carried out through several stages according to the PRISMA flow, namely identification, screening, feasibility assessment, and inclusion. At the identification stage, 50 articles were found obtained from academic databases. Furthermore, a screening process is carried out based on the title and abstract to ensure compatibility with the focus of the research. At this stage, 5 articles were removed because they were not relevant to the research topic. After that, a complete text search was carried out on the remaining 45 articles and all articles were successfully accessed.

The next stage is a feasibility assessment based on predetermined inclusion and exclusion criteria. The inclusion criteria include articles that discuss the application of smart contracts in crowdfunding, their impact on user trust, published in scientific journals, and using relevant empirical and conceptual approaches. The exclusion criteria include articles that are not relevant to the focus of the research, do not provide information that can be analyzed, or have discussions that are too general. Of the 45 articles assessed, as many as 10 articles were removed because they did not meet the eligibility criteria. Finally, a total of 35 articles were declared eligible and included in the final synthesis of the research



RESULTS AND DISCUSSION

Table of Results

No	Research Name and Year	Research Objectives	Researcher Results
1.	(STIE Bina Karya 2025)	SLR to evaluate the integration of smart	Smart contracts have the potential to



		contracts in Islamic finance, including Islamic crowdfunding.	increase efficiency and transparency; It is necessary to harmonize regulations and audit sharia compliance.
2.	(Silehu and Widayat 2024)	Developing a donation crowdfunding web application that leverages blockchain & smart contracts.	The prototype shows increased donation accountability; implementation challenges including UX and on-chain costs.
3.	(Ardian et al. 2026)	Analyze the role of smart contracts in building trust of crowdfunding platform users.	Smart contracts improve the audit footprint and transparency of the use of funds, thereby increasing trust; Adoption is influenced by digital literacy.
4.	(Oky Wida Syahputra et al. 2024)	Review the development of fintech, crowdfunding, and blockchain adoption in Indonesia.	Implementation of smart contracts improves accountability; regulatory and infrastructure challenges still limit scale.
5.	(Fahlevi and Fitriana 2024)	Analyzing the legal position of smart contracts from the perspective of Indonesian civil law.	Smart contracts can be recognized as legal agreements, but legal protection and certainty are still limited.
6.	(Wilistianto and Mardiansyah 2025)	Implementing the Polygon blockchain to improve the security and transparency of the crowdfunding platform.	The use of Polygon lowers transaction fees and improves security; Smart contract audits are still required.
7.	(Cetta Rasendriya 2025)	Examine the ability of blockchain to improve the transparency and accountability of	Blockchain has the potential to strengthen the credibility of reports



		Islamic financial institutions, including crowdfunding.	and reduce manipulation; Recommendation: Regulatory and Audit Guidelines.
8.	(Sahid and Hamid, n.d.)	Assess the transactional model of sharia crowdfunding that utilizes smart contracts for contract automation and reporting.	Smart contracts allow for the automation of contract fulfillment (e.g. disbursement, refunds) thereby reducing the risk of abuse and increasing transparency.
9.	(Arwani and Priyadi 2024)	Examine in SLR how blockchain can increase transparency and accountability in Islamic finance (including zakat, waqf, crowdfunding)	Blockchain improves data security, transaction transparency, and accountability; policy recommendations to strengthen public trust and sharia regulations.
10.	(Muhammad Rizky and Teduh Dirgahayu 2025)	Examining the potential use of blockchain-based crowdfunding platforms for sharia MSMEs, as well as obstacles to its implementation.	Blockchain increases the transparency of the use of funds and strengthens investor confidence; challenges: costs, literacy, and OJK regulations.
11.	(Khairunnisa Ibrahim et al. 2025)	Examine sharia crowdfunding and P2P practices as well as the potential for technology integration to increase transparency and trust.	A more transparent sharia model (reporting of funds, contracts, distributions) can strengthen user trust.
12.	(Adnasohn Aqilla Respati 2024)	Examine the impact of the implementation of crowdfunding and blockchain on finance, including security, transparency, and regulatory aspects.	Blockchain improves the security and transparency of crowdfunding transactions; The implementation of smart contracts



			speeds up contract execution.
13.	(Abdul Hamid 2025)	Examining the factors influencing transparency and accountability on donor trust in sharia crowdfunding.	The level of donor confidence is significantly influenced by transparency and reporting of funds; Transparency increases participation and trust on the platform.
14.	(Choa 2025)	Analyze the opportunities and challenges of implementing smart contracts in public services in Indonesia.	Smart contracts improve efficiency, transparency, and accountability, but are constrained by regulations, security, and digital infrastructure.
15.	(Katou and Prastiyo 2025)	Designing a blockchain system to prevent fraud on crowdfunding platforms.	Blockchain successfully improves security, transaction transparency, and investor trust and automatically detects fraud.

Discussion

Based on the results of studies from various studies, the application of smart contracts on crowdfunding platforms shows great potential in increasing transparency, accountability, and user trust. Most studies confirm that blockchain technology is capable of creating a more secure, open, and difficult to manipulate transaction recording system. This can be seen in research by (Ardian et al. 2026), (Arwani and Priyadi 2024), and (Katoda and Prastiyo 2025) which states that blockchain can improve data security, transaction transparency, and help detect fraud automatically. With a clear audit trail, crowdfunding platform users become more confident in the management of the funds carried out.

In addition, the implementation of smart contracts is considered to be able to increase the efficiency of the transaction process in crowdfunding. Research by (Sahid and Hamid) and (Adnasohn Aqilla Respati 2024) shows that smart contracts can automate the implementation of contracts, fund distribution, and refund processes without the need for a third party. This automation makes the transaction process faster, more accurate, and reduces the risk of misuse of funds. Research from (Wilistianto and Mardiansyah 2025) also adds that the use



of the Polygon blockchain can reduce transaction costs while increasing the security of the crowdfunding system.

In the context of sharia crowdfunding, transparency and accountability are the main factors in building the trust of users and donors. Research by (Abdul Hamid 2025) explains that the level of donor trust is greatly influenced by the openness of reports on the use of funds and a clear reporting system. A similar thing was also found by (Khairunnisa Ibrahim et al. 2025) who stated that a transparent sharia crowdfunding model is able to increase the participation and loyalty of platform users.

Although it has many benefits, various studies also reveal challenges in the implementation of smart contracts and blockchain in crowdfunding. These challenges include regulatory limitations, low public digital literacy, implementation costs, and readiness of technology infrastructure. Research by (Fahlevi and Fitriana 2024) shows that the legal position of smart contracts in Indonesia still requires stronger legal certainty. In addition, the research (Oky Wida Syahputra et al. 2024) and (Choa 2025) explain that regulation and digital infrastructure are still the main obstacles in the widespread application of blockchain technology in Indonesia.

Conclusion

Based on the results of studies from various studies, it can be concluded that the application of blockchain and smart contracts on crowdfunding platforms has great potential in increasing transparency, accountability, security, and transaction efficiency. This technology is able to create a more open system through transaction recording that is difficult to manipulate as well as automating the contract process, distributing funds, and financial reporting. The increase in transparency has a positive effect on the trust of users, investors, and donors on crowdfunding platforms, especially sharia crowdfunding.

In addition to providing benefits, the implementation of blockchain and smart contracts also still faces several challenges, such as regulatory limitations, implementation costs, low digital literacy of the community, and the readiness of technological infrastructure. Therefore, clear regulatory support, increased public understanding of digital technology, and supervision and audit of smart contracts are needed so that their implementation can run optimally and in accordance with sharia principles. Overall, blockchain and smart contracts can be innovative solutions in the development of more secure, transparent, and reliable crowdfunding platforms in the future.

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