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ANALYSIS OF BLOCKCHAIN UTILIZATION IN ACTIONS TO EMPOWER DIGITALIZATION OF ACCOUNTING INFORMATION SYSTEMS FOR FOR SMALL AND MEDIUM-SIZED ENTITIES (SMES) IN INDONESIA

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ABSTRACT

Implementing a digital accounting information system supports efficient financial performance management for MSMEs in Indonesia. However, some MSMEs still need to apply manual financial recording and bookkeeping due to limited ability and insight regarding the digitalization of financial management. This research aims to identify and analyze the role and solution steps in realizing the empowerment of digitizing accounting information systems through blockchain to realize effectiveness for MSMEs in managing and controlling financial performance. This study uses a qualitative descriptive method based on primary data through questionnaires and secondary data from previous research obtained by studying the literature on relevant journals, articles, and documents. The results of this study indicate that there are still MSME actors who still need to keep records or bookkeeping and MSME actors who apply manual methods in managing their finances. On the other hand, the combination of digitizing accounting information systems with blockchain can optimize the financial performance of MSMEs so that comprehensive socialization is needed to create awareness and initiatives to transform towards digital. This is the first study conduct on the utilization of blockchain in actions to empower digitalization of accounting information systems for MSMEs in Indonesia.

Keywords: *Digitization, Accounting Information System, Blockchain, MSMEs, Decentralization, Technology Transformation*

1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) have an essential role in the national economy. MSMEs also contribute to the provision of productive employment for the community. This contribution is realized through its ability to absorb 119.6 million or 96.92% of the total workforce in Indonesian business units (Ministry of Cooperatives and Small and Medium Enterprises, 2021). On the other hand, MSMEs also contribute up to 61.1% of the Gross Domestic Product (GDP) (Ministry of Finance of the Republic of Indonesia, 2020).

The multiplier growth of MSMEs has an impact on increasingly fierce competition. On the other hand, every business actor needs to formulate a comprehensive strategy for adopting digital technology to compete with various competitors and adapt to the times. Digitizing MSMEs can be an opportunity, as well as a challenge in maintaining the potential and existence of the business, if implemented. The transformation of business patterns from conventional to digital also needs to be empowered in a realistic way to facilitate technology transfer for each business sector. Not only in the creation and innovation of products or services, but a business's operation also needs to be balanced with the ability to adopt digitalization. This can be a supportive aspect in realizing more optimal performance by adapting to technology.

Although it is often found that many MSMEs have entered digitization through e-commerce, the Indonesian people's financial literacy index can be said to be weak, namely at the level of 38.03% (Financial Services Authority, 2019). This problem is evidenced by one of the common problems for MSMEs, namely the preparation of business documents such as bookkeeping and financial reports carried out manually. MSME actors have the notion that technology in accounting can complicate financial records, so many business actors still need to adopt technology in processing financial data from their business activities (Ayunita & Husnah, 2021). In addition, there is an assumption that the implementation of accounting information systems in financial planning and management is only limited to collecting income and expenses, then accumulating them to determine whether their business makes a profit or a loss.

MSME actors need to understand more about the application of accounting information systems in designing bookkeeping to financial reports that are more organized and regular. An accounting information system is an organization of forms, records, and reports that are aligned in such a way as to provide the financial information needed by management (Romey & Steinbart, 2016). The presence of an accounting information system for MSMEs is a means of managing various important reports to support the validity and efficiency of each report (Rahmawati, Subagyo, & Budiadi, 2019). The existence of an accounting information system will be an opportunity for MSME actors to identify problems to make the right decisions for the sustainability of their business. The creation of an effective accounting information system will impact the ease with which this information is received and in accordance with expectations, especially regarding the credibility and accuracy of the data (Widjajanto, 2001). Digitization can be a forum for making it easier for every MSME actor to apply accounting information digitally. The combination of information systems and digitization is a guideline for MSMEs in managing directed and well-controlled businesses.

A blockchain is a form of digitization in the current era of modernization. As a result of technological advances, blockchain does not utilize and apply the participation of third parties in the data transfer process in a transaction process (Witami & Suartana, 2019). The use of blockchain supports efficiency and transparency in digital data storage, primarily due to its ability to record data without editing or changing it. Blockchain's ability to accurately maintain various transaction histories in ledgers and for everyone to see makes blockchain the right choice for realizing transparency in a business. The existence of the blockchain also guarantees data security for every transaction carried out by a business so that it can minimize the risk of fraud or fraud. On the other hand, the application of blockchain also impacts cost efficiency for MSMEs so that it can support more optimal business productivity.

1.1. Problem Formulation

1.1.1. What is the role of digitizing accounting information systems for MSMEs in Indonesia?

1.1.2. What is the role and correlation between blockchain and accounting information systems?

1.1.3. How does blockchain work for accounting information systems?

1.1.4. What are the exemplary efforts to socialize the use of blockchain for MSMEs in Indonesia?

1.2. Purpose of the Paper

This research aims to understand the essential role of blockchain in digitizing accounting information systems that can optimize MSMEs' performance in Indonesia. The other goal is to create a solution for MSMEs in carrying out financial planning in the form of effective and efficient digital bookkeeping.

1.3. Benefits of the Paper

1.3.1. For Researchers

1.3.1.1. A forum for developing researchers' insights regarding implementing digitization, such as blockchain and accounting information systems in managing MSME finance in Indonesia.

1.3.2. For the University

1.3.2.1. Relevant information forum that can be used as a reference between students regarding blockchain's role in empowering digitization of accounting information systems for MSMEs in Indonesia.

1.3.3. For MSMEs

1.3.3.1. A forum for empowering MSMEs in Indonesia regarding the essential role of implementing digital accounting information systems for sustainable business continuity.

1.3.3.2. A place of enrichment for MSMEs in Indonesia in understanding and implementing blockchain, which can create efficiency and effectiveness in sustaining business operations.

2. LITERATURE REVIEW

2.1 Blockchain

Blockchain is a decentralized or distributed open ledger (Leoputra, 2021). Blockchain guarantees data transparency by having the ability to maintain data authenticity when a transaction enters the blockchain (Hartoyo et al., 2021). This statement is supported by decentralization in the blockchain so that each server has an equal capacity that will be connected. Connected decentralization aims to prevent and minimize deviations due to data differences in recording (Hartoyo et al., 2021). Therefore, blockchain can benefit MSMEs, especially by guaranteeing the resulting securities, data transparency, and time efficiency obtained during their use to support sustainable business continuity. This view is supported by analysis from Koolwal, Mohbey, and Kumar (2019), which states that blockchain has several features which, include:

2.1.1. Decentralization

The blockchain's efficiency is reflected in the decentralization that supports the creation of distributed peer-to-peer money transactions. This supports server cost savings and reduces central sector performance bottlenecks caused by a centralized management system.

2.1.2. Automatic Execution Contract

Smart contracts on the blockchain are automatically executed code stored to support transaction operations and act as a substitute for a legal contract. Smart contracts support the implementation of tasks that will be completed more quickly.

2.1.3. Auditability

Transaction recording includes a timestamp which can simplify the validation and verification process. In addition, records in the previously recorded time can also be traced. The aim is to increase the operational transparency of data management and prevent fraud.

2.1.4. Persistent

Minimization of data damage can be realized due to a transaction recording validation process that allows the records to be freely distributed but do not have the opportunity to be copied.

2.1.5. Anonymity

Each user with their respective server can efficiently communicate in the blockchain network. However, the privacy and security of addresses, data and transactions can still be guaranteed due to the absence of a centralized recording system.

In its development, there have been four generations of blockchains that have evolved, including:

2.1.1. Blockchain 1.0

Blockchain 1.0, the first phase of the blockchain, presents the transition from a traditional recording of transactions to digital. Phase 1.0 focuses on the financial sector, such as financial calculators, first-generation computers, and ATMs (Ministry of Communication and Informatics, 2018). On the other hand, blockchain 1.0 aims to create efficient financial transactions that can be carried out without using intermediaries. The presence of the first blockchain in Indonesia is due to the support from blockchain globally. Blockchain development underlies people's aspirations to achieve a broader world openness (Trujillo, 2017). Blockchain 1.0 was first introduced by Hall Finley in 2005 through the implementation of distributed ledger technology with the first applications based on Crypto currencies such as Bitcoin.

2.1.2. Blockchain 2.0

The emergence of a phase marks blockchain development after blockchain 1.0, namely blockchain 2.0. This phase is supported by implementing blockchain in the banking sector and having a share in the market economy. In addition, phase 2.0 expands the use of currencies that were previously only based on Crypto currencies by implementing Smart Contracts, which are automated computer programs that carry out agreement clauses based on agreements between the parties related to the agreement, such as clauses for payment, delivery, guarantees, and force majeure (Tanumihardjo & Putra, 2022).

2.1.3. Blockchain 3.0

According to Arief, Sundara, & Syahputra (2019), the improvisation of phase 2.0 can be seen from blockchain 3.0. This phase introduces decentralized applications, namely DApps. Such decentralization will not involve an element of centralization on one party to minimize the possibility of data manipulation. On the other hand, DApps have several types according to their functions, such as those specifically for transaction processing and merging transaction processes with smart contracts.

2.1.4. Blockchain 4.0

At this stage, blockchain is expected to contribute to realizing progress from implementing industry 4.0. Blockchain 4.0 optimizes what was already in phase 3.0, such as data security tightness, and maximizes the potential for data processing speed (Rizky et al., 2021). On the other hand, blockchain allows businesses to carry out operations by switching to applications that guarantee data security and privacy. In addition, each data will be recorded by itself in a decentralized ledger due to the automation that is created.

2.2 Accounting Information System

The accounting information system is a computerized accounting system capable of processing financial data related to transaction data in the accounting cycle (Jaya, 2018). On the other hand, an accounting information system is a system that aims to collect and process data that will be reported in the form of financial transaction information (Diana & Setiawati, 2011). Similar to what was disclosed by Kusrini and Koniyo (2007), an accounting information system can transform business transactions into useful financial information for its users. Five dimensions can be utilized to measure the quality of

an accounting information system: integration, flexibility, accessibility, formality, and timeliness (Heidmann, 2008). Therefore, every business needs to have the ability to adopt and adapt technological developments so that they can implement relevant accounting information systems to support better business quality. On the other hand, implementing an accounting information system will create efficiency for every business in creating transparency, minimizing human error, supporting decision-making, and providing opportunities for every business to plan, control, and manage their business more optimally. According to Muda et al. (2017), components of the accounting information system include:

2.2.1. Hardware

Hardware includes physical equipment that collects, records, manages, stores, and displays information as a result of data processing.

2.2.2. Software

Software is a program that is aligned with driving applications on a computer. Software classification includes system software and application software.

2.2.3. Brainware

Human resources (HR) act as data managers to produce information.

2.2.4. Procedure

Procedure as a series of repetitive activities refers to incoming information and views on related information.

2.2.5. Database

The database can be interpreted as a collection of data stored on the computer.

2.3 MSME

Based on Law no. 20 of 2008, Micro, Small, and Medium Enterprises (MSMEs) are productive businesses owned by individuals or business entities that meet the criteria for micro-enterprises and have a maximum net worth of Rp. 50,000,000 (fifty million rupiahs), excluding land and buildings where the business is located. Alternatively, have annual sales of at most Rp. 300,000,000.00 (three hundred million rupiahs). MSMEs are essential and contribute to realizing national economic development goals, such as economic growth, employment opportunities, increasing foreign exchange, and regional economic development (Sinarwati et al., 2019). In order to maximize business operations, support long-term business sustainability, and increase competitiveness among the many competitors, every MSME actor needs to adopt digital technology to realize effective business performance.

2.4 Digitalization

For MSMEs, digitalization can present opportunities to expand markets, networks, and product opportunities to be widely known by the public (Astuti, Kartono, and Rahmadi, 2020). Collaboration between advances in information technology and the internet which creates digitalization becomes a forum for the community to carry out effective and efficient business activities (Yuniarti et al., 2022). Therefore, MSME actors are expected to be able to adopt and implement digitization in their business if they want to survive in increasingly fierce competition in the business world (Purwana, Rahmi, and Aditya, 2017). Digitalization can affect the business environment, how companies work, and the company's internal and operating environment. This effect is supported by digitalization capabilities in creating internal efficiencies, such as more optimal performance with effective implementation of digital facilities, external opportunities, such as service renewal, and disruptive change, which is a fundamental change in business roles (Kumorojati, 2021).

3. RESEARCH AND METHODOLOGY

3.1 Research Method

Qualitative research, according to Mujahidin (2019: 5) aims to explore and find answers to a phenomenon by utilizing a qualitative approach so that it can understand the phenomena experienced by the object of research, such as behavior, perceptions, motivations, actions, and others. When observed from the number of respondents as research objects, qualitative research methods tend to

observe research objects in smaller numbers compared to quantitative research because they prioritize data depth rather than data quantity (Soegianto et al., 1989). In this study, researchers distributed questionnaires to respondents who met the criteria for their role as active MSME actors. The distribution of the questionnaires utilized the Google form and was carried out from January 3, 2023, to January 10, 2023. In addition, the data collection technique researchers used was a literature study. Researchers use various written sources such as articles, journals, and relevant documents to support this study (Surani, 2019).

3.2 Data Collection Method

Data collection was carried out using qualitative primary and secondary databases. According to Sari (2020), primary data is obtained by researchers based on the direct analysis carried out on the object under study. Primary data for this study was obtained by distributing questionnaires to informants. On the other hand, secondary data is obtained from information that has been obtained from previous researchers, which researchers will collect to support the factuality of this study.

3.3 Population and Sample

Sugiyono (2018) defines a population as an object or research subject with specific characteristics according to the criteria set by the researcher to be observed and conclusions drawn. In contrast, the sample is defined as part of the number of characteristics possessed by the population concerned. This study took 20 respondents with the following criteria:

3.3.1. Boys and girls aged 18-25 years

3.3.2. Have experience working as an MSME actor or have worked in an MSME

3.3.3. Carry out records or bookkeeping both manually and digitally to manage the operations and finances of the implemented MSMEs

4. RESULT

4.1 Respondent Profile

4.1.1 Based on Domicile

Domicile	Jabodetabek	Outside of Jabodetabek
Number of Samples	17	3

4.1.2. Based on type of MSME

MSMEs Type	Number of Samples
Food and Beverages	15
Clothing	4
Beauty	1

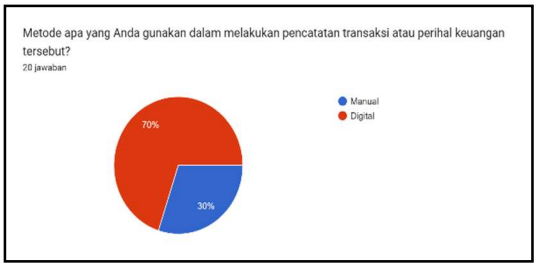
4.1.3. Based on the Length of Time for Business Implementation

Length of Time for Business Implementation	Number of Samples
1 - 6 months	9
7 - 12 months	8
1 - 2 months	3

4.1.4. Based on the Recording of Transactions or Financial Matters

Recording of Transactions or Financial Matters	Number of Samples
Always	13
Often	4
Rarely	3

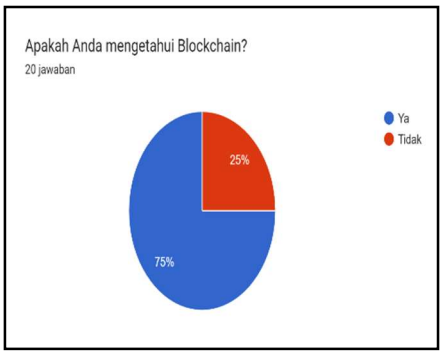
4.1.5. Based on the Method of Recording Transactions or Financial Matters



Recording Method	Number of Samples

Manual	6
Digital	14

4.1.6. Based on the Knowledge of Blockchain



Knowledge of Blockchain	Number of Samples
Yes	15
No	5

4.1.7. Conclusion of Respondent Profile

Based on the respondent data collected and analyzed through the chart above, it can be concluded that many MSMEs have switched to utilizing digital technology for recording and bookkeeping related business financial transactions, namely 14 respondents or 70%. However, MSME actors who still use the manual method are also quite prominent, namely, as many as six respondents or 30%. On the other hand, a large number of MSME actors already know blockchain, namely as many as 15 respondents or the equivalent of 75%. However, five respondents, or 25% of MSMEs, need to learn about blockchain. Therefore, it can be concluded that the empowerment of digitization for MSMEs in implementing digital recording and bookkeeping also needs to be improved, especially from the presence of many benefits both in terms of efficiency, security, and flexibility in accessing financial data that can make it easier for MSME actors to manage his finances. In addition, information dissemination regarding blockchain also needs to be realized to broaden business people's insights about the benefits of blockchain in digital bookkeeping.

4.2 Digitalization of Accounting Information Systems for MSMEs in Indonesia

Based on the research results from the questionnaires that have been distributed, twenty respondents who act as MSME actors have realized the importance of organized financial recording and bookkeeping. Recording and bookkeeping can be a way for every business actor to identify the operations and conditions of the business sector being developed so that they can make the right decisions regarding the continuity and sustainability of their business. However, digitization in financial records and bookkeeping is still an urgency that needs to be considered by the community, especially for MSME actors.

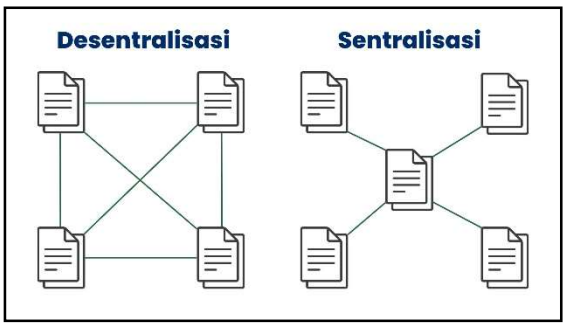
To accommodate more optimal UMKM Go Digital, the implementation of digitization does not only cover the process of online product marketing or promotion but also how to manage finances and business operations digitally. The transition from manual to digital recording and bookkeeping is a form of implementing information technology that is right on target in managing financial data. Suppose MSME actors can understand the workings, benefits, and goals of digitizing accounting information systems. In that case, this can support them to empower competent use of technology for their

businesses. MSME actors can easily prepare detailed, coherent, and accurate financial reports to create efficiency in observing business financial conditions.

Digitalization as a form of implementing information technology can contribute to optimizing the ability of the accounting function, such as guaranteeing the preparation of financial reports that are accurate, timely, and flexible, in the sense that they can be accessed by anyone, anytime and anywhere (Al-Khasawneh et al., 2022). Financial reports are also an essential contributor to making decisions that are right on target and evaluating the operational performance of the business. On the other hand, accounting information in financial reports can also be a forum for determining and determining business capital more effectively to support better business productivity. In order to realize the digitization of the accounting information system, the participation of all components of the accounting information system is required so that the implementation of digitization can be realized and effectively.

4.3 Blockchain in Accounting Information System

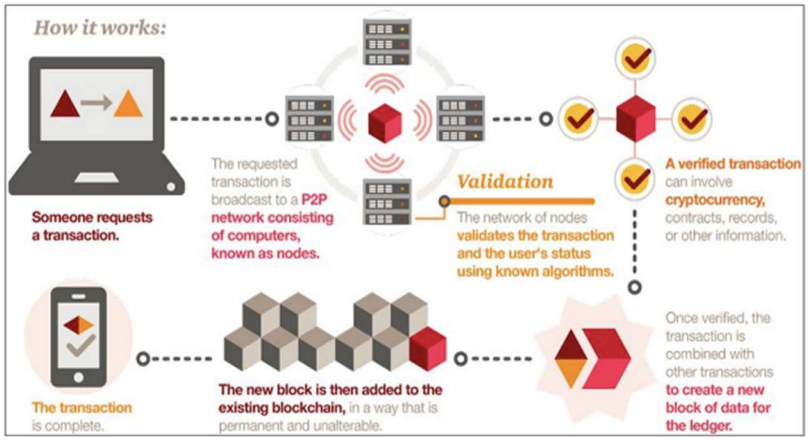
Blockchain, as a form of digitization, has the essential potential to open up opportunities for improving the performance and productivity of MSME financial records and accounting. In Indonesia, the development of blockchain technology can be seen from the emergence of the Indonesian Blockchain Association, which includes various large companies, such as Blocksphere, Blocktech, Vexanium, and Tokocrypto. Based on an analysis from Potekhina and Rumkin (2017), as software, the essence of blockchain appears in the ability to read, record, and publish transactions in an accounting information system. Concerning accounting in preparing ledgers and financial reports, Blockchain can ensure that the data entered is genuine and not manipulated. The validity of this data can be validated and verified through a timestamp available in transaction data and financial documents. In addition, changes to recorded accounting data will be recorded automatically and in real-time. Therefore, blockchain is not an alternative to existing accounting ledgers but enhances the recording and bookkeeping of all business records with guarantees that are more secure and efficient (Coyne & McMickle, 2017).



Source: Researcher, 2023

The main advantage of blockchain implementation is the decentralization of each server. This advantage creates equal opportunities for each server to access recorded data. In addition, each server will be connected to facilitate effective communication, and decision-making is a joint result, not unilateral. This decentralization also aims to minimize bias and influence the final, objective decision. Each server can know changes in information to data to minimize the occurrence of miscommunication which can hinder work productivity. Compared to centralization, decisions will be centered on a central server, and the inability of servers to communicate with each other will cause a subjective bias.

4.4 How the Blockchain Works



Source: PWC 2018

Based on the picture above, when someone wants to make a transaction, the transaction request will be recorded by the internal blockchain system and channeled through a peer-to-peer (P2P) network on the computer. P2P acts as a communication model on a network that has been decentralized and consists of a group of devices that are familiarly called individual nodes or peers. P2P networks have several advantages, such as decentralized communication. This communication will not be centered on the central server only, but each node has the same power to carry out the same responsibilities. In addition, the P2P network also opens equal opportunities for each server or individual to process, validate and verify transactions. Each server will be connected automatically. Furthermore, each transaction will be verified and transcribed into a record. The validation steps for related transactions will conform to each server's criteria or rules mutually agreed upon.

On the other hand, the verification process in the blockchain aims to reconfirm the validity and correctness of the transaction details. The verification process will also include blockchain mining by applying the Proof of Work (PoW) principle to prevent detrimental data manipulation or corruption. After going through the validation and verification process, the transaction will be combined with other transactions to prepare a general ledger. Transactions that have been combined and stored in all blockchain nodes will automatically be permanent, or the information cannot be changed. The aim is to ensure data transparency and prevent the falsification of information.

4.5. Blockchain for MSME

In facing various obstacles to MSMEs, such as financing, recording, operations, and services that have not been implemented optimally, the potential of blockchain has the opportunity to create efficiencies for the constraints experienced by MSMEs so that the continuity and sustainability of MSMEs can be guaranteed. The presence of blockchain not only focuses on the financial sector but also covers other sectors such as trade, business, retail, and logistics. Every MSME actor can also create security in transactions with producers, distributors, and consumers. Transparency, as one of the advantages of blockchain, can support MSMEs to ensure that all transactions carried out are recorded in detail, accurately, and have reliable validity. Data verification and validation in the internal blockchain can make it easier for MSME players to track transaction data. On the other hand, this transparency can be seen in that all transactions that have been recorded cannot be deleted, thereby preventing a server from modifying, manipulating, or deleting stored data. In addition, every incoming transaction will be recorded in real-time, and there is a timestamp to ensure the execution time of the transaction, which can be proof of the accuracy of the transaction.

In addition to transparency, MSMEs can enjoy the advantages of blockchain from the guarantee of data security. The blockchain connected to each server will duplicate each data sequentially so that each server gets the same data. The guarantee of identity data privacy is guaranteed by the blockchain so that each user can maintain the confidentiality of their respective data. Thus, the flexibility of the blockchain can be seen from the concept of blockchain technology, namely transparency while maintaining user privacy by hiding the user's identity, which will be automatically encrypted (Harahap, Aini, & Anam, 2020). One of the blockchain programs, namely smart contracts, can also create time and cost efficiencies because the transaction process will be recorded digitally and does not require a

third party or intermediary to process the transaction. Even though smart contracts have yet to be widely implemented in Indonesia, they can provide opportunities for MSME players to start digitizing their businesses (Margahayu, 2021). Therefore, the presence of blockchain for MSMEs can provide significant benefits for business operations and internal, ranging from security, transparency, decentralization, and privacy, as well as time and cost efficiency.

4.6. Actions to Empower the Digitalization of Accounting Information Systems and Utilization of Blockchain for MSMEs in Indonesia

4.6.1. Increasing the Digital Literacy of MSMEs in Indonesia

Digital transformation requires society to adapt to the times. Society's ability to utilize technology also needs to be empowered in a realistic way for self-awareness to be literate. Digitalization for MSMEs can be implemented if every MSME actor is digitally literate or accustomed to using technology daily (Nilamsari, Widjaja, & Matitaputty, 2020). Therefore, digital literacy can be a solution to realize more optimal digital MSME development. Jordana and Suwarto (2017) say that digital literacy is an adaptive ability that allows someone to utilize technical skills and collect, identify, and understand various information available on the internet network. Therefore, the role of MSMEs as a driving force for the national economy also requires implementing a comprehensive strategy to be competitive and sustainable. In order to increase digital literacy, a collaboration between the government, business actors, and the wider community also needs to be intensified to grow an effective contribution to its implementation. The government can carry out outreach by utilizing social media that is easily accessible by various business actors in a flexible way. On the other hand, business actors can also take the initiative to take advantage of technological developments such as the internet to find relevant information related to information about digitization. Meanwhile, people can spread awareness to each other regarding the importance of digitalization in this modern era, especially in adapting to the times.

4.6.2. Expanding the Reach of the MSME Go Online Movement

The UMKM Go Online movement launched by the government can expand its reach. Until now, UMKM Go Online is still focused on switching product sales and marketing methods from conventional to digital through e-commerce. However, the government can socialize this movement to internally renovate MSMEs, such as implementing digital recording and bookkeeping to realize the digitization of accounting information systems. This intensive socialization needs to include information about the advantages of digital bookkeeping and steps that MSMEs can implement to adapt towards digitalization.

4.6.3. Growing Awareness of the Importance of Digital Accounting Information Systems for MSMEs in Indonesia

Every MSME actor needs to know the importance of implementing a digital accounting information system to maintain his business. The transformation of financial records from manual to digital is also the first step for MSMEs to implement a digital accounting information system. However, every MSME actor also needs to be aware of the importance of recording and bookkeeping in identifying the income and expenses of a business. This can be a practical step for MSMEs to compile financial reports that can be evidence of the operational performance of the business. Later, financial reports can be used as evaluation material for MSMEs to make the right decisions, from repairs and improvements.

4.6.4. Socialization Around Blockchain and Training on Digitalization of Accounting Information Systems

Education regarding implementing blockchain as a decentralized ledger is an essential subject that MSME actors need to know. The advantages and benefits of blockchain in realizing the effectiveness of recording, compiling ledgers, and forming financial reports will help MSMEs control their financial performance and business operations. Transparency and guaranteed data security can provide benefits for MSME actors to ensure the security of transaction data or financial matters that are carried out. On the other hand, the involvement of each server or individual in accessing information through the blockchain system can support receiving the same information for each server and making

objective and acceptable decisions for each party. In broadening the insights of MSMEs regarding blockchain and digitizing financial records and bookkeeping, the government can facilitate by organizing digitalization training by partnering with several digital platforms and blockchain-based startups, such as Block Tech, Corechain, Vexanium, Rekeningku, Indodax, and others. Even though the target of this training is focused on business actors, this collaboration can be an attraction for the wider community who want to start a business to find information about digitizing accounting information systems and blockchain as a system capable of supporting the efficiency of this digitalization.

5. CONCLUSION

Empowerment of digitalization of MSMEs in Indonesia is an urgency that needs attention. The awareness of MSME actors to switch to digital products in carrying out bookkeeping and recording as part of the accounting information system also needs to be implemented honestly and regularly. This transformation can become a forum for MSME players to optimize their business performance and productivity, especially from the role of blockchain, which can facilitate financial management for MSMEs. Blockchain, a decentralized ledger, can build trust in a business by efficiently monitoring and controlling financial data such as daily transactions. This trust is manifested in data transparency that can be received by each server or member and accessed simultaneously, as for the availability of timestamps to ensure the exact time of transaction execution. In addition, data security and privacy guarantees can also be realized through validation and verification processes in the internal blockchain, the anonymity of each server, and the identity of each server or user, which will be encrypted to prevent data misuse, fraud, or other actions against the law. On the other hand, automation in the blockchain can speed up the processing of financial data while still guaranteeing the accuracy of financial report results to minimize or prevent data manipulation. Time and cost efficiencies can also be realized, from the flexibility of access, eliminating costs for intermediaries, to preventing human errors due to manual data input.

Therefore, the various advantages of blockchain need to be socialized to the public, especially MSME players who can support more effective and efficient business operations. In order to make this happen, it is crucial for every party, both from the business actors themselves, the government, and the wider community, to contribute to disseminating information regarding the importance of implementing digital accounting information systems and the role of blockchain in digitalization to become an attraction for transformation from what was previously carried out manually to digital. This socialization can also attract business actors to begin to realize the importance of recording and bookkeeping to control the business's financial performance.

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2. Bukti Korespondensi Review Artikel (Tanggal 15 Februari 2023)

From: **JATIT** <editor@jatit.org>
Date: Wednesday, Feb 15, 2023 at 2:10 PM
Subject: Evaluation Form
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The enclosed manuscript is under consideration for the journal. Please provide feedback on the following criteria so that further process my be initiated

Mark where appropriate	YES	NO
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Does the title accurately reflect the content?	x	
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Are the English and syntax of the paper satisfactory?		x
Is the paper concise? (If not, please indicate which parts might be cut?)		
Does the paper develop a logical argument or a theme?	x	
Do the conclusions sensibly follow from the work that is reported?	?	

Are the references authoritative and representative?	x	
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Additional Comments: Paper is conditionally approved

Emphasize research contribution in abstract introduction and conclusions. Both are weak and need rework

Introduction covers the what, but lacks the why part. Improve the same

Clearly mention what this work does and does not cover.

Conceptualization basis needs to be strong. Why is this a problem that needs attention?

Make clear the type of research design and steps to achieve target results.

Evidence presented to support claims is weak. Improve the same and include more diverse holistic examples.

The findings have not been critiqued against the current literature

In conclusions also suggest any questions the paper's argument raises but cannot or does not try to answer

Hasil revisi artikel *(warna abu-abu)*

BLOCKCHAIN UTILIZATION IN ACTIONS TO EMPOWER DIGITALIZATION OF ACCOUNTING INFORMATION SYSTEMS FOR SMALL AND MEDIUM-SIZED ENTITIES IN INDONESIA

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Abstract

Implementing a digital accounting information system supports efficient financial performance management for MSMEs in Indonesia. However, some MSMEs still need to apply manual financial recording and bookkeeping due to limited ability and insight regarding the digitalization of financial management. This research aims to identify and analyze the role and solution steps in realizing the empowerment of digitizing accounting information systems through blockchain to realize effectiveness for MSMEs in managing and controlling financial performance. This study uses a qualitative descriptive method based on primary data through questionnaires and secondary data from previous research obtained by studying the literature on relevant journals, articles, and documents. The results of this study indicate that there are still MSME actors who still need to keep records or bookkeeping and MSME actors who apply manual methods in managing their finances. On the other hand, the combination of digitizing accounting information systems with blockchain can optimize the financial performance of MSMEs so that comprehensive socialization is needed to create awareness and initiatives to transform towards digital. This is the first study conduct on the utilization of blockchain in actions to empower digitalization of accounting information systems for MSMEs in Indonesia.

Keywords: *Digitization, Accounting Information System, Blockchain, MSMEs, Decentralization, Technology Transformation*

1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) have an essential role in the national economy. MSMEs also contribute to the provision of productive employment for the community. This contribution is realized through its ability to absorb 119.6 million or 96.92% of the total workforce in Indonesian business units (Ministry of Cooperatives and Small and Medium Enterprises, 2021). On the other hand, MSMEs also contribute up to 61.1% of the Gross Domestic Product (GDP) (Ministry of Finance of the Republic of Indonesia, 2020).

The multiplier growth of MSMEs has an impact on increasingly fierce competition. On the other hand, every business actor needs to formulate a comprehensive strategy for adopting digital technology to compete with various competitors and adapt to the times. Digitizing MSMEs can be an opportunity, as well as a challenge in maintaining the potential and existence of the business, if implemented. The transformation of business patterns from conventional to digital also needs to be empowered in a realistic way to facilitate technology transfer for each business sector. Not only in the creation and innovation of products or services, but a business's operation also needs to be balanced with the ability to adopt digitalization. This can be a supportive aspect in realizing more optimal performance by adapting to technology.

Although it is often found that many MSMEs have entered digitization through e-commerce, the Indonesian people's financial literacy index can be said to be weak, namely at the level of 38.03% (Financial Services Authority, 2019). This problem is evidenced by one of the common problems for MSMEs, namely the preparation of business documents such as bookkeeping and financial reports carried out manually. MSME actors have the notion that technology in accounting can complicate financial records, so many business actors still need to adopt technology in processing financial data from their business activities (Ayunita & Husnah, 2021). In addition, there is an assumption that the implementation of accounting information systems in financial planning and management is only limited to collecting income and expenses, then accumulating them to determine whether their business makes a profit or a loss.

MSME actors need to understand more about the application of accounting information systems in designing bookkeeping to financial reports that are more organized and regular. An accounting information system is an organization of forms, records, and reports that are aligned in such a way as to provide the financial information needed by management (Romey & Steinbart, 2016). The presence of an accounting information system for MSMEs is a means of managing various important reports to support the validity and efficiency of each report (Rahmawati, Subagyo, & Budiadi, 2019). The existence of an accounting information system will be an opportunity for MSME actors to identify problems to make the right decisions for the sustainability of their business. The creation of an effective accounting information system will impact the ease with which this information is received and in accordance with expectations, especially regarding the credibility and accuracy of the data (Widjajanto, 2001). Digitization can be a forum for making it easier for every MSME actor to apply accounting information digitally. The combination of information systems and digitization is a guideline for MSMEs in managing directed and well-controlled businesses.

A blockchain is a form of digitization in the current era of modernization. As a result of technological advances, blockchain does not utilize and apply the participation of third parties in the data transfer process in a transaction process (Witami & Suartana, 2019). The use of blockchain supports efficiency and transparency in digital data storage, primarily due to its ability to record data without editing or changing it. Blockchain's ability to accurately maintain various transaction histories in ledgers and for everyone to see makes blockchain the right choice for realizing transparency in a business. The existence of the blockchain also guarantees data security for every transaction carried out by a business so that it can minimize the risk of fraud or fraud. On the other hand, the application of blockchain also impacts cost efficiency for MSMEs so that it can support more optimal business productivity.

1.1. Problem Formulation

1.1.1. What is the role of digitizing accounting information systems for MSMEs in Indonesia?

1.1.2. What is the role and correlation between blockchain and accounting information systems?

1.1.3. How does blockchain work for accounting information systems?

1.1.4. What are the exemplary efforts to socialize the use of blockchain for MSMEs in Indonesia?

1.2. Purpose of the Paper

This research aims to understand the essential role of blockchain in digitizing accounting information systems that can optimize MSMEs' performance in Indonesia. The other goal is to create a solution for MSMEs in carrying out financial planning in the form of effective and efficient digital bookkeeping.

1.3. Benefits of the Paper

1.3.1. For Researchers

1.3.1.1. A forum for developing researchers' insights regarding implementing digitization, such as blockchain and accounting information systems in managing MSME finance in Indonesia.

1.3.2. For the University

1.3.2.1. Relevant information forum that can be used as a reference between students regarding blockchain's role in empowering digitization of accounting information systems for MSMEs in Indonesia.

1.3.3. For MSMEs

1.3.3.1. A forum for empowering MSMEs in Indonesia regarding the essential role of implementing digital accounting information systems for sustainable business continuity.

1.3.3.2. A place of enrichment for MSMEs in Indonesia in understanding and implementing blockchain, which can create efficiency and effectiveness in sustaining business operations.

2. LITERATURE REVIEW

2.1. Blockchain

Blockchain is a decentralized or distributed open ledger (Leoputra, 2021). Blockchain guarantees data transparency by having the ability to maintain data authenticity when a transaction enters the blockchain (Hartoyo et al., 2021). This statement is supported by decentralization in the blockchain so that each server has an equal capacity that will be connected. Connected decentralization aims to prevent and minimize deviations due to data differences in recording (Hartoyo et al., 2021). Therefore, blockchain can benefit MSMEs, especially by guaranteeing the resulting securities, data transparency, and time efficiency obtained during their use to support sustainable business continuity. This view is supported by analysis from Koolwal, Mohbey, and Kumar (2019), which states that blockchain has several features which, include:

2.1.1. Decentralization

The blockchain's efficiency is reflected in the decentralization that supports the

creation of distributed peer-to-peer money transactions. This supports server cost savings and reduces central sector performance bottlenecks caused by a centralized management system.

2.1.2. Automatic Execution Contract

Smart contracts on the blockchain are automatically executed code stored to support transaction operations and act as a substitute for a legal contract. Smart contracts support the implementation of tasks that will be completed more quickly.

2.1.3. Auditability

Transaction recording includes a timestamp which can simplify the validation and verification process. In addition, records in the previously recorded time can also be traced. The aim is to increase the operational transparency of data management and prevent fraud.

2.1.4. Persistent

Minimization of data damage can be realized due to a transaction recording validation process that allows the records to be freely distributed but do not have the opportunity to be copied.

2.1.5. Anonymity

Each user with their respective server can efficiently communicate in the blockchain network. However, the privacy and security of addresses, data and transactions can still be guaranteed due to the absence of a centralized recording system.

In its development, there have been four generations of blockchains that have evolved, including:

2.1.1. Blockchain 1.0

Blockchain 1.0, the first phase of the blockchain, presents the transition from a traditional recording of transactions to digital. Phase 1.0 focuses on the financial sector, such as financial calculators, first-generation computers, and ATMs (Ministry of Communication and Informatics, 2018). On the other hand, blockchain 1.0 aims to create efficient financial transactions that can be carried out without using intermediaries. The presence of the first blockchain in Indonesia is due to the support from blockchain globally. Blockchain development underlies people's aspirations to achieve a broader world openness (Trujillo, 2017). Blockchain 1.0 was first introduced by Hall Finley in 2005 through the implementation of distributed ledger technology with the first applications based on Crypto currencies such as Bitcoin.

2.1.2. Blockchain 2.0

The emergence of a phase marks blockchain development after blockchain 1.0, namely blockchain 2.0. This phase is supported by implementing blockchain in the banking sector and having a share in the market economy. In addition, phase 2.0 expands the use of currencies that were previously only based on Crypto currencies by implementing Smart Contracts, which are automated computer programs that carry out agreement clauses based on agreements between the parties related to the agreement, such as clauses for payment, delivery, guarantees, and force majeure (Tanumihardjo & Putra, 2022).

2.1.3. Blockchain 3.0

According to Arief, Sundara, & Syahputra (2019), the improvisation of phase 2.0 can be seen from blockchain 3.0. This phase introduces decentralized applications, namely DApps. Such decentralization will not involve an element of centralization on one party to minimize the possibility of data manipulation. On the other hand, DApps have several types according to their functions, such

as those specifically for transaction processing and merging transaction processes with smart contracts.

2.1.4. Blockchain 4.0

At this stage, blockchain is expected to contribute to realizing progress from implementing industry 4.0. Blockchain 4.0 optimizes what was already in phase 3.0, such as data security tightness, and maximizes the potential for data processing speed (Rizky et al., 2021). On the other hand, blockchain allows businesses to carry out operations by switching to applications that guarantee data security and privacy. In addition, each data will be recorded by itself in a decentralized ledger due to the automation that is created.

2.2. Accounting Information System

The accounting information system is a computerized accounting system capable of processing financial data related to transaction data in the accounting cycle (Jaya, 2018). On the other hand, an accounting information system is a system that aims to collect and process data that will be reported in the form of financial transaction information (Diana & Setiawati, 2011). Similar to what was disclosed by Kusrini and Koniyo (2007), an accounting information system can transform business transactions into useful financial information for its users. Five dimensions can be utilized to measure the quality of an accounting information system: integration, flexibility, accessibility, formality, and timeliness (Heidmann, 2008). Therefore, every business needs to have the ability to adopt and adapt technological developments so that they can implement relevant accounting information systems to support better business quality. On the other hand, implementing an accounting information system will create efficiency for every business in creating transparency, minimizing human error, supporting decision-making, and providing opportunities for every business to plan, control, and manage their business more optimally. According to Muda et al. (2017), components of the accounting information system include:

2.2.1. Hardware

Hardware includes physical equipment that collects, records, manages, stores, and displays information as a result of data processing.

2.2.2. Software

Software is a program that is aligned with driving applications on a computer. Software classification includes system software and application software.

2.2.3. Brainware

Human resources (HR) act as data managers to produce information.

2.2.4. Procedure

Procedure as a series of repetitive activities refers to incoming information and views on related information.

2.2.5. Database

The database can be interpreted as a collection of data stored on the computer.

2.3. MSME

Based on Law no. 20 of 2008, Micro, Small, and Medium Enterprises (MSMEs) are productive businesses owned by individuals or business entities that meet the criteria for micro-enterprises and have a maximum net worth of Rp. 50,000,000 (fifty million rupiahs), excluding land and buildings where the business is located. Alternatively, have annual sales of at most Rp. 300,000,000.00 (three hundred million rupiahs). MSMEs are essential and contribute to realizing national economic development goals, such as economic growth, employment opportunities, increasing foreign exchange, and regional economic development (Sinarwati et al., 2019). In order

to maximize business operations, support long-term business sustainability, and increase competitiveness among the many competitors, every MSME actor needs to adopt digital technology to realize effective business performance.

2.4. Digitalization

For MSMEs, digitalization can present opportunities to expand markets, networks, and product opportunities to be widely known by the public (Astuti, Kartono, and Rahmadi, 2020). Collaboration between advances in information technology and the internet which creates digitalization becomes a forum for the community to carry out effective and efficient business activities (Yuniarti et al., 2022). Therefore, MSME actors are expected to be able to adopt and implement digitization in their business if they want to survive in increasingly fierce competition in the business world (Purwana, Rahmi, and Aditya, 2017). Digitalization can affect the business environment, how companies work, and the company's internal and operating environment. This effect is supported by digitalization capabilities in creating internal efficiencies, such as more optimal performance with effective implementation of digital facilities, external opportunities, such as service renewal, and disruptive change, which is a fundamental change in business roles (Kumorojati, 2021).

3. RESEARCH AND METHODOLOGY

3.1. Research Method

Qualitative research, according to Mujahidin (2019: 5) aims to explore and find answers to a phenomenon by utilizing a qualitative approach so that it can understand the phenomena experienced by the object of research, such as behavior, perceptions, motivations, actions, and others. When observed from the number of respondents as research objects, qualitative research methods tend to observe research objects in smaller numbers compared to quantitative research because they prioritize data depth rather than data quantity (Soegianto et al., 1989). In this study, researchers distributed questionnaires to respondents who met the criteria for their role as active MSME actors. The distribution of the questionnaires utilized the Google form and was carried out from January 3, 2023, to January 10, 2023. In addition, the data collection technique researchers used was a literature study. Researchers use various written sources such as articles, journals, and relevant documents to support this study (Surani, 2019).

3.2. Data Collection Method

Data collection was carried out using qualitative primary and secondary databases. According to Sari (2020), primary data is obtained by researchers based on the direct analysis carried out on the object under study. Primary data for this study was obtained by distributing questionnaires to informants. On the other hand, secondary data is obtained from information that has been obtained from previous researchers, which researchers will collect to support the factuality of this study.

3.3. Population and Sample

Sugiyono (2018) defines a population as an object or research subject with specific characteristics according to the criteria set by the researcher to be observed and conclusions drawn. In contrast, the sample is defined as part of the number of characteristics possessed by the population concerned. This study took 20 respondents with the following criteria:

3.3.1. Boys and girls aged 18-25 years

3.3.2. Have experience working as an MSME actor or have worked in an MSME

3.3.3. Carry out records or bookkeeping both manually and digitally to manage the operations and finances of the implemented MSMEs

4. HASIL DAN PEMBAHASAN

4.1. Respondent Profile

4.1.1. Based on Domicile

Domicile	Jabodetabek	Outside of Jabodetabek
Number of Samples	17	3

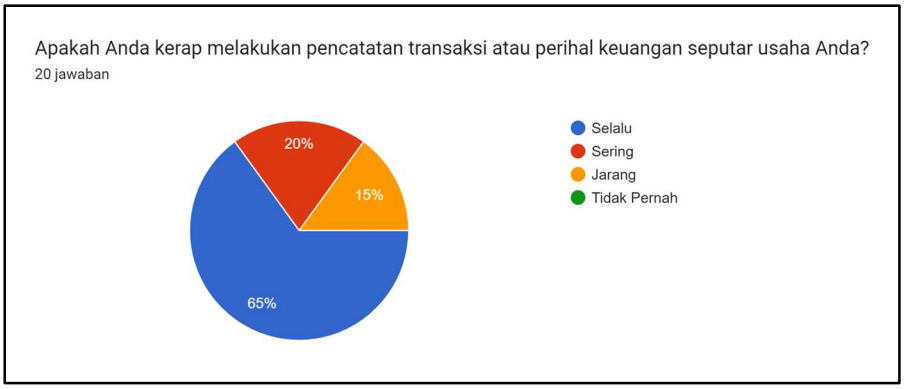
4.1.2. Based on type of MSME

MSMEs Type	Number of Samples
Food and Beverages	15
Clothing	4
Beauty	1

4.1.3. Based on the Length of Time for Business Implementation

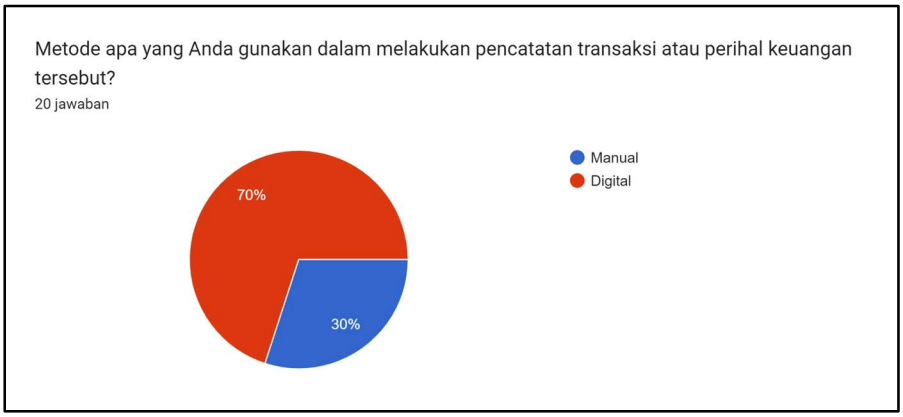
Length of Time for Business Implementation	Number of Samples
1 - 6 months	9
7 - 12 months	8
1 - 2 months	3

4.1.4. Based on the Recording of Transactions or Financial Matters



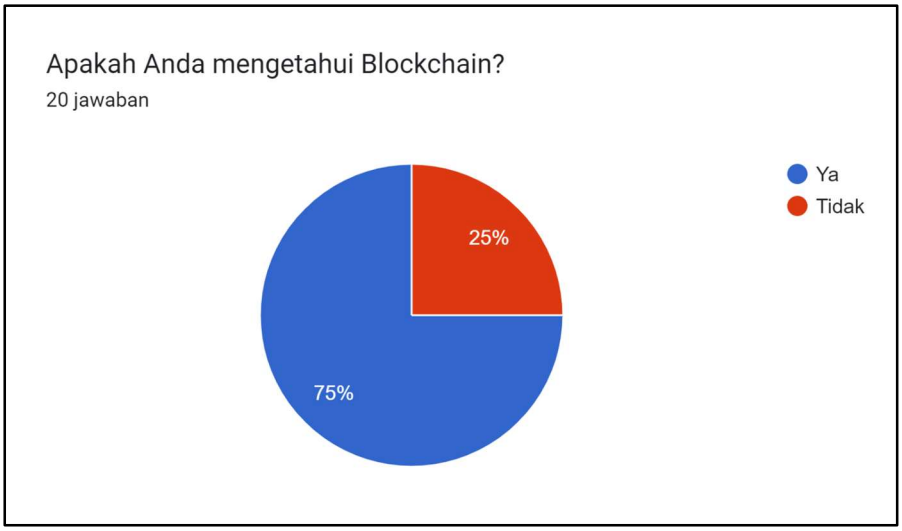
Recording of Transactions or Financial Matters	Number of Samples
Always	13
Often	4
Rarely	3

4.1.5. Based on the Method of Recording Transactions or Financial Matters



Recording Method	Number of Samples
Manual	6
Digital	14

4.1.6. Based on the Knowledge of Blockchain



Knowledge of Blockchain	Number of Samples
Yes	15
No	5

4.1.7. Conclusion of Respondent Profile

Based on the respondent data collected and analyzed through the chart above, it can be concluded that many MSMEs have switched to utilizing digital technology for recording and bookkeeping related business financial transactions, namely 14 respondents or 70%. However, MSME actors who still use the manual method are also quite prominent, namely, as many as six respondents or 30%. On the other hand, a large number of MSME actors already know blockchain, namely as many as 15 respondents or the equivalent of 75%. However, five respondents, or 25% of MSMEs, need to learn about blockchain. Therefore, it can be concluded that the empowerment of digitization for MSMEs in implementing digital recording and bookkeeping also needs to be improved, especially from the presence of many benefits both in terms of efficiency, security, and flexibility in accessing financial data that can make it easier for MSME actors to manage his finances. In addition, information dissemination regarding blockchain also needs to be realized to broaden business people's insights about the benefits of blockchain in digital bookkeeping.

4.2. Digitalization of Accounting Information Systems for MSMEs in Indonesia

Based on the research results from the questionnaires that have been distributed, twenty respondents who act as MSME actors have realized the importance of organized financial recording and bookkeeping. Recording and bookkeeping can be a way for every business actor to identify the operations and conditions of the business sector being developed so that they can make the right decisions regarding the continuity and sustainability of their business. However, digitization in financial records and bookkeeping is still an urgency that needs to be considered by the community, especially for MSME actors.

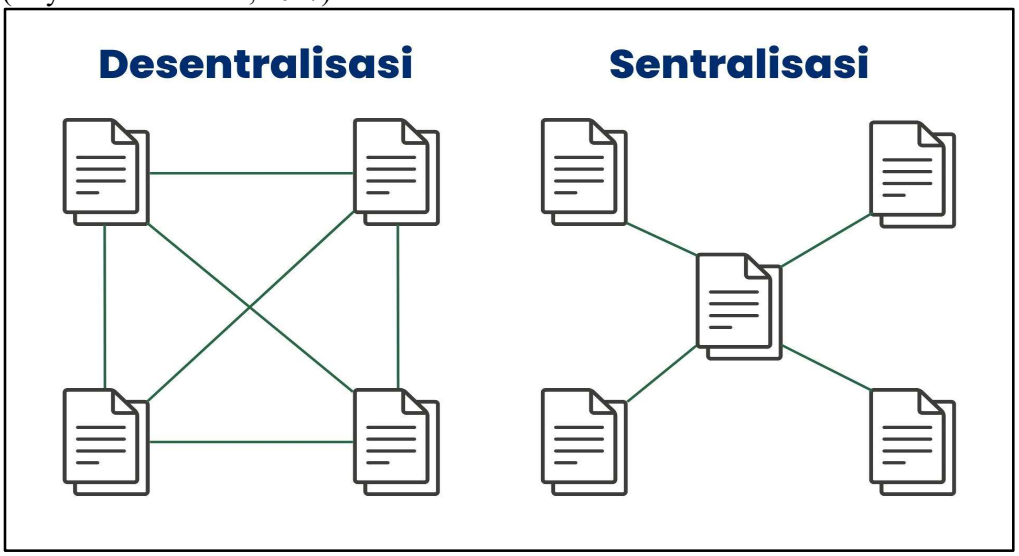
To accommodate more optimal UMKM Go Digital, the implementation of digitization does not only cover the process of online product marketing or promotion

but also how to manage finances and business operations digitally. The transition from manual to digital recording and bookkeeping is a form of implementing information technology that is right on target in managing financial data. Suppose MSME actors can understand the workings, benefits, and goals of digitizing accounting information systems. In that case, this can support them to empower competent use of technology for their businesses. MSME actors can easily prepare detailed, coherent, and accurate financial reports to create efficiency in observing business financial conditions.

Digitalization as a form of implementing information technology can contribute to optimizing the ability of the accounting function, such as guaranteeing the preparation of financial reports that are accurate, timely, and flexible, in the sense that they can be accessed by anyone, anytime and anywhere (Al-Khasawneh et al., 2022). Financial reports are also an essential contributor to making decisions that are right on target and evaluating the operational performance of the business. On the other hand, accounting information in financial reports can also be a forum for determining and determining business capital more effectively to support better business productivity. In order to realize the digitization of the accounting information system, the participation of all components of the accounting information system is required so that the implementation of digitization can be realized and effectively.

4.3. Blockchain in Accounting Information System

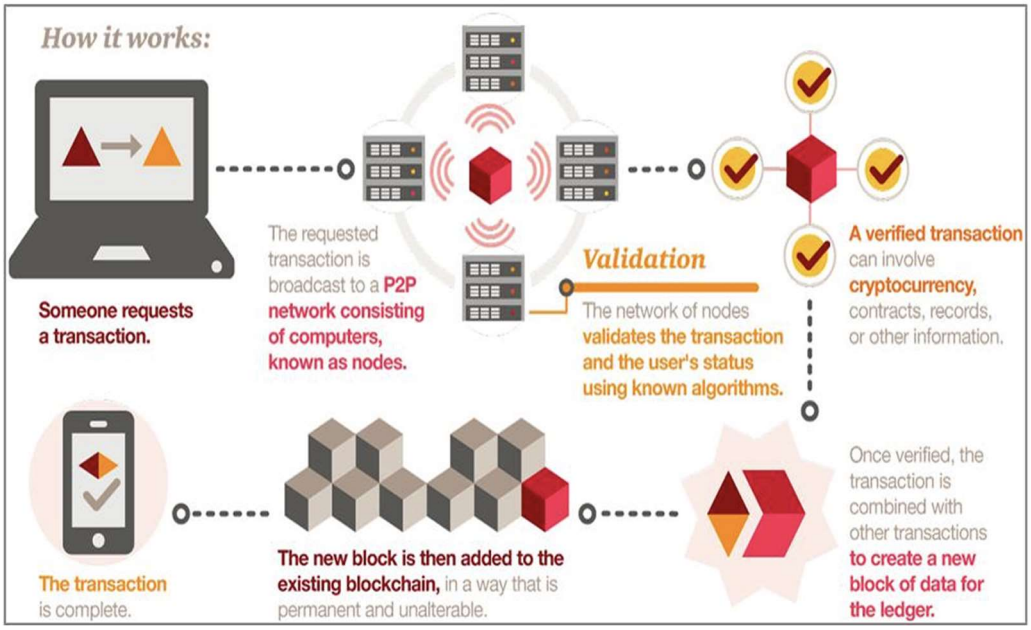
Blockchain, as a form of digitization, has the essential potential to open up opportunities for improving the performance and productivity of MSME financial records and accounting. In Indonesia, the development of blockchain technology can be seen from the emergence of the Indonesian Blockchain Association, which includes various large companies, such as Blocksphere, Blocktech, Vexanium, and Tokocrypto. Based on an analysis from Potekhina and Rumkin (2017), as software, the essence of blockchain appears in the ability to read, record, and publish transactions in an accounting information system. Concerning accounting in preparing ledgers and financial reports, Blockchain can ensure that the data entered is genuine and not manipulated. The validity of this data can be validated and verified through a timestamp available in transaction data and financial documents. In addition, changes to recorded accounting data will be recorded automatically and in real-time. Therefore, blockchain is not an alternative to existing accounting ledgers but enhances the recording and bookkeeping of all business records with guarantees that are more secure and efficient (Coyne & McMickle, 2017).



Source: Researcher, 2023

The main advantage of blockchain implementation is the decentralization of each server. This advantage creates equal opportunities for each server to access recorded data. In addition, each server will be connected to facilitate effective communication, and decision-making is a joint result, not unilateral. This decentralization also aims to minimize bias and influence the final, objective decision. Each server can know changes in information to data to minimize the occurrence of miscommunication which can hinder work productivity. Compared to centralization, decisions will be centered on a central server, and the inability of servers to communicate with each other will cause a subjective bias.

4.4. How the Blockchain Works



Source: PWC 2018

Based on the picture above, when someone wants to make a transaction, the transaction request will be recorded by the internal blockchain system and channeled through a peer-to-peer (P2P) network on the computer. P2P acts as a communication model on a network that has been decentralized and consists of a group of devices that are familiarly called individual nodes or peers. P2P networks have several advantages, such as decentralized communication. This communication will not be centered on the central server only, but each node has the same power to carry out the same responsibilities. In addition, the P2P network also opens equal opportunities for each server or individual to process, validate and verify transactions. Each server will be connected automatically. Furthermore, each transaction will be verified and transcribed into a record. The validation steps for related transactions will conform to each server's criteria or rules mutually agreed upon.

On the other hand, the verification process in the blockchain aims to reconfirm the validity and correctness of the transaction details. The verification process will also include blockchain mining by applying the Proof of Work (PoW) principle to prevent detrimental data manipulation or corruption. After going through the validation and verification process, the transaction will be combined with other transactions to prepare a general ledger. Transactions that have been combined and stored in all blockchain nodes will automatically be permanent, or the information cannot be changed. The aim is to ensure data transparency and prevent the falsification of information.

4.5. Blockchain for MSME

In facing various obstacles to MSMEs, such as financing, recording, operations, and services that have not been implemented optimally, the potential of blockchain has the opportunity to create efficiencies for the constraints experienced by MSMEs so that the continuity and sustainability of MSMEs can be guaranteed. The presence of blockchain not only focuses on the financial sector but also covers other sectors such as trade, business, retail, and logistics. Every MSME actor can also create security in transactions with producers, distributors, and consumers. Transparency, as one of the advantages of blockchain, can support MSMEs to ensure that all transactions carried out are recorded in detail, accurately, and have reliable validity. Data verification and validation in the internal blockchain can make it easier for MSME players to track transaction data. On the other hand, this transparency can be seen in that all transactions that have been recorded cannot be deleted, thereby preventing a server from modifying, manipulating, or deleting stored data. In addition, every incoming transaction will be recorded in real-time, and there is a timestamp to ensure the execution time of the transaction, which can be proof of the accuracy of the transaction.

In addition to transparency, MSMEs can enjoy the advantages of blockchain from the guarantee of data security. The blockchain connected to each server will duplicate each data sequentially so that each server gets the same data. The guarantee of identity data privacy is guaranteed by the blockchain so that each user can maintain the confidentiality of their respective data. Thus, the flexibility of the blockchain can be seen from the concept of blockchain technology, namely transparency while maintaining user privacy by hiding the user's identity, which will be automatically encrypted (Harahap, Aini, & Anam, 2020). One of the blockchain programs, namely smart contracts, can also create time and cost efficiencies because the transaction process will be recorded digitally and does not require a third party or intermediary to process the transaction. Even though smart contracts have yet to be widely implemented in Indonesia, they can provide opportunities for MSME players to start digitizing their businesses (Margahayu, 2021). Therefore, the presence of blockchain for MSMEs can provide significant benefits for business operations and internal, ranging from security, transparency, decentralization, and privacy, as well as time and cost efficiency.

4.6. Actions to Empower the Digitalization of Accounting Information Systems and Utilization of Blockchain for MSMEs in Indonesia

4.6.1. Increasing the Digital Literacy of MSMEs in Indonesia

Digital transformation requires society to adapt to the times. Society's ability to utilize technology also needs to be empowered in a realistic way for self-awareness to be literate. Digitalization for MSMEs can be implemented if every MSME actor is digitally literate or accustomed to using technology daily (Nilamsari, Widjaja, & Matitaputty, 2020). Therefore, digital literacy can be a solution to realize more optimal digital MSME development. Jordana and Suwarto (2017) say that digital literacy is an adaptive ability that allows someone to utilize technical skills and collect, identify, and understand various information available on the internet network. Therefore, the role of MSMEs as a driving force for the national economy also requires implementing a comprehensive strategy to be competitive and sustainable. In order to increase digital literacy, a collaboration between the government, business actors, and the wider community also needs to be intensified to grow an effective contribution to its implementation. The government can carry out outreach by

utilizing social media that is easily accessible by various business actors in a flexible way. On the other hand, business actors can also take the initiative to take advantage of technological developments such as the internet to find relevant information related to information about digitization. Meanwhile, people can spread awareness to each other regarding the importance of digitalization in this modern era, especially in adapting to the times.

4.6.2. Expanding the Reach of the MSME Go Online Movement

The UMKM Go Online movement launched by the government can expand its reach. Until now, UMKM Go Online is still focused on switching product sales and marketing methods from conventional to digital through e-commerce. However, the government can socialize this movement to internally renovate MSMEs, such as implementing digital recording and bookkeeping to realize the digitization of accounting information systems. This intensive socialization needs to include information about the advantages of digital bookkeeping and steps that MSMEs can implement to adapt towards digitalization.

4.6.3. Growing Awareness of the Importance of Digital Accounting Information Systems for MSMEs in Indonesia

Every MSME actor needs to know the importance of implementing a digital accounting information system to maintain his business. The transformation of financial records from manual to digital is also the first step for MSMEs to implement a digital accounting information system. However, every MSME actor also needs to be aware of the importance of recording and bookkeeping in identifying the income and expenses of a business. This can be a practical step for MSMEs to compile financial reports that can be evidence of the operational performance of the business. Later, financial reports can be used as evaluation material for MSMEs to make the right decisions, from repairs and improvements.

4.6.4. Socialization Around Blockchain and Training on Digitalization of Accounting Information Systems

Education regarding implementing blockchain as a decentralized ledger is an essential subject that MSME actors need to know. The advantages and benefits of blockchain in realizing the effectiveness of recording, compiling ledgers, and forming financial reports will help MSMEs control their financial performance and business operations. Transparency and guaranteed data security can provide benefits for MSME actors to ensure the security of transaction data or financial matters that are carried out. On the other hand, the involvement of each server or individual in accessing information through the blockchain system can support receiving the same information for each server and making objective and acceptable decisions for each party. In broadening the insights of MSMEs regarding blockchain and digitizing financial records and bookkeeping, the government can facilitate by organizing digitalization training by partnering with several digital platforms and blockchain-based startups, such as Block Tech, Corechain, Vexanium, Rekeningku, Indodax, and others. Even though the target of this training is focused on business actors, this collaboration can be an attraction for the wider community who want to start a business to find information about digitizing accounting information systems and blockchain as a system capable of supporting the efficiency of this digitalization.

5. CONCLUSION

Empowerment of digitalization of MSMEs in Indonesia is an urgency that needs attention. The awareness of MSME actors to switch to digital products in carrying out bookkeeping and recording as part of the accounting information system also needs to be implemented honestly and regularly. This transformation can become a forum for MSME players to optimize their business performance and productivity, especially from the role of blockchain, which can facilitate financial management for MSMEs. Blockchain, a decentralized ledger, can build trust in a business by efficiently monitoring and controlling financial data such as daily transactions. This trust is manifested in data transparency that can be received by each server or member and accessed simultaneously, as for the availability of timestamps to ensure the exact time of transaction execution. In addition, data security and privacy guarantees can also be realized through validation and verification processes in the internal blockchain, the anonymity of each server, and the identity of each server or user, which will be encrypted to prevent data misuse, fraud, or other actions against the law. On the other hand, automation in the blockchain can speed up the processing of financial data while still guaranteeing the accuracy of financial report results to minimize or prevent data manipulation. Time and cost efficiencies can also be realized, from the flexibility of access, eliminating costs for intermediaries, to preventing human errors due to manual data input.

Therefore, the various advantages of blockchain need to be socialized to the public, especially MSME players who can support more effective and efficient business operations. In order to make this happen, it is crucial for every party, both from the business actors themselves, the government, and the wider community, to contribute to disseminating information regarding the importance of implementing digital accounting information systems and the role of blockchain in digitalization to become an attraction for transformation from what was previously carried out manually to digital. This socialization can also attract business actors to begin to realize the importance of recording and bookkeeping to control the business's financial performance.

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BLOCKCHAIN UTILIZATION IN ACTIONS TO EMPOWER DIGITALIZATION OF ACCOUNTING INFORMATION SYSTEMS FOR SMALL AND MEDIUM-SIZED ENTITIES IN INDONESIA

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ABSTRACT

Implementing a digital accounting information system supports efficient financial performance management for MSMEs in Indonesia. However, some MSMEs still need to apply manual financial recording and bookkeeping due to limited ability and insight regarding the digitalization of financial management. This research aims to identify and analyze the role and solution steps in realizing the empowerment of digitizing accounting information systems through blockchain to realize effectiveness for MSMEs in managing and controlling financial performance. This study uses a qualitative descriptive method based on primary data through questionnaires and secondary data from previous research obtained by studying the literature on relevant journals, articles, and documents. The results of this study indicate that there are still MSME actors who still need to keep records or bookkeeping and MSME actors who apply manual methods in managing their finances. On the other hand, the combination of digitizing accounting information systems with blockchain can optimize the financial performance of MSMEs so that comprehensive socialization is needed to create awareness and initiatives to transform towards digital. This is the first study conduct on the utilization of blockchain in actions to empower digitalization of accounting information systems for MSMEs in Indonesia.

Keywords: *Digitization, Accounting Information System, Blockchain, MSMEs, Decentralization, Technology Transformation*

1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) have an essential role in the national economy. MSMEs also contribute to the provision of productive employment for the community. This contribution is realized through its ability to absorb 119.6 million or 96.92% of the total workforce in Indonesian business units (Ministry of Cooperatives and Small and Medium Enterprises, 2021). On the other hand, MSMEs also contribute up to 61.1% of the Gross Domestic Product (GDP) (Ministry of Finance of the Republic of Indonesia, 2020).

The multiplier growth of MSMEs has an impact on increasingly fierce competition. On the other hand, every business actor needs to formulate a comprehensive strategy for adopting digital technology to compete with various competitors and adapt to the times. Digitizing MSMEs can be an opportunity, as well as a challenge in maintaining the potential and existence of the business, if implemented. The transformation of business patterns from conventional to digital also needs to be empowered in a realistic way to facilitate technology transfer for each business sector. Not only in the creation and innovation of products or services, but a business's operation also needs to be balanced with the ability to adopt digitalization. This can be a supportive aspect in realizing more optimal performance by adapting to technology [1,16].

Although it is often found that many MSMEs have entered digitization through e-commerce, the Indonesian people's financial literacy index can be said to be weak, namely at the level of 38.03% (Financial Services Authority, 2019). This problem is evidenced by one of the common problems for MSMEs, namely the preparation of business documents such as bookkeeping and financial reports carried out manually. MSME actors have the notion that technology in accounting can complicate financial records, so many business actors still need to adopt technology in processing financial data from their business activities (Ayunita & Husnah, 2021). In addition, there is an assumption that the implementation of accounting information systems in financial planning and management is only limited to collecting income and expenses, then accumulating them to determine whether their business makes a profit or a loss [2, 17].

MSME actors need to understand more about the application of accounting information systems in designing bookkeeping to financial reports that are more organized and regular [4, 19]. An accounting information system is an organization of forms, records, and reports that are aligned in such a way as to provide the financial information needed by management (Romey & Steinbart, 2016). The presence of an accounting information system for MSMEs is a means of managing various important reports to support the validity and efficiency of each report (Rahmawati, Subagyo, & Budiadi, 2019). The existence of an accounting information system will be an opportunity for MSME actors to identify problems to make the right decisions for the sustainability of their business. The creation of an effective accounting information system will impact the ease with which this information is received and in accordance with expectations, especially regarding the credibility and accuracy of the data (Widjajanto, 2001). Digitization can be a forum for making it easier for every MSME actor to apply accounting information digitally. The combination of information systems and digitization is a guideline for MSMEs in managing directed and well-controlled businesses [5, 20]..

A blockchain is a form of digitization in the current era of modernization. As a result of technological advances, blockchain does not utilize and apply the participation of third parties in the data transfer process in a transaction process (Witami & Suartana, 2019). The use of blockchain supports efficiency and transparency in digital data storage, primarily due to its ability to record data without editing or changing it. Blockchain's ability to accurately maintain various transaction histories in ledgers and for everyone to see makes blockchain the right choice for realizing transparency in a business. The existence of the blockchain also guarantees data security for every transaction carried out by a business so that it can minimize the risk of fraud or fraud. On the other hand, the application of blockchain also impacts cost efficiency for MSMEs so that it can support more optimal business productivity [3,18].

1.1. Problem Formulation

1.1.1. What is the role of digitizing accounting information systems for MSMEs in Indonesia?

1.1.2. What is the role and correlation between blockchain and accounting information systems?

1.1.3. How does blockchain work for accounting information systems?

1.1.4. What are the exemplary efforts to socialize the use of blockchain for MSMEs in Indonesia?

1.2. Purpose of the Paper

This research aims to understand the essential role of blockchain in digitizing accounting information systems that can optimize MSMEs' performance in Indonesia. The other goal is to create a solution for MSMEs in carrying out financial planning in the form of effective and efficient digital bookkeeping.

1.3. Benefits of the Paper

1.3.1. For Researchers

1.3.1.1. A forum for developing researchers' insights regarding implementing digitization, such as blockchain and accounting information systems in managing MSME finance in Indonesia.

1.3.2. For the University

1.3.2.1. Relevant information forum that can be used as a reference between students regarding blockchain's role in empowering digitization of accounting information systems for MSMEs in Indonesia.

1.3.3. For MSMEs

1.3.3.1. A forum for empowering MSMEs in Indonesia regarding the essential role of implementing digital accounting information systems for sustainable business continuity.

1.3.3.2. A place of enrichment for MSMEs in Indonesia in understanding and implementing blockchain, which can create efficiency and effectiveness in sustaining business operations [6, 21].

2. LITERATURE REVIEW

2.1 Blockchain

Blockchain is a decentralized or distributed open ledger (Leoputra, 2021). Blockchain guarantees data transparency by having the ability to maintain data authenticity when a transaction enters the blockchain (Hartoyo et al., 2021). This statement is supported by decentralization in the blockchain so that each server has an equal capacity that will be connected. Connected decentralization aims to prevent and minimize deviations due to data differences in recording (Hartoyo et al., 2021). Therefore, blockchain can benefit MSMEs, especially by guaranteeing the resulting securities, data transparency, and time efficiency obtained during their use to support sustainable business continuity [7, 22]. This view is supported by analysis from Koolwal, Mohbey, and Kumar (2019), which states that blockchain has several features which, include:

2.1.1. Decentralization

The blockchain's efficiency is reflected in the decentralization that supports the creation of distributed peer-to-peer money transactions. This supports server cost savings and reduces central sector performance bottlenecks caused by a centralized management system [8, 23].

2.1.2. Automatic Execution Contract

Smart contracts on the blockchain are automatically executed code stored to support transaction operations and act as a substitute for a legal contract. Smart contracts support the implementation of tasks that will be completed more quickly [10, 25].

2.1.3. Auditability

Transaction recording includes a timestamp which can simplify the validation and verification process. In addition, records in the previously recorded time can also be traced. The aim is to increase the operational transparency of data management and prevent fraud [11, 26].

2.1.4. Persistent

Minimization of data damage can be realized due to a transaction recording validation process that allows the records to be freely distributed but do not have the opportunity to be copied.

2.1.5. Anonymity

Each user with their respective server can efficiently communicate in the blockchain network. However, the privacy and security of addresses, data and transactions can still be guaranteed due to the absence of a centralized recording system.

In its development, there have been four generations of blockchains that have evolved, including:

2.1.1. Blockchain 1.0

Blockchain 1.0, the first phase of the blockchain, presents the transition from a traditional recording of transactions to digital. Phase 1.0 focuses on the financial sector, such as financial calculators, first-generation computers, and ATMs (Ministry of Communication and Informatics, 2018). On the other hand, blockchain 1.0 aims to create efficient financial transactions that can be carried out without using intermediaries. The presence of the first blockchain in Indonesia is due to the support from blockchain globally. Blockchain development underlies people's aspirations to achieve a broader world openness (Trujillo, 2017). Blockchain 1.0 was first introduced by Hall Finley in 2005 through the implementation of distributed ledger technology with the first applications based on Crypto currencies such as Bitcoin [9, 24].

2.1.2. Blockchain 2.0

The emergence of a phase marks blockchain development after blockchain 1.0, namely blockchain 2.0. This phase is supported by implementing blockchain in the banking sector and having a share in the market economy. In addition, phase 2.0 expands the use of currencies that were previously only based on Crypto currencies by implementing Smart Contracts, which are automated computer programs that carry out agreement clauses based on agreements between the parties related to the agreement, such as clauses for payment, delivery, guarantees, and force majeure (Tanumihardjo & Putra, 2022).

2.1.3. Blockchain 3.0

According to Arief, Sundara, & Syahputra (2019), the improvisation of phase 2.0 can be seen from blockchain 3.0. This phase introduces decentralized applications, namely DApps. Such decentralization will not involve an element of centralization on one party to minimize the possibility of data manipulation. On the other hand, DApps have several types according to their functions, such as those specifically for transaction processing and merging transaction processes with smart contracts [12, 27].

2.1.4. Blockchain 4.0

At this stage, blockchain is expected to contribute to realizing progress from implementing industry 4.0. Blockchain 4.0 optimizes what was already in phase 3.0, such as data security tightness, and maximizes the potential for data processing speed (Rizky et al., 2021). On the other hand, blockchain allows businesses to carry out operations by switching to applications that guarantee data security and privacy. In addition, each data will be recorded by itself in a decentralized ledger due to the automation that is created.

2.2 Accounting Information System

The accounting information system is a computerized accounting system capable of processing financial data related to transaction data in the accounting cycle (Jaya, 2018). On the other hand, an accounting information system is a system that aims to collect and process data that will be reported in the form of financial transaction information (Diana & Setiawati, 2011). Similar to what was disclosed by Kusrini and Koniyo (2007), an accounting information system can transform business transactions into useful financial information for its users [11, 29].. Five dimensions can be utilized to measure the quality of an accounting information system: integration, flexibility, accessibility, formality, and timeliness (Heidmann, 2008). Therefore, every business needs to have the ability to adopt and adapt technological developments so that they can implement relevant accounting information systems to support better business quality. On the other hand, implementing an accounting information system will create efficiency for every business in creating transparency, minimizing human error, supporting decision-making, and providing opportunities for every business to plan, control, and manage their business more optimally. According to Muda et al. (2017), components of the accounting information system include:

2.2.1. Hardware

Hardware includes physical equipment that collects, records, manages, stores, and displays information as a result of data processing.

2.2.2. Software

Software is a program that is aligned with driving applications on a computer. Software classification includes system software and application software.

2.2.3. Brainware

Human resources (HR) act as data managers to produce information.

2.2.4. Procedure

Procedure as a series of repetitive activities refers to incoming information and views on related information.

2.2.5. Database

The database can be interpreted as a collection of data stored on the computer.

2.3 MSME

Based on Law no. 20 of 2008, Micro, Small, and Medium Enterprises (MSMEs) are productive businesses owned by individuals or business entities that meet the criteria for micro-enterprises and have a maximum net worth of Rp. 50,000,000 (fifty million rupiahs), excluding land and buildings where the business is located. Alternatively, have annual sales of at most Rp. 300,000,000.00 (three hundred million rupiahs). MSMEs are essential and contribute to realizing national economic development goals, such as economic growth, employment opportunities, increasing foreign exchange, and regional economic development (Sinarwati et al., 2019). In order to maximize business operations, support long-term business sustainability, and increase competitiveness among the many competitors, every MSME actor needs to adopt digital technology to realize effective business performance [12, 30].

2.4 Digitalization

For MSMEs, digitalization can present opportunities to expand markets, networks, and product opportunities to be widely known by the public (Astuti, Kartono, and Rahmadi, 2020). Collaboration between advances in information technology and the internet which creates digitalization becomes a forum for the community

to carry out effective and efficient business activities (Yuniarti et al., 2022). Therefore, MSME actors are expected to be able to adopt and implement digitization in their business if they want to survive in increasingly fierce competition in the business world (Purwana, Rahmi, and Aditya, 2017). Digitalization can affect the business environment, how companies work, and the company's internal and operating environment. This effect is supported by digitalization capabilities in creating internal efficiencies, such as more optimal performance with effective implementation of digital facilities, external opportunities, such as service renewal, and disruptive change, which is a fundamental change in business roles (Kumorojati, 2021).

3. RESEARCH AND METHODOLOGY

3.1 Research Method

Qualitative research, according to Mujahidin (2019: 5) aims to explore and find answers to a phenomenon by utilizing a qualitative approach so that it can understand the phenomena experienced by the object of research, such as behavior, perceptions, motivations, actions, and others. When observed from the number of respondents as research objects, qualitative research methods tend to observe research objects in smaller numbers compared to quantitative research because they prioritize data depth rather than data quantity (Soegianto et al., 1989). In this study, researchers distributed questionnaires to respondents who met the criteria for their role as active MSME actors. The distribution of the questionnaires utilized the Google form and was carried out from January 3, 2023, to January 10, 2023. In addition, the data collection technique researchers used was a literature study. Researchers use various written sources such as articles, journals, and relevant documents to support this study (Surani, 2019).

3.2 Data Collection Method

Data collection was carried out using qualitative primary and secondary databases. According to Sari (2020), primary data is obtained by researchers based on the direct analysis carried out on the object under study. Primary data for this study was obtained by distributing questionnaires to informants. On the other hand, secondary data is obtained from information that has been obtained from previous researchers, which researchers will collect to support the factuality of this study.

3.3 Population and Sample

Sugiyono (2018) defines a population as an object or research subject with specific characteristics according to the criteria set by the researcher to be observed and conclusions drawn. In contrast, the sample is defined as part of the number of characteristics possessed by the population concerned. This study took 20 respondents with the following criteria:

3.3.1. Boys and girls aged 18-25 years

3.3.2. Have experience working as an MSME actor or have worked in an MSME

3.3.3. Carry out records or bookkeeping both manually and digitally to manage the operations and finances of the implemented MSMEs

4. RESULT

4.1 Respondent Profile

4.1.1 Based on Domicile

Domicile	Jabodetabek	Outside of Jabodetabek
Number of Samples	17	3

4.1.2. Based on type of MSME

MSMEs Type	Number of Samples
Food and Beverages	15
Clothing	4
Beauty	1

4.1.3. Based on the Length of Time for Business Implementation

How long have you been doing this business?

Length of Time for Business Implementation	Number of Samples
1 - 6 months	9
7 - 12 months	8
1 - 2 months	3

4.1.4. Based on the Recording of Transactions or Financial Matters

Do you often record transactions or financial matters about your business?

20 answers

Recording of Transactions or Financial Matters	Number of Samples
Always	13
Often	4
Rarely	3

4.1.5. Based on the Method of Recording Transactions or Financial Matters

What method do you use in recording transactions or financial matters?

20 answers

Recording Method	Number of Samples
Manual	6
Digital	14

4.1.6. Based on the Knowledge of Blockchain

Do you know blockchain?

20 answers

Knowledge of Blockchain	Number of Samples
Yes	15
No	5

4.1.7. Conclusion of Respondent Profile

Based on the respondent data collected and analyzed through the chart above, it can be concluded that many MSMEs have switched to utilizing digital technology for recording and bookkeeping related business financial transactions, namely 14 respondents or 70%. However, MSME actors who still use the manual method are also quite prominent, namely, as many as six respondents or 30%. On the other hand, a large number of MSME actors already know blockchain, namely as many as 15 respondents or the equivalent of 75%. However, five respondents, or 25% of MSMEs, need to learn about blockchain. Therefore, it can be concluded that the empowerment of digitization for MSMEs in implementing digital recording and bookkeeping also needs to be improved, especially from the presence of many benefits both in terms of efficiency, security, and flexibility in accessing financial data that can make it easier for MSME actors to manage his finances. In addition, information dissemination regarding blockchain also needs to be realized to broaden business people's insights about the benefits of blockchain in digital bookkeeping.

4.2 Digitalization of Accounting Information Systems for MSMEs in Indonesia

Based on the research results from the questionnaires that have been distributed, twenty respondents who act as MSME actors have realized the importance of organized financial recording and bookkeeping. Recording and bookkeeping can be a way for every business actor to identify the operations and conditions of the business sector being developed so that they can make the right decisions regarding the continuity and sustainability of their business. However, digitization in financial records and bookkeeping is still an urgency that needs to be considered by the community, especially for MSME actors [13, 19].

To accommodate more optimal UMKM Go Digital, the implementation of digitization does not only cover the process of online product marketing or promotion but also how to manage finances and business operations digitally. The transition from manual to digital recording and bookkeeping is a form of implementing information technology that is right on target in managing financial data. Suppose MSME actors can understand the workings, benefits, and goals of digitizing accounting information systems. In that case, this can support them to empower competent use of technology for their businesses. MSME actors can easily prepare detailed, coherent, and accurate financial reports to create efficiency in observing business financial conditions [14, 20].

Digitalization as a form of implementing information technology can contribute to optimizing the ability of the accounting function, such as guaranteeing the preparation of financial reports that are accurate, timely, and flexible, in the sense that they can be accessed by anyone, anytime and anywhere (Al-Khasawneh et al., 2022). Financial reports are also an essential contributor to

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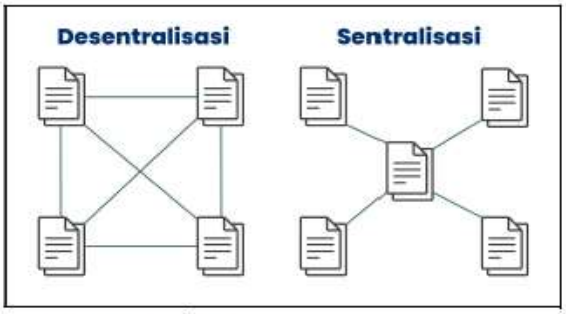
making decisions that are right on target and evaluating the operational performance of the business. On the other hand, accounting information in financial reports can also be a forum for determining and determining business capital more effectively to support better business productivity. In order to realize the digitization of the accounting information system, the participation of all components of the accounting information system is required so that the implementation of digitization can be realized and effectively [15, 22].

4.3 Blockchain in Accounting Information System

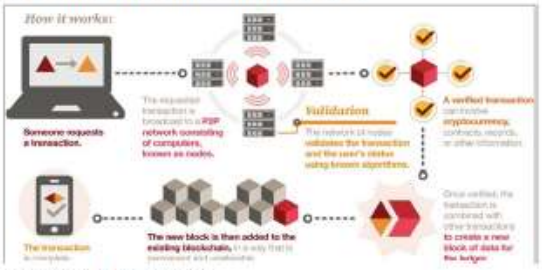
Blockchain, as a form of digitization, has the essential potential to open up opportunities for improving the performance and productivity of MSME financial records and accounting. In Indonesia, the development of blockchain technology can be seen from the emergence of the Indonesian Blockchain Association, which includes various large companies, such as Blocksphere, Blocktech, Vexanium, and Tokocrypto. Based on an analysis from Potekhina and Rumkin (2017), as software, the essence of blockchain appears in the ability to read, record, and publish transactions in an accounting information system. Concerning accounting in preparing ledgers and financial reports, Blockchain can ensure that the data entered is genuine and not manipulated. The validity of this data can be validated and verified through a timestamp available in transaction data and financial documents. In addition, changes to recorded accounting data will be recorded automatically and in real-time. Therefore, blockchain is not an alternative to existing accounting ledgers but enhances the recording and bookkeeping of all business records with guarantees that are more secure and efficient (Coyne & McMickle, 2017).



Source: Researcher, 2023

The main advantage of blockchain implementation is the decentralization of each server. This advantage creates equal opportunities for each server to access recorded data. In addition, each server will be connected to facilitate effective communication, and decision-making is a joint result, not unilateral. This decentralization also aims to minimize bias and influence the final, objective decision. Each server can know changes in information to data to minimize the occurrence of miscommunication which can hinder work productivity. Compared to centralization, decisions will be centered on a central server, and the inability of servers to communicate with each other will cause a subjective bias [16, 27].

4.4 How the Blockchain Works



Source: PWC 2018

Based on the picture above, when someone wants to make a transaction, the transaction request will be recorded by the internal blockchain system and channeled through a peer-to-peer (P2P) network on the computer. P2P acts as a communication model on a network that has been decentralized and consists of a group of devices that are familiarly called individual nodes or peers. P2P networks have several advantages, such as decentralized communication. This communication will not be centered on the central server only, but each node has the same power to carry out the same responsibilities. In addition, the P2P network also opens equal opportunities for each server or individual to process, validate and verify transactions. Each server will be connected automatically. Furthermore, each transaction will be verified and transcribed into a record. The validation steps for related transactions will conform to each server's criteria or rules mutually agreed upon.

On the other hand, the verification process in the blockchain aims to reconfirm the validity and correctness of the transaction details. The verification process will also include blockchain mining by applying the Proof of Work (PoW) principle to prevent detrimental data manipulation or corruption. After going through the validation

and verification process, the transaction will be combined with other transactions to prepare a general ledger. Transactions that have been combined and stored in all blockchain nodes will automatically be permanent, or the information cannot be changed. The aim is to ensure data transparency and prevent the falsification of information.

4.5. Blockchain for MSME

In facing various obstacles to MSMEs, such as financing, recording, operations, and services that have not been implemented optimally, the potential of blockchain has the opportunity to create efficiencies for the constraints experienced by MSMEs so that the continuity and sustainability of MSMEs can be guaranteed. The presence of blockchain not only focuses on the financial sector but also covers other sectors such as trade, business, retail, and logistics. Every MSME actor can also create security in transactions with producers, distributors, and consumers. Transparency, as one of the advantages of blockchain, can support MSMEs to ensure that all transactions carried out are recorded in detail, accurately, and have reliable validity. Data verification and validation in the internal blockchain can make it easier for MSME players to track transaction data. On the other hand, this transparency can be seen in that all transactions that have been recorded cannot be deleted, thereby preventing a server from modifying, manipulating, or deleting stored data. In addition, every incoming transaction will be recorded in real-time, and there is a timestamp to ensure the execution time of the transaction, which can be proof of the accuracy of the transaction.

In addition to transparency, MSMEs can enjoy the advantages of blockchain from the guarantee of data security. The blockchain connected to each server will duplicate each data sequentially so that each server gets the same data. The guarantee of identity data privacy is guaranteed by the blockchain so that each user can maintain the confidentiality of their respective data. Thus, the flexibility of the blockchain can be seen from the concept of blockchain technology, namely transparency while maintaining user privacy by hiding the user's identity, which will be automatically encrypted (Harahap, Aini, & Anam, 2020). One of the blockchain programs, namely smart contracts, can also create time and cost efficiencies because the transaction process will be recorded digitally and does not require a third party or intermediary to process the transaction. Even though smart contracts have yet to be widely implemented in Indonesia, they can provide opportunities for MSME players to start digitizing their businesses (Margahayu, 2021). Therefore, the presence of blockchain for MSMEs can provide significant benefits for business operations and internal, ranging from security, transparency, decentralization, and privacy, as well as time and cost efficiency.

4.6. Actions to Empower the Digitalization of Accounting Information Systems and Utilization of Blockchain for MSMEs in Indonesia

4.6.1. Increasing the Digital Literacy of MSMEs in Indonesia

Digital transformation requires society to adapt to the times. Society's ability to utilize technology also needs to be empowered in a realistic way for self-awareness to be literate. Digitalization for MSMEs can be implemented if every MSME actor is digitally literate or accustomed to using technology daily (Nilamsari, Widjaja, & Matitaputty, 2020). Therefore, digital literacy can be a solution to realize more optimal digital MSME development. Jordana and Suwarto (2017) say that digital literacy is an adaptive ability that allows someone to utilize technical skills and collect, identify, and understand various information available on the internet network. Therefore, the role of MSMEs as a driving force for the national economy also requires implementing a comprehensive strategy to be competitive and sustainable. In order to increase digital literacy, a collaboration between the government, business actors, and the wider community also needs to be intensified to grow an effective contribution to its implementation. The government can carry out outreach by utilizing social media that is easily accessible by various business actors in a flexible way. On the other hand, business actors can also take the initiative to take advantage of technological developments such as the internet to find relevant information related to information about digitization. Meanwhile, people can spread awareness to each other regarding the importance of digitalization in this modern era, especially in adapting to the times.

4.6.2. Expanding the Reach of the MSME Go Online Movement

The UMKM Go Online movement launched by the government can expand its reach. Until now, UMKM Go Online is still focused on switching product sales and marketing methods from conventional to digital through e-commerce. However, the government can socialize this

movement to internally renovate MSMEs, such as implementing digital recording and bookkeeping to realize the digitization of accounting information systems. This intensive socialization needs to include information about the advantages of digital bookkeeping and steps that MSMEs can implement to adapt towards digitalization.

4.6.3. Growing Awareness of the Importance of Digital Accounting Information Systems for MSMEs in Indonesia

Every MSME actor needs to know the importance of implementing a digital accounting information system to maintain his business. The transformation of financial records from manual to digital is also the first step for MSMEs to implement a digital accounting information system. However, every MSME actor also needs to be aware of the importance of recording and bookkeeping in identifying the income and expenses of a business. This can be a practical step for MSMEs to compile financial reports that can be evidence of the operational performance of the business. Later, financial reports can be used as evaluation material for MSMEs to make the right decisions, from repairs and improvements.

4.6.4. Socialization Around Blockchain and Training on Digitalization of Accounting Information Systems

Education regarding implementing blockchain as a decentralized ledger is an essential subject that MSME actors need to know. The advantages and benefits of blockchain in realizing the effectiveness of recording, compiling ledgers, and forming financial reports will help MSMEs control their financial performance and business operations. Transparency and guaranteed data security can provide benefits for MSME actors to ensure the security of transaction data or financial matters that are carried out. On the other hand, the involvement of each server or individual in accessing information through the blockchain system can support receiving the same information for each server and making objective and acceptable decisions for each party. In broadening the insights of MSMEs regarding blockchain and digitizing financial records and bookkeeping, the government can facilitate by organizing digitalization training by partnering with several digital platforms and blockchain-based startups, such as Block Tech, Corechain, Vexanium, Rekeningku, Indodax, and others. Even though the target of this training is focused on business actors, this collaboration can be an attraction for the wider community who want to start a business to find information about digitizing accounting information systems and blockchain as a system capable of supporting the efficiency of this digitalization.

5. CONCLUSION

Empowerment of digitalization of MSMEs in Indonesia is an urgency that needs attention. The awareness of MSME actors to switch to digital products in carrying out bookkeeping and recording as part of the accounting information system also needs to be implemented honestly and regularly. This transformation can become a forum for MSME players to optimize their business performance and productivity, especially from the role of blockchain, which can facilitate financial management for MSMEs. Blockchain, a decentralized ledger, can build trust in a business by efficiently monitoring and controlling financial data such as daily transactions. This trust is manifested in data transparency that can be received by each server or member and accessed simultaneously, as for the availability of timestamps to ensure the exact time of transaction execution. In addition, data security and privacy guarantees can also be realized through validation and verification processes in the internal blockchain, the anonymity of each server, and the identity of each server or user, which will be encrypted to prevent data misuse, fraud, or other actions against the law. On the other hand, automation in the blockchain can speed up the processing of financial data while still guaranteeing the accuracy of financial report results to minimize or prevent data manipulation. Time and cost efficiencies can also be realized, from the flexibility of access, eliminating costs for intermediaries, to preventing human errors due to manual data input.

Therefore, the various advantages of blockchain need to be socialized to the public, especially MSME players who can support more effective and efficient business operations. In order to make this happen, it is crucial for every party, both from the business actors themselves, the government, and the wider community, to contribute to disseminating information regarding the importance of implementing digital accounting information systems and the role of blockchain in digitalization to become an attraction for transformation from what was previously carried out manually to digital. This socialization can also attract business actors to begin to realize the

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importance of recording and bookkeeping to control the business's financial performance.

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