



SWOT Analysis of Lending Platform from Blockchain Technology Perspectives

Wisnu Uriawan

INSA Lyon, LIRIS, UMR5205, France

Department of Informatics, UIN Sunan Gunung Djati Bandung, Indonesia

Correspondence: E-mail: wisnu.uriawan@insa-lyon.fr, wisnu_u@uinsgd.ac.id

ABSTRACTS

Blockchain Technology become phenomenal issue in the world, emerging with bitcoin and IoT. It had been implemented in many areas in human activity. Advantages of blockchain technology is distributed ledger where resources distributed to all member in network. Loans or credit as part of human activity in their life. When we need cash for a major expense, it might be tempting to borrow from a payday lender or max out a credit card or similar, but you have other options that will not harm your credit or put you in a cycle of debt, even if your credit record is not all that great. Collateral loans could be a way to borrow the money as you need. One of which is the lending platform. Blockchain technology has been implemented in many lending platforms, but there are still any weaknesses that can be refined and optimized. Tool of analysis is SWOT, describes of four analysis, as follow: Strength, Weakness, Opportunity and Threats. This paper purpose to analyzed lending platform measured by look for the weaknesses variable and how to optimize that system performance that can improve for helping people in lending process. In addition, the result of this analysis can use for enhancement recommendation the system based on the weaknesses are found and opportunity for make a lending platform robust.

ARTICLE INFO

Article History:

Received 18 Nov 2020

Revised 20 Nov 2020

Accepted 25 Nov 2020

Available online 26 Dec 2020

Keywords:

Blockchain,

Distributed Ledger,

Lending Platform,

SWOT,

Enhancement,

Robust.

1. INTRODUCTION

Blockchain arise in good time, it introduced with Bitcoin emerging in financial crisis in 2008 (G. Verdian, P. Tasca, C. Paterson, and G. Mondelli,, 2018), at the same time people need some money for survive in life. Traditional lender burdened people with high interest and more long-time payback period. Another way, individual can propose lending to traditional financial services, like a bank or financial institutions (I. González-Carrasco, J. L. Jiménez-Márquez, J. L. López-Cuadrado, and B. Ruiz-Mezcua,2019), but it's very difficult for accepted because they should give some collateral. On the other hand, people do not have collateral for proposed some credit to financial institutions, more big proposed loans, will more collateral also (W. Presthus and N. O. O'Malley,2017). Financial institutions make some conditions for grading lending, it depend on the risk. High risk will high conditions and more collateral required. Blockchain has completed by technology modern for support in lending platform environment with the simple way and faster in processing (I. Anagnostopoulos,2018). Ledger will support for recorded all transactions on network with unique privilege it is work as individual or organization as well as (J. Li, D. Greenwood, and M. Kassem,2019). Smart contracts are supported to manage transactions with particular process with high code security and robustness with solidity adaptive language (W. Viriyasitavat and D. Hoonsopon,, 2019), peer-to-peer (P2P) lending is possible for person transaction with another person online

with simple way, in several country has successful apply that system as like in China and United Kingdom, its method provides for Small Medium Enterprises (SMEs) and individual with population increasing about 110% in year 2015-2016 and still developing for lending industry market with high risk (Y. Zhang, H. Li, M. Hai, J. Li, and A. Li, 2017), trustworthiness will help the transaction more faster because will reduced many following conditions like transaction credit record, collateral, many person rejected when applied lending or credit with small collateral (C. R. Macaulay 2015), (T. Yu and W. Shen 2019). According to the Transparency Market Research, lending market cap will growth in 2024 about \$897.85 then before in 2015 about \$26.16 billion (B. Bilbao and V. Argentaria, 2018) is significant and interesting for lending platform development in the future.

All the kind of services will provide with blockchain technology for financial institutions non-bank. Peer-to-peer networking a set group computer or network that can resource sharing by itself autonomous, without central authority need support by consensus. Asymmetric cryptography used for ensure the user can accesses the system and avoidance from malicious access or unauthority users, with this cryptography model only privilege and authentic user can access the system (J. Chen and S. Micali, 2019). Cryptographic hashing merkle tree data structure is used to record all transactions from large datasets with unique authority so that data integrity is well maintained (L. Wang, X. Shen, J. Li, J. Shao, and Y. Yang, 2019). SWOT analysis identify several factors of

organizational or system for adapted and analyze present conditions for competitive advantages. Strength will identify positive value of the current process, weakness it shown vulnerability or error of the current system according to process after organizational evaluated. Opportunity use for identifying in the future beside competitive advantages. Threats is how the system can avoidance or minimized the risk today and in the Future (S. S. Humaidan, 2015), SWOT analysis will help the organization for manage better all the situation and conditions occurs also for increasing competitive advantages. This paper describes how to analyze the lending platform by looking for particularly the weaknesses and opportunity, that can improve the lending platform performance. In addition, weaknesses show the system leak or vulnerable so that the organization can fix this weakness become lending platform strength and robust.

2. METHODOLOGY

Blockchain is a coherent data structure as a digital sign and becomes an identity, then shared and distributed as a database that contains a well-structured log of transaction and chronological information. The database is called a ledger which contains many transactions that have occurred, user logging and data maintenance. Transactions in the general ledger will be collected into a block, which is recorded with a time stamp and cryptographically linked to the genesis block that forms and composes a sequence of events or other blocks as a unit. The structure itself

describes the data structure, is a form of digital consensus and is also used in literature, algorithms or application domains that are built on the design block structure (M. Andoni *et al*, 2019), (J. Mattila *et al*, 2016), (G. Wood, 2014).

Data transmission, sharing of resources, and computing are all part of computer networks. Cryptocurrency as a distributed network resource to others with a specific address. The challenge is that the system needs to ensure that the expenses that are distributed do not double. A traditional transaction such as bank and non-bank, which acts as a mediator between a third party and a trusted data storage medium, will become a valid ledger block and keep the data up to date. Authority activated if several parties need to write in the ledger at the same time with concurrency control and consolidation. The current centralized management may not accept this, because it is high cost and requires the trust of network users to a third party to operate the system (M. Andoni *et al*, 2019), (J. Mattila *et al*, 2016).

2.1 Ledger

A copy of the distributed ledger will be the same held by all users on the network. Consensus will add new data every time there is a change to the ledger if all users agree and the data is valid. Any attempt to change the data by one user then the other users will be informed of the change, it creates immutability (S. Pearson *et al*, 2019). The genesis block is the place where transactions are stored, and all blocks

will be cryptographically linked to each other which records the data. The nodes in the graph represent transactions and their edges will show the direction of confirmation between transactions (B. Shala, U. Trick, A. Lehmann, B. Ghita, and S. Shiaeles, 2019).

2.2 Fintech

The Financial Technologies (FinTech) and the IoT (I. Anagnostopoulos, 2018), (B. Shala, U. Trick, A. Lehmann, B. Ghita, and S. Shiaeles, 2019), (J. L. Ferrer-Gomila, M. Francisca Hinarejos, and A. P. Isern-Deyà, 2019). Although both domains require the basic common features of a decentralized trusted transaction ledger, substantial differences can be found in usage principles, transaction volume and rates, tight security requirements or transaction fees. At FinTech, the main challenge is ensuring highly secure and reliable financial payments, with a low volume of transaction failures and some tolerance for transaction delays. On the other hand, in IoT, using multiple devices and a greater volume of transactions is expected, with micro and nano payments required for IoT assets and data changes. Transaction costs are a relevant issue here, as well as transaction delays required for near real-time operations (M. Pustišek and A. Kos, 2018), shown by Fig. 1.

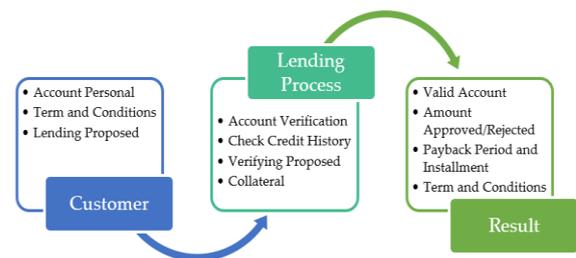


Fig. 1. Lending Process

2.3 Ethereum

Ethereum is a blockchain network with an open system. Ethereum and Bitcoin are tools that make it possible to bring the economic system into the software, complete with an account management system and a native exchange unit system for funneling through accounts (L. Catania, S. Grassi, and F. Ravazzolo, 2019). Games like Monopoly or something identic. Each player calls a native unit of coins for this exchange, token, or cryptocurrency, but it is no different from tokens on any other system: they are a form of money (or scripts) that can only be used in that system (C. Dannen, 2017).

Ethereum is a global transaction-based machine: it starts with block genesis and gradually executes transactions to manipulate it into final blocks. The last block is canonical Ethereum. Genesis blocks available in it such as account balance information, track records, reliable, real-world data and information; otherwise, anything that could be manipulated by the computer would be accepted. Transaction validation between blocks is essential to avoid invalid fake blocks or valid blocks undergoing changes. Invalid block changes will reduce the account balance without the same

renewal and opposite increases elsewhere. Valid block transitions generated by transactions (U. Team, 2018).

Decentralized protocols and applications, distributed storage, distributed shared marketplace and other concepts have the potential to enhance the computing industry and the support provided for peer-to-peer protocols for lending platforms. Writing code in Ethereum, will get a lot of blockchain functionality like a programming language completely useful for generating smart contracts functionality and more secure by arbitrary encoding and users can modify according to the objective (B. V. Buterin, 2009).

2.4 Smart Contract

The assigned and delegated smart contracts will execute the correct input. Distributed ledger is a distributed database of transaction history that is approved by the majority of participants in its network through a predetermined consensus mechanism. All participants in the network have a copy of the same ledger. Any changes in the ledger will be reflected in all on the final copy. Assets that are recorded in the ledger can be financial, legal, physical, electronic, or many other properties. Depending on the network rules, the ledger can be updated by some or all the participants. Major security and consensus issues are generally resolved through cryptographic mechanisms (A. Raschendorfer *et al*, 2019). Smart contracts are computer programs that enforce rules without requiring a third party. In the Bitcoin blockchain, basic versions of smart contracts are implemented through a writing system which can facilitate use cases such as

multi-user accounts, multi wallets, digital signatures and other services (M. Westerkamp, F. Victor, A. Küpper, and A. Kupper, 2019).

The security risks associated with blockchain platforms and technology are as follows: 1) It is difficult to implement regulations to avoid money laundering activities due to the high level of anonymity using the protocol. 2) There are several cryptocurrencies that have been indicated to be used for money laundering purposes and are a challenge ahead to enforce financial penalties. 3) The ineffective tax regulation scheme may be a side effect of the anonymity factor. 4) Many countries have introduced tax regulations for cryptocurrencies, in an effort to deal with the global cryptocurrency phenomenon and avoid risks for users who are exposed to cryptocurrency price volatility. 5) In the future, there will be problems of inflation and risks of monetary and financial stability, including the potential loss of control over the amount of currency to be circulated, the level of risk will increase from the cryptocurrency market and increased credit in the economy with the use of cryptocurrencies that are difficult to control. 6) The emergence of the use of cryptocurrency will be accompanied by a series of new problems that arise with regard to laws and regulations, so that it can affect public confidence in conventional currencies. Cryptocurrency is like a representation of value transactions, can be traded and function generally as money (D. Unal,

M. Hammoudeh, and M. S. Kiraz, 2019).

Society of Worldwide Interbank Financial Telecommunication (SWIFT) system uses predefined code to pass on transaction details through the SWIFT network. Each transaction is described by a series of SWIFT code. The code consists of several key identifier components, such as institution code, country code, location code and branch code to indicate the sender and receiver (T. Qiu, R. Zhang, and Y. Gao, 2019). SWOT analysis it contains about relation identification of strengths, weakness, opportunities and threats from subject research. Strength contra with weakness, opportunity versus threats. Strength will identify about resources available and running well, Weakness for measure how high the risks. Opportunity analyze represent the marketplaces as the subject, while threats is for prevent or minimize the risk (T. Qiu, R. Zhang, and Y. Gao, 2015), (J. R. Glass, G. H. Kruse, and S. A. Miller, 2015), (H. Thamrin and E. W. Pamungkas, 2017), (A. Aich and S. K. Ghosh, 2016). Identifying the lists of positive and negative contribution objectives with the subject evaluation. SWOT analysis is required for the selection of right method and application, is very simple but the result is better, and the recommendation can use for next process.

3. RESULTS AND DISCUSSION

Blockchain has become famous and is present for all daily activities in the fields of economy, business, education, health, and other non-bank financial institutions. Exponential growth has almost changed the world and provides more options for efficiency and low costs. The lending activity is an interesting area because many people have experiences at least once in their life. In practice of lending system, someone will become a lender and another party will be a borrower. There are many terms and conditions for this loan activity, including: collateral, ability to payback, trust, and the purpose of the loan. Blockchain technology will bridge these activities to reduce transaction times and complicated mechanisms. In the traditional lending process, it will take at least 1 week to a month, but borrowers cannot wait longer because of urgent needs.

3.1. Analysis Lending Platform

Smart contracts in blockchain technology have been used to replace a faster and more efficient lending process, one example of changing from centralization to a process of decentralization, trust, efficiency and accountability. One of the Spanish multinational banking groups Banco Bilbao Vizcaya Argentaria (BBVA) invested around € 75 million in corporate loans and has taken advantage of the distributed ledger and became the first international bank to implement blockchain technology. SWOT analysis for lending platform variable are blockchain technology, No mediator/Collateral, Competitive Rates, Reduced Risk, Improved

Efficiency, Market Cap and Competitive Advantages. SWOT analysis framework summarized

(B.Bilbao and V. Argentaria, 2018), (T. Qiu, R. Zhang, and Y. Gao, 2019) in the following Table 1.

Table 1. SWOT Analysis Framework

Variable	Strengths	Weakness	Opportunities	Threats
Blockchain Technology	√			
No Mediator/ Collateral		√		
Competitive Rates			√	
Trustiness	√			
Reduced Risk				√
Improve Efficiency	√			
Market Cap	√			
Competitive Advantages	√			

The lending platform will help individuals who are looking for a place to apply for loans or credit directly to lenders. This process will reduce dependence on financial institutions such as banks and third parties. Blockchain technology adopts the traditional lending process by reducing waste and making decisions quickly. Illustration "if someone needs a loan or credit, they just visit one of the loan platforms and try to propose an amount of credit need, then the system will response with status of accepted or rejected" in just a few minutes. Blockchain technology is helping for better and more profitable transactions such as: safer, simpler operations, generating potential passive income, and people are starting to focus on blockchain development.

Some loan platforms offer convenience to use, but they require a

lot of terms and conditions. However, it is still a burden for users, if the lending platform still requires collateral, users will have difficulty fulfilling it so that users will still be rejected. Finally, they tried to return to traditional loans.

Investment in a lending platform is very interesting as long as it is completed with new technology that allow it to meet with the user experience and needs, many lending platforms only focus on profit without thinking about the user needs. Lending platforms offer the lending products but do not focus on user needs analysis so that will affect the success of a lending platform.

3.2. Analysis Lending Platform

Current lending platforms able to implement of blockchain technology through third parties, Bitcoin and Ethereum. Referring to the SWOT analysis shown in Table 2.

Table 2. SWOT Technology Platform

Variable	Strengths	Weakness	Opportunities	Threats
Bitcoin				√
Ethereum	√			
Third-Party		√		
Mix (Bitcoin and Ethereum)			√	
Bitcoin				√
Ethereum	√			
Third-Party		√		
Mix (Bitcoin and Ethereum)			√	

Bitcoin has a limitation that the bitcoin network will be a threat to future lending platforms and is quite difficult to develop. Ethereum is still open to development, therefore it is easier to develop and will grow faster without worrying about restrictions. Third parties, it is easier to start installing because they are developed by third parties, but it will be high cost and also requires third party maintenance. Mix (Bitcoin and Ethereum), the opportunity is open to take the lower to upper segment

classes, but the system is more complex to handle both transactions.

3.3. Trustworthiness

The most important thing about the lending platform is the level of trust, if the community has given trust, the lending platform will grow faster and have a good influence so that it will be recommended to other users. The best practices of each user will be to transfer his experience, refer to Table 3 below.

Table 3. SWOT of Trustness

Variable	Strengths	Weakness	Opportunities	Threats
Ease of use	√			
Track Record Acceptance			√	
Member Complaint				√
Time needed		√		
Market Capital	√			

Ease of use describe how far lending platform have acceptance from users without complaint and satisfy in use.

Track Record Acceptance, statistical record acceptance and succeed for lending process. Member complaint,

reduction or minimize of member complaint will indicate the good process. Time needed, how long lending process will need processing time, time that's shown can cut down complex process. Market Capital, how big market penetration of lending platform, larger

coverage area will bring trustiness to users.

3.4. Improved Efficiency

Efficiency is a keyword of the lending platform performance parameters will show in the Table 4 below.

Table 4. SWOT of Improve Efficiency

Variable	Strengths	Weakness	Opportunities	Threats
Ratio of use	√			
Comparative of Lender and Borrower			√	
Asset vs Market		√		
Technology Optimized			√	
Error Accumulation				√

Ratio of use, lending platform usability will describe the overall system performance. Comparison of Lenders and Borrowers, providing statistical data between Lenders and Borrowers so that users will learn the comparison of the two and see future trends. Asset vs Market, the lending platform must be able to present the asset report and market capitalization to the public, the user will study and analyze the results, for example, the asset must be greater than the market capitalization to guarantee the user's investment. Optimized technology,

the loan platform must always update the system periodically to keep all transactions up and running efficiently. Accumulation of errors, to minimize errors, is the obligation of the loan platform to ensure the system runs well with zero errors.

3.5. Market Capital

Each lending platform will competitive with many lending platforms in the world, they should prepare variable in Table 5 below.

Table 5. SWOT of Competitive Advantages

Variable	Strengths	Weakness	Opportunities	Threats
Performance	√			
Speed			√	
Technology driven				√
Security		√		

Performance, the lending platform must have a good performance to be the winner or the best choice for the user. Speed is an indicator to measure how fast each transaction can be handled and measure the success of the transaction process. Driven by technology, the latest technological innovations will help improve performance and in line with the system architecture, the more recent technology uses will affect the lending platform's adaptability to the latest

technology. Security, a classic problem but very important to apply to the lending platform, a good system must have a high level of security, because it will be accessed by many users.

3.6. Competitive Advantages

Growth of lending platform shown by market capital, variables of market capital refers to Table 6 below.

Table 6. SWOT of Market Capital

Variable	Strengths	Weakness	Opportunities	Threats
Coverage area			√	
Kind of Country		√		
Market Segment				√
Variant of lending	√			

Coverage area, how big is the coverage area of the lending platform that will be supported, the wider area will give opportunity to win the market with the risk of being more complex in managing the system. Kind of Country, the type of user will be influenced by the type of the state and shows the behavior of the user, the system must be able to handle all the behavior of users who access. Market

segmentation will show the user segment environment, middle to upper or lower class will be used as evaluation for market segmentation, corporate or personal trends will also measure the level of communication of the lending platform. Lending variants, lending platform products that are available in various variants and segmentations can open a wider market.

3.7. Comparative of Lending Platform

Comparative of lending platform will describe how performance their system

was built and how the system can handle many transactions with many products are offer refers to Table 7 below.

Table 7. SWOT of Competitive Advantages

Variable	Strength	Weakness	Opportunity	Threats
Blockchain Technology				
Bitcoin				√
Ethereum	√			
Third-Party		√		
Mix (Bitcoin and Ethereum)			√	
Reduced Risk				
Easy of use	√			
Track Record Acceptance			√	
Member complaint				√
Time needed		√		
Market capital	√			
Improve Efficiency				
Ratio of use Comparative of	√			
Lender and Borrower			√	
Asset vs Market		√		
Technology Optimized			√	
Error Handle				√
Technology Optimized				
Coverage area			√	
Kind of Country		√		
Market Segment				√
Variant of lending	√			
Error Accumulation				
Performance	√			
Speed			√	
Technology driven				√
Security		√		

4. CONCLUSION

The blockchain technology of the lending platform will affect the overall system performance, SWOT analysis variables show 6 Strengths, 5 Weaknesses, 6 Opportunities and 5 Threats. All variables describe how to manage the lending platform at the best possible performance. These recommendations will help in the future to develop a better lending platform and system maintenance

considering the Strengths and Opportunities, Weaknesses and Threats variables. However, for the best lending platform, focus on weaknesses and threats to make the system more reliable.

5. ACKNOWLEDGEMENTS

Authors wishing to acknowledge LIRIS UMR5205 Laboratory at INSA Lyon France and MORA Scholarship from Indonesian Government that

supports and funds this research publication.

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