Increasing Efficiency and Transparency of Soft Loans for SME Businesses with Blockchain Technology

Inayatulloh[1], Onsardi[2], Emi Suwarni[3], Rajiv Dharma Mangruwa[4], Nico Djundharto Djajasinga[5], Darmawati[6], Birusman Nuryadin[7]

[1]*Information System Department, School of Information System, Bina Nusantara University Jakarta Indonesia*
[2]*Universitas Muhammadiyah Bengkulu*
[3]*Universitas Teknokrat Indonesia*
[4]*Communication and Business-Telkom University, Bandung, Indonesia*
Azman Hashim International Business School – University of Technology Malaysia , Malaysia.
[5]*PoliteknikTransportasiDarat Indonesia-STTD*
[6]*Fakultas Ekonomi Dan Bisnis Islam UINSI Samarinda*

[1]inay@binus.ac.id, [2]onsardi@umb.ac.id, [3]emisuwarni@teknokrat.ac.id, [4]rmangruwa@telkomuniversity.ac.id, [5]nico.djajasinga@ptdisttd.ac.id, [6]darmawati@uinsi.ac.id, [7]birusman.nuryadin@uinsi.ac.id

Abstract—**SMEs as one of the pillars of the economy have several limitations and financial limitations are the biggest obstacle to the development of SMEs. As an effort to improve the performance of SMEs, the government provides soft loans to make it easier for SMEs to get financial assistance. Problems arise when SMEs cannot guarantee the use of soft loans for business development needs but for other purposes that are not in accordance with the agreement with soft lenders. Thus, a mechanism is needed to ensure that soft loans are used in accordance with the designation specified in the agreement. Block chain is a technology that has the ability to create transactions with high transparency and security. This research aims to facilitate the process of providing soft loans for SMEs. The research method uses a qualitative approach through literature review to identify problems and alternative solutions. The result of this research is a blockchain model for improving the efficiency of soft loans for SMEs**

Keywords—**SMEs, Soft Loans, Block Chain**

INTRODUCTION

SMEs are business units that accept special attention from the Indonesian government in the growth of their businesses, with the Ministry of Cooperatives and the Republic of Indonesia overseeing the advancement of these business units [1]. SMEs, despite the restrictions of their business trips, must contend with intensifying business competition, which requires competitive edge to survive and expand. One of the biggest obstacles that hinder the development of SMEs is the financial weakness of SMEs. The government and financial institutions are willing to provide soft loans with several conditions. Weak supervision over the use of soft loans is an obstacle in granting these loans to SMEs [2] [2] [3] [4].

Currently, the government and financial institutions do not yet have a monitoring system for the use of soft loans so that they can be used according to the designation agreed upon in the agreement for granting soft loans between SMEs and the government [5] [6] [7].

Blockchain technology can create transparent transactions with a high level of security. With peer-to-peer transactions to validate transactions and hash functions to protect information, block chain technology is a solution for providing soft loans for SMEs [8] [9].

The purpose of this study is to increase supervision of SME soft loans. The research method uses a qualitative approach through literature review to identify problems and find alternative solutions. The result of this research is a blockchain model to improve supervision of soft loans for SMEs from the government and financial institutions.

LITERATURE REVIEW

A. Small Medium Enterprise Business

Small and medium-sized enterprises (SMEs) are organizations with revenues, assets, or employee counts below a specified threshold. Each nation has its own definition of what a small or medium-sized business is. Each

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International Journal of Applied Engineering & Technology

33

country may also define a small business differently across industries based on its own guidelines [10] [11].

Small and medium-sized enterprises (SMEs) play a crucial role in the economy, employing large numbers of people and contributing to the growth of innovation. Governments provide incentives, such as favorable tax treatment and easier access to loans, to ensure the profitability of businesses. Certain size requirements must be met, and sometimes the business's industry is also considered.[12] [13].

B. Soft Loan for SMEs.

Small and medium soft loans are one of the government's programs to improve access to capital for Small and Medium-sized Enterprises (SMEs), which are channeled through assured banking firms [14] [15] [16]. In the context of enacting policies to accelerate real sector development and empower SMEs, soft loans are designed to strengthen the equity capabilities of businesses. The disbursed funding comes from bank funds or financial institutions that distribute soft loans. The provided funds consist of working capital and investment funds that are channeled to individual/individual MSME actors, business entities, and/or business groups that have constructive and feasible businesses but lack additional or viable securities and are not yet bankable.[17] [18].

C. Blockchain Technology

The term blockchain consists of two words: block, which signifies a group, and chain, which signifies a chain. The name alludes to how blockchain operates, in which software applications are used to build blocks that are linked to execute transactions [19] [20] [21].Blockchain is a collection of sequentially constructed and disseminated blocks [22] [23]

Each transaction has a ledger as well as specific components: data, hash, and hash of the previous block [24]. The type of data utilized in this technology is determined by the function of the blockchain. In bitcoin, for example, the data block consists of all transaction records, including the number of coins sent and the sender and recipient of the transaction. The collected information regarding a signature, fingerprint, or signature is stored in a hash. The hash function is utilized to generate an identifier for the block and its contents. The prior block's hash is the element that secures the blockchain network by carrying the trail of previous information [25] [26].

When a block receives new data, the blockchain commences. The blockchain system consists of a network of cryptography and original plaintext hashes that link activities and blocks. Blockchain functions by storing immutable data. The decentralized nature of blockchain technology eliminates the requirement for an external authority to validate and maintain the authenticity of data. This is a decentralized process that occurs between network nodes to validate the data [27].

The content will be moved to a new block in accordance with the decentralization policy. Each block has its own unique code or hash. Even though every blockchain transaction is an investment, a single block can contain a variety of data types. The use of blockchains has in some way facilitated the transaction process. By making transactions safer and more visible, data exploitation, such as fraudulent activity, is reduced [28] [29].

Using blockchain technology, data and actions can be effectively tracked. The system has been shown to be both secure and accessible. This is because when the transaction occurs, all parties can view public access without needing to log in. Blockchain technologies are vastly dissimilar to financial systems. Using blockchain technology, user information and funds cannot be utilized without the owner's consent. The blockchain database is exclusively append-only, meaning that it cannot be modified. Therefore, hackers have difficulty penetrating the blockchain system [30].

The blockchain technology enables users to view the audit trail of their assets, thereby decreasing the risk of embezzlement. All recording and verification activities are directed and immutable, eliminating the need for middlemen or brokers who frequently increase costs [31].

RESEARCH METHOD

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International Journal of Applied Engineering & Technology

34

Inayatulloh, Onsardi, Emi Suwarni, Rajiv Dharma Mangruwa, Nico Djundharto Djajasinga, Darmawati and Birusman Nuryadin

The research method uses a qualitative approach through interviews with the staff of the Ministry of SMEs of the Republic of Indonesia. From the interview, several conclusions were obtained

1. The requirement to obtain soft loans for SMEs is an obstacle to the approval of the granting of these funds because many SMEs do not meet administrative requirements.
2. Some SMEs can get soft loans but there is no mechanism to oversee the use of these soft loans in accordance with the agreement between SMEs and funders.
3. Some of the recording processes are made manually so that it is difficult to get data that is integrated with all parts.
4. Some SMEs went bankrupt after getting soft loans due to inappropriate use of funds.

The research is also supported by quantitative data through the distribution of questionnaires to see the effect of fixed lending and variable loans on the performance of SMEs. Fixed fund loan is a type of soft loan for SMEs that is given specifically to one SME that has met the requirements that have been set. Meanwhile, non-permanent loan is a type of soft loan that is given to SMEs on a rotating basis. Figure 1 describes a hypothetical model that examines the relationship between soft loans given to SMEs and the performance of SMEs [32].
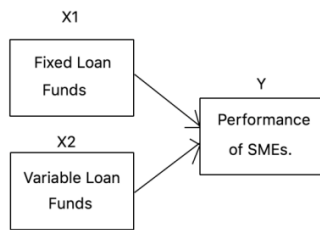

Figure 1. Hypothesis Model

II. RESULT AND DISCUSSION

A. Hypothesis Results

The data collected came from 85 SMEs and then processed with SPP with the results of research analysis as follows:

TABLE I
PATH ANALYSIST RESULT

Relation	R2	F	DF1	DF2	P. Value	Description
X1→Y	0.971	2816,9	1	85	0.0000	Significant
X2→Y	0.975	3302	1	85	0.0000	Significant

R squared is a number between 0 and 1 that indicates the magnitude of the independent variables' influence on the regression model. The closer the regression model is to number one, the better it will be. From the table above, the R Squared for X1 and X2 against Y is 0.971 and 0.975,

respectively, which means that soft loans are very influential on the performance of SMEs. The P value also shows a significant influence between soft loans and the performance of SMEs.

TABLE 2
PATH COEFFICIENTS

Relation	Standard Regression coefficient	Error Standard	t-Statistic	P. Value	Description
X1→Y	0.474	0.232	9.560	0.0000	Significant
X2→Y	0.533	0.120	10.672	0.0000	Significant

Based on table 2, the regression coefficient values of X1 and X2 to Y are positive, which means that soft loans have a positive effect on the performance of SMEs. Figure 2 explains the results of the hypotheses that prove a positive relationship between soft loans given to SMEs and the performance of SMEs.
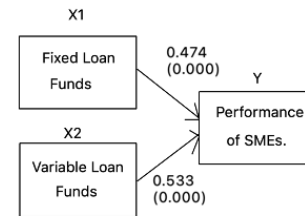

Figure 2. Result Hypothesis Model

B. Proposed Model

Based on the results of interviews and respondent data, the research produces a model that adopts blockchain technology in the distribution of soft loans for SMEs. The model is built by considering the mechanism for submitting soft loans as well as the basic concepts of blockchain technology. Figure 3 describes a proposed model in which the blockchain concept is represented by blocks and smart contracts, registration, and validation processes. While the provision of soft loans for SMEs involves several parts, namely:

1. Government which is the source of funds to be channeled to SMEs.
2. Banks as government partners to distribute SME soft loans
3. Third parties who are SME partners whose role is to support SME businesses by spending funds from soft loans.

The following is an explanation of the stages based on the numbers in figure 3

1. Registration is the initial stage so that all nodes can be connected in the blockchain network. Nodes represent objects or entities that are connected in a blockchain network. So the government, banks, SMEs and third parties must register into the blockchain network.
2. The smart contract between the bank and the government is an agreement between the government

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International Journal of Applied Engineering & Technology

35

and the bank as a distributor of SME soft loans. This agreement contains important soft loan information, especially about the soft loan nominal as well as other information related to the nominal, such as the distribution of soft loans, SMEs that receive soft loans. By using a smart contract where the smart contract is the main part of the block chain, all nodes connected to the blockchain network will know the nominal soft loan and the SMEs that will receive it. This condition precludes the possibility of misuse of the distribution of soft loans from the government to banks. The next smart contact is a smart contract between banks and SMEs. Soft loans received by SMEs must comply with government regulations so that banks cannot manipulate soft loan nominal information to SMEs because all nodes will know through the block chain network. The next smart contract is between SMEs and third-party SME partners that function to support SME businesses. funds from soft loans must be spent to third parties in accordance with a predetermined nominal amount. This condition will rule out the possibility of SMEs abusing soft loans for expenses that are not in accordance with their designation.

3. All blocks will be stored on the block chain network if there are additional SMEs, third parties and banks then all additions will be stored on the block chain network

4. If there is a new agreement between the government, third-party banks and SMEs, the agreement will be stored in the smart contract and entered the blockchain network.

5. The validation stage is the next stage after the registration stage. Before becoming eternal data stored in the block chain network, all smart contacts will go through a peer to peer validation process to all nodes on the block chain network.
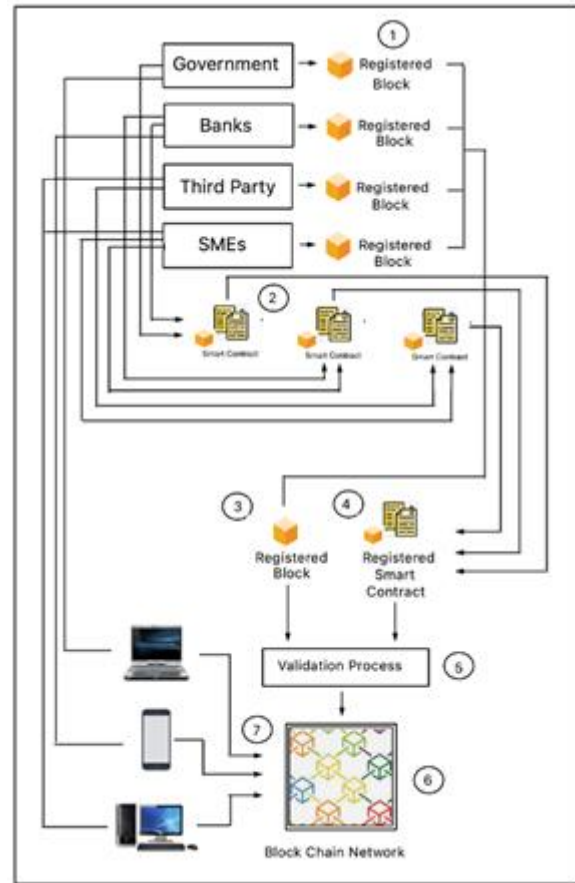

Figure 3. Proposed model

CONCLUSION

One of the weaknesses of SMEs that hinders the development of their businesses the most is the lack of financial capital. Assistance from several parties to provide soft loans to SMEs has been carried out but soft loans have not made SMEs develop as expected. The inappropriate use of funds from soft loans is one of the causes of the ineffectiveness of the soft loans provided. Currently there is no mechanism that can ensure soft loans for SMEs are used properly in accordance with the agreement with the lender. The adoption of block chains in the provision of soft loans for SMEs is an effective solution because block chain technology creates transparent transactions with a peer to peer validation system to all parties involved with soft loans for SMEs.

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International Journal of Applied Engineering & Technology

36

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International Journal of Applied Engineering & Technology

37