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Implementation of A Blockchain Security Solution For Indonesia Corporate Digital Economy Systems In 2025

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Abstract: Indonesia will have 275 millions of population by 2025 and the country is predicted to be the 4th rank of 10.5 Trillion USD GDP in the globe. A security of the company's financial system is very important for the sustainability of the company, especially in cases of alleged hacking by irresponsible individuals. Blockchain technology has been frequently discussed recently and it is predicted to be the safest technology today. This technology can be connected through cryptography and its use itself cannot be separated from Bitcoin and Cryptocurrency. Cryptocurrency has also gained the attention of many people all over the world, including Indonesia. Up to now, there has not yet been an assessment of the possibility to apply the blockchain technology for digital economy in Indonesia. As of October 2020, almost 30 million Indonesians own cryptocurrency and the country is also amongst the top countries in terms of the increase in use of Bitcoin. Blockchain may be one of choices and can be also applied for a decentralized digital medium and record-keeping capable of recording all transactions taken place. The application of the technology in an E-commerce service is also an urgent need because in carrying out the transaction process a security system is needed to maintain data confidentiality. There are several types of blockchain networks, the most popular being Etherium's ERC-20, where the world's first digital currency cryptocurrency, Bitcoin, runs, and now there are countless companies using Etherium's ERC-20 blockchain network. Due to the previously explained facts, this paper proposes the strategies of possibility to utilize blockchain-based digital economy in Indonesia by 2024. The strategies commence with SWOT analysis dealing with actions to support the application of it in the country. The all blockchain activities in the country will also be deliberated as well. The reason to choose the blockchain digital economy for the country will also be explained. Finally, the roles of government financial agencies and non-government stakeholders in Indonesia economy activities from time to time are also discussed, so blockchain technology could lead Indonesia economy digital-based taking place in a couple of years or at the end of 2023. Indeed, the country is believed to become the biggest digital economy in the ASEAN region by 2025.

Keywords: Blockchain, decentralized, cryptography, cryptocurrency, Indonesia

INTRODUCTION

Indonesia will have 275 millions of population by 2025 and the country is predicted to be the 4th rank of 10.5 Trillion USD GDP in the globe [1] and the security of the company's financial system is very important for the sustainability of the company, especially in cases of alleged hacking by irresponsible individuals so that the company has to bear considerable losses. Recently, Blockchain technology has been discussed frequently and it is predicted to be the safest technology today. Blockchain is a new technology developed for digital data storage systems. This technology is connected through cryptography and its use itself cannot be separated from Bitcoin and Cryptocurrency. Over the past few years, cryptocurrency has gained the attention of many people all over the world, including Indonesia. As of October 2020, nearly 30 million Indonesians own cryptocurrency and Indonesia is also amongst the top countries in terms of the increase in use of Bitcoin. Blockchain may be on of choices and also a decentralized digital medium and record-keeping capable of recording all transactions that take place. Blockchain is also considered a new technology that is believed to be able to answer problems related to security at this time. It is very possible that in the near future all fields related to finance will use the blockchain network. Furthermore, Blockchain is a technology for recording transactions that are interconnected using unique codes in it that are eternal and cannot be changed. How blockchain works when new transactions or edits to existing transactions enter the blockchain, generally most nodes in blockchain implementations must run algorithms to evaluate and verify the history of individual proposed blockchain blocks [1]. The application of blockchain technology in an E-commerce service is an urgent need because in carrying out the transaction process a security system is needed to maintain data confidentiality [2].

Moreover, Blockchain is also a digital ledger that is publicly distributed and managed by thousands of computers around the world at the same time. All transactions and data storage are guaranteed security because they are replicated across the blockchain network [3]. There are several types of blockchain networks, the most popular being Etherium's ERC-20, where the world's first digital currency cryptocurrency, Bitcoin, runs, and now there are countless companies using Etherium's ERC-20 blockchain network. However, with the development of blockchain technology, new competitors that offer a faster and cheaper blockchain network emerged, namely Binance's BEP-2 and BEP-20, then TRON's TRC-20 and many more. In terms of the blockchain programming language, namely Nodejs, which is an open-source and cross-platform runtime environment for JavaScript. With Nodejs, one can run JavaScript code anywhere, not just limited to the browser environment. When a system that is built wants to run on a blockchain network, an agreement or collaboration with the network owner must be made, which is called a Smart Contract. Smart contracts run on a blockchain network, so they are stored in a public database and cannot be changed. Transactions that occur in smart contracts will be processed by the blockchain, which means smart contracts can be sent automatically without third parties (banks, governments, brokers, etc.). In carrying out the Smart Contract, you can choose a package or network that suits your needs and the costs incurred so that transactions only occur when the conditions in the agreement are met. In the absence of a third party, there is no entity to trust in running a smart contract.

Based on the facts previously explained, this paper presents strategies of the facts of the progress of blockchain applications in Indonesia by 2023. The strategies commence with SWOT analysis dealing actions to be done to support the vision of digital economy blockchain-based in the country. The blockchain activities all of the country will be deliberated to support the vision. The reason to choose the blockchain digital economy for the country will also be explained. Finally, if all government and non-government stakeholders involve in all Indonesia economy activities from time to time, blockchain technology could be an Indonesia digital economy based in five years or at the end of 2023. Indeed, the country is believed to become the biggest digital economy in ASEAN region by 2025.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Research conducted by Peters, G. W., & Panayi, E. [4] with the title “Understanding modern banking ledgers through blockchain technologies: Future of transaction processing and smart contracts on the internet of money. In Banking beyond banks and money” [4], they explained the concept of blockchain technology and its potential to disrupt the banking world through global remittance facilities, smart contracts, automated banking ledgers, and digital assets. In “Technological Forecasting and Social Change” [5], it is explained the potential effects of blockchain technology on the enormous institutional economy and an economic theory of transaction costs. It is also explored the transactional nature of blockchain technology to propose models and the demonstration on how and why blockchain technology-based applications are said to be highly effective. Furthermore, Jabbar, A., & Dani, S. [6] conducted a research of the “Investigating the link between transaction and computational costs in a blockchain environment. In [6], a study was conducted aimed at investigating the relationship between blockchain transactions and computational costs, and this study used an experimental methodology. They developed and implemented a fully functional virtual public blockchain for storing, validating and maintaining transactions. The methodology provides a process for measuring the computational costs, frequency, and intensity of transactions. This research contributes to conceptual research on the blockchain implementation paradigm.

Bhowmik, D., & Feng, T. [7] carried out the research of "The multimedia blockchain: A distributed and tamper-proof media transaction framework" [7]. They proposed a watermarking-based Multimedia Blockchain framework that can address forgery issues in files, artwork, creative media and distributed entertainment content for various purposes including exhibitions, gallery collections or in media production workflows. The unique information watermark contains two pieces of information: a) a cryptographic hash containing the transaction history (blockchain transaction logs) and b) an image hash that retains the original retrievable media content. After the watermark is extracted, the first part of the watermark is passed to the distributed ledger to retrieve historical transaction traces and the last part is used to identify the edited/tampered part. Another research on blockchain was carried out by Habib, M. A., Sardar, M. B., Jabbar, S., Faisal, C. N., Mahmood, N., & Ahmad, M. [8]. They analyzed trust issues in supply chains and design new proposed schemes based on blockchain technology to solve problems in the supply chain and automate the entire payment process through smart contracts. Case study-based validation was carried out, and the results showed that blockchain improves transaction processing. Another research was conducted by Guo, Y., & Liang, C. [9] entitled "Blockchain application and outlook in the banking industry: Financial innovation" [9]. They proposed that blockchain technology can help the financial industry to automatically and accurately identify customer credit conditions, restructure financial market credit systems, and improve cross-border payment efficiency. Finally, the following sections explain the methodology of research, results and discussions and conclusion of the paper.

METHODS

Some of the research methodologies carried out in this study paper, including, a) literature review, in this review paper literature review is very important because by collecting research data that has been carried out by previous researchers it provides an overview and assessment from a different point of view. Searching for articles related to this study paper is very helpful in writing, as well as national and international journals providing many useful insights for authors and b) SWOT analysis, which stands for strengths, weaknesses, opportunities and threats. The SWOT analysis is a process of analysis and decision making and hence the strategies based on these 4 aspects have been made.

RESULT AND DISCUSSION

The following will explain the things that need to be done when it is associated with important matters relating to the digital economy with a blockchain base in Indonesia.

S (Strength)

The digital economy needs to be developed in Indonesia, considering that Indonesia has a population of 271 million today and is predicted to be 275 million in 2025. Indonesia is predicted to become the 4th country producing a GDP of 10.5 trillion USD in 2050. Considering that the whole world is moving towards a digital economy in 10 years. In the next 20 years, there is no doubt that Indonesia will progress further if its economy is supported by a digital economy.

W (Weakness)

Blockchain can be accessed by end-users from around the world, so it does not escape the cyber-attack threats. It is very possible that a blockchain user in Indonesia can be hacked from other countries in Europe, America/Canada or others. Therefore, collaboration with developed countries in Europe or America is very necessary so that the progress of the digital economy based on blockchain technology in Indonesia can be guaranteed.

O (Opportunities)

Regulations on cryptocurrencies have become clearer and in Indonesia, regulations regarding trading crypto assets have also been regulated in Banking Number 3 of 2020. With these regulations, it is very possible for users of blockchain technology to be guaranteed financial security because the state can be the guarantor of their existence. It is very possible that Indonesia becomes the biggest digital economy in ASEAN in the following years.

T (Threats)

Price fluctuations are the biggest source of doubt for investors about crypto assets, such as, bitcoin and crypto assets and others, but the existence of a stable coin token is expected to be the answer including guarantees from the state, that is the existence of blockchain technology in the country.

The Choice of Blockchain Technology for Indonesia.

On the blockchain there is a decentralized ledger feature, or recording of all connected computers. If there is one transaction that occurs on the blockchain network, the connected computers will record it and all records will produce the same value so that the transaction is declared valid, then the transaction is encrypted with other blockchain features, namely cryptography to lock the record so that it cannot be accessed. changed again. In Wallet Dogecoin case as seen in Figure 1, the existing transaction cannot be changed anymore, and the ownership has changed. This is called peer to peer, every transaction that does not require a third party, even if you have to transact in various countries as long as you have a wallet or address for the token or coin being transacted. The following is the test carried out to make transactions or transfer coins from the wallet in a peer to peer way. The coin that will be used is Dogecoin, because the transaction fees are quite cheap. First, a client should have to look for the Dogecoin wallet/address to receive the coins sent, usually found in the deposit menu.

Figure 1. Wallet Dogecoin [10].

Referring to Figure 1, after obtaining a Dogecoin wallet, save it carefully, because this address is very important, such as, an account number at a bank, if one letter is wrong, it is certain that the coin sent will never arrive. In the Figure above, the transaction fee for sending Dogecoin is 5 coins, then in the new doge address column, enter the wallet address you want to send and follow the next instructions. There are several stages to verify the delivery of this coin, namely, Google Auth and email, and when finished the coin has been successfully transferred and all transaction results will be recorded by the blockchain and can be accessed here at https://dogechain.info. In addition, it is noted that not only Dogecoin that can be used for transactions, but there are thousands of coins scattered on the blockchain network, all information regarding Cryptocurrencies is found on the http://coinmarketcap.com/ website, some even use the rupiah unit, namely IDK.

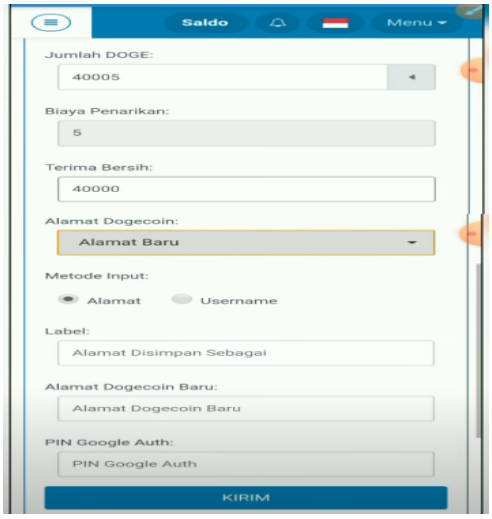

Figure 2. Example of Transfer Dogecoin [11].

Figure 3. Token of Indonesian Rupiah for the Blockchain (IDK) [12].

The Progress of Blockchain Application in Indonesia

Figure 4 showed the development of industry 1 from 1784 to industry 4 is today. In Industry 4.0, all activities are believed to continue to use digital technology and it is even possible that the role of artificial intelligence (AI) in industry 4 will become the main role for daily applications in the next 10-20 years. Furthermore, from Figure 8, it can be seen that although in 2022 the blockchain business is still very small and not much different from 2021 at around 38 billion USD, in 2030 the blockchain business is predicted to be around 3160 billion USD. In a period of 9 years from 2021 to 2030, the increase in the blockchain business is around 8300%. The author believes that the more people in a country love digital business, so it is more certain that they will also love more the blockchain business.

According to Bank Indonesia (BI), by 2025, Indonesia's digital business will be around 2500 trillion rupiah or around 178.5 billion USD.

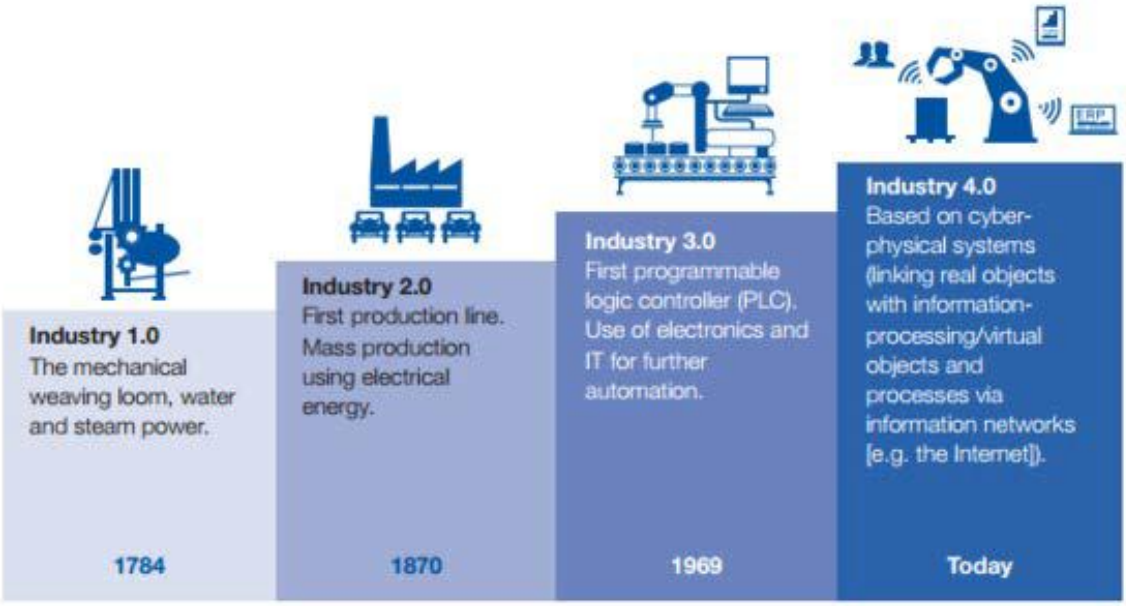

Figure 4. Sequential Development of Industry 1.0 to 4.0 [13].

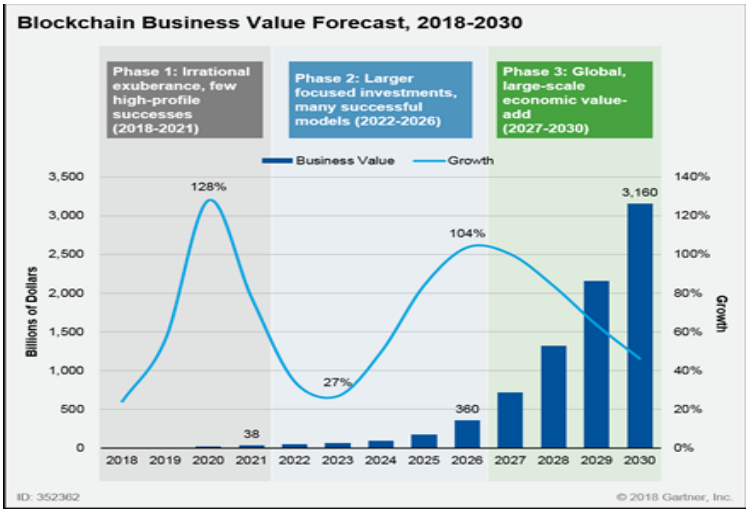

Figure 5. The World Blockchain Business Value Forecast 2018-2030 [14].

The progress of technology and information system force digitalization process such as e-commerce to emerge and in Indonesia. The utilization of e-commerce has flourished because it has many benefits and advantages to broaden the market and stay competitive [13]. However, it is faced with many challenges such as fraud, commission fees, limited contact between buyer and seller and misuse of personal data. Blockchain implementation has the potential to solve this problem with increased security and transparency through the implementation of cryptocurrency in payment and smart contracts. The Authors believe the usage of the blockchain, cryptocurrency and smart contract to e-commerce for a secure and efficient transaction in Indonesia. As soon in Table 1, there are the differences or advantages between virtual currencies and cryptocurrencies. It is very clear that the cryptocurrencies have a lot of more advantages that than the virtual currencies.

Table 1. Virtual Currencies versus Cryptocurrencies [13].

Term	Virtual currencies	Cryptocurrency
Specification	Can be altered by controlling party	Must be agreed by consensus
Purpose	Used within an online platform	Wider economy
Existence	Controlled by a central authority	No central authority
Identity	Known	Anonymously
Environment	Offline and Online	Online only
Currencies flow	Through 3rd party	Directly
Value generate	Have backing	Purely artificial

Source: Research data, 2022

The usage of e-commerce in Indonesia has been adopted by many companies, but it is not perfect and can be improved. Blockchain implementation has the ability to improve e-commerce and solve e-commerce problems. Through cryptocurrency, blockchain encourages p2p (peer-to-peer) payment removing the need for commission fee and limitation in the interaction between buyers and sellers. The smart contract will enforce the pre-condition ensuring the fairness and security. While ledgers establish the environment that transparent and decentralized. Blockchain still categorized as new technology, it is not complete and mature enough, so many countries including Indonesia does not have clear regulation about blockchain implementation because there are some risks in using blockchain and cryptocurrency such as money laundry and a black market. Furthermore, there are various benefits that can be achieved if blockchain technology is used in financial matters not only for individuals but also for companies. Blockchain finance can be easily traced with the digital system used (traceability). The entire blockchain-based financial transaction system is also very efficient considering that everything is used based on a sophisticated and secure digital system. Blockchain financial system collaboration will continue to be carried out and improved with all global digital financial institutions, so it will make easier and faster for financial transactions with any well-known party in the world. The blockchain security system continues to be improved from time to time using the latest security system, so the blockchain security for all its customers is guaranteed from time to time. Transparency and auditability are the main keys to blockchain, so every customer or blockchain user can clearly know their financial status at anytime and anywhere.

Indodax (Indonesia Digital Asset Exchange) is the oldest company in the country that uses the Blockchain concept [15]. indodax itself is the most popular cryto/exchange asset trading platform in Indonesia, the number of users in the country is very large, almost reaching 4.7 million users and almost are active users of Indodax services every day. Indodax's job as a Marketplace (provider and liaison) in digital transactions for assets that you want to buy or sell. Currently, Indodax has served as many as 178 digital assets, which can increase and decrease at any time, including Bitcoin, Ethereum, Ripple, Dash, Litecoin, and others, all information can be accessed on the https://indodax.com website. Furthermore, Pundi X is a startup company that uses Blockchain to process financial transactions quickly and cheaply [16]. One of them is the existence of a cash register (Point of Sales) which they named X POS. Similar to an electronic money card called Pundi X Pass. In addition, they also provide an application in the form of a digital wallet purse. The Pundi X expansion is not only targeting the homeland market, but a number of countries such as China, Malaysia, Singapore, Brazil, and are currently launching in Nigeria. In

addition, Pundi X is very professional and ready in today's Fintech world, all information can be accessed on the https://pundix.com/ website.

The Indonesia Blockchain Network (IBN) has been established as an advocate body that accommodates and facilitates the growth of Digital Ledge Books and technology in the field of Cryptocurrency. Its name is Indonesia Blockchain Network, and the deed foundation from IBN came out on April 4, 2018. Even though IBN is still young, they have a big idea, which is to help adopt the Blockchain concept globally. Later it can be implemented in all fields such as revolutionizing data, values, assets, contracts without involving third parties. IBN itself has nine Co-Founders from various backgrounds that make them collaborate with each other in the Blockchain field. Everything comes from young people who have great intentions to implement the Blockchain concept. all information can be accessed on the website https://idblockchain.network. In addition, HARA is a blockchain-based data exchange for the food and agriculture sector that has been operating since 2015. HARA provides farmers and other players in the agricultural sector with valuable data. HARA has obtained data that is usually difficult to find such as data on farmers, land, and weather in various provinces in Indonesia. This data is useful for institutions across sectors to make data-driven decisions. For example, HARA has succeeded in helping digitize the administrative processes and disbursement of loans from several financial institutions. In addition, data from HARA has been used in market research reports to provide reliable information about rice production in Indonesia. all information can be accessed on the website https://www.hara.ag. Furthermore, the Indonesian Blockchain Association promotes the adoption of blockchain in the country's education, regulations and commercialization sectors. Indonesia is a country of 17,508 islands and 260 million people, including 171 million internet users [17]. It actually has the highest percentage of mobile e-commerce of any country in the world — higher than China, South Korea and the U.S. In short: It's a huge market, dominated by the digital economy. ADB to develop blockchain network prototype for central banks' cross-border securities transactions. The ADB will partner with ConsenSys, Fujitsu, R3, and Soramitsu to create a blockchain network for the ASEAN+3 nations: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam, Japan, China, and South Korea.

The Asian Development Bank (ADB) has started a project to connect central banks in Asia and the Pacific region via blockchain technology to make their cross-border securities transactions faster and more secure [18]. The ADB said on January 26 that it was partnering with blockchain and technology companies ConsenSys, Fujitsu, R3, and Soramitsu on the project. The central banks involved include those of the ASEAN+3 nations, which include Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam, Japan, China, and South Korea. The project will also examine systems interoperability and the viability of central bank digital currencies in the region. "Cross-border securities transactions in the ASEAN+3 region are currently processed through a global network of custodians and correspondent banks, which go through global centers in either the United States or Europe. As a result, intraregional transaction settlements in ASEAN+3 take at least 2 days, due to time differences as well as varying operating hours for markets within the same time zone," the ADB said in a statement. By connecting the said institutions within a blockchain network, transaction costs and settlement risks could be reduced.

Road Map of Blockchain Technology as Digital Economy in Indonesia

As previous mention, it is needed to propose blockchain technology to become a basis of Indonesia digital currency in the near future or 2023 at the latest. The idea to achieve that vision is deployed in Figure 6.

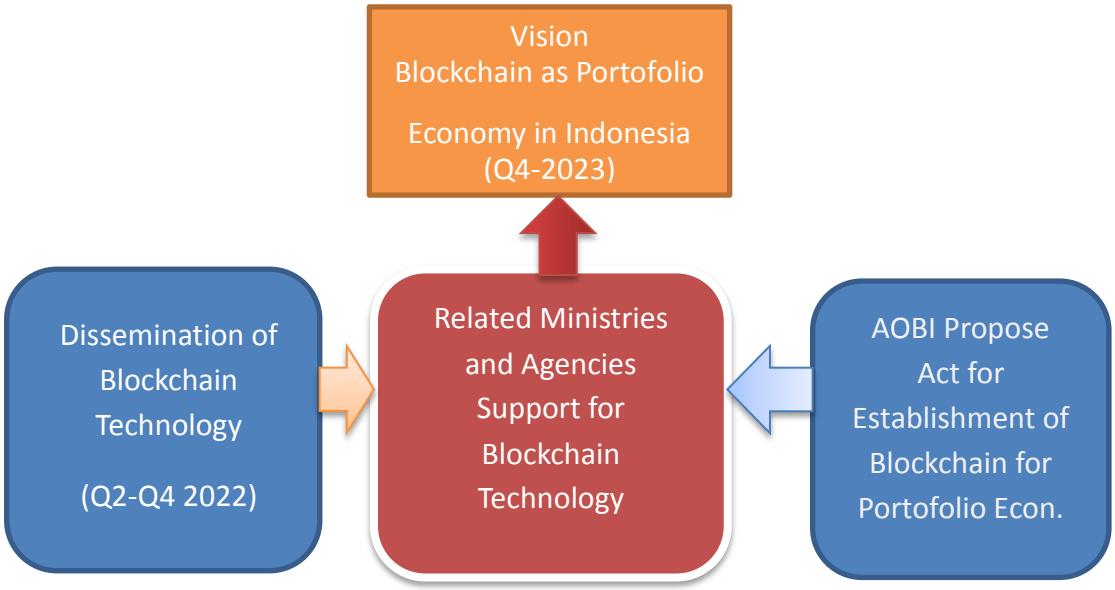

Figure 6. Steps Toward Blockchain Technology as Indonesia Digital Economy in 2023.

Dissemination of blockchain technology (BT) to all stakeholders is very important to achieve the vision of BT as Indonesia's economic basis in 2023 and the dissemination needs to be carried out starting in April 2022 and ending in December 2022. For this reason, the involvement of ministries and institutions needs to be coordinated on an ongoing basis. Therefore, it is highly recommended that all ministries and institutions in Indonesia need to be empowered and coordinated with the highest leadership of the President of the Republic of Indonesia by giving full authority to the Ministry of Economy, Finance and Industry. Furthermore, all ministries under the Coordinating Ministry for Economic Affairs need to carry out their duties and authorities related to the vision of Blockchain Technology as one of the economic bases of Indonesia in 2023.

In line with the dissemination of BT to all stakeholders, the Indonesian Blockchain Association (Association of Blockchain Indonesia, AoBI) needs to actively continue to disseminate and approach all relevant ministries and institutions including the People's Representative Council commission in charge of the economy. The aim is to make a goal of making a law on economic blockchain as one of the bases for Indonesia's digital economy starting in 2023. All of these activities are expected to be carried out in the 2nd and 3rd quarters of 2022, so that starting in early 2023, discussions between the government and the DPR to make the law achievable can be implemented in a timely manner. If all the things that were previously planned can be done on time, it is very possible that the Blockchain-Based Digital Economy vision can be implemented by the end of 2023 or no later than the beginning of 2024.

The Roles of Bank Indonesia (BI) and the Indonesia Financial Services Authority (OJK) on Blockchain Technology

Bank Indonesia (BI) is an independent institution, free from interference from the government and/or other parties, except for matters that are expressly regulated in The Act No. 3 year 2004 concerning Bank Indonesia. BI is domiciled in the capital city of the Republic of Indonesia and may have offices inside and outside the territory of the Republic of Indonesia. BI's objective is to achieve and maintain stability in the value of the rupiah. This goal needs to be supported by three main pillars, namely monetary policy with the principle of prudence, a fast and appropriate payment system, as well as a sound banking and financial system. The BI has the authority to set monetary targets by taking into account the

inflation rate that has been determined. They can also carry out monetary control by using methods such as open market operations on the money market, both rupiah and foreign currencies. The establishment of the supervisory agency was carried in the country on December 31, 2012. In order for the independence given to BI to be carried out with full responsibility, BI is required to be transparent and fulfill the principles of public accountability. Transparency and the principle of public accountability are carried out by a) Delivering information to the public openly through the mass media at the beginning of each fiscal year which includes an evaluation of the implementation of monetary policy in the previous year and the plan for monetary policy and setting monetary targets for the coming year. All of the report results of the examination should be submitted by the BPK to the DPR and announced by BI through the mass media. Other than BI, the country has also the Financial Services Authority (OJK), which is an institution authorized to regulate, supervise, examine, and investigate all transaction activities in the financial sector. OJK is also an independent institution and has its own legal basis which regulates all matters related to the main tasks and functions of the OJK, namely, Law no. 21 of 2011. Therefore, OJK has the freedom from intervention by any state institution and its main tasks and functions will not overlap with those of Bank Indonesia. In the banking sector, OJK as an independent institution should be in charge of compiling a supervisory system for all banks operating in Indonesia. The OJK is also obliged not only to enforce the law in the banking sector, but also to provide guidance, inspection and supervision in the banking sector. In the Capital Markets Sector, OJK has the task of formulating principles in financial management and transactions. Moreover, the OJK's special authority in supervising and regulating the banking sector concerns a) Licensing for the establishment of banks, opening of bank offices, articles of association, work plans, ownership, management and human resources, mergers, consolidations and bank acquisitions, as well as revocation of bank business licenses, b) Regulation and supervision of prudential aspects of banks, including risk management, bank governance, know-your-customer principles and anti-money laundering, and prevention of terrorism financing and banking crimes, as well as bank checks.

To show a global digital economy, 5G technology covering blockchain technology is expected to create approximately $ 3.6 T in economic output and 22.3 M jobs by 2035 in the global 5G value chain alone. For potential economic digital in Indonesia, the Bank of Indonesia predicted US$ 150 B or 2,064 Trillion Rupiahs in 2025 which met with Mc Kinsey popular research and the 5G also possibly contributes ultimately 9,5% to GDP (Gross Domestic Product) of around 2,874 Trillion Rupiahs in 2030 [19]. From the previous statement and all explanation in this paper, it is clear that the digital technology including blockchain grows very fast in Indonesia. Furthermore, there is an association of blockchain Indonesia covering private companies spread out all over the country and they have implemented blockchain technology in daily lives not only for personals purposes but also for corporate financial matters. Finally, to sustain the progress of blockchain implementation in daily lives as well as in corporate financial matters, the role of Indonesia government especially Bank Indonesia (BI) and Indonesia Financial Services Authority (Otoritas Jasa Keuangan, OJK) should actively involve to guarantee the application of blockchain technology based financial matters properly in the country. Finally, blockchain technology will finally increase national GDP in the following decade and Indonesia rupiah blockchain based as a digital currency will become real at the end of 2023 in the country. Indeed, Indonesia will become the biggest digital economy in ASEAN region by 2025.

CONCLUSION

From the results of the research above, it can be concluded that using a blockchain network can provide a higher level of security and all transaction results can be tracked so it is more transparent and avoids mistakes. Admittedly, no investment instrument is free from weaknesses and threats, including investing in crypto. However, this does not prevent many investors from buying and selling crypto. It is clear the digital technology including blockchain grows very fast in Indonesia. Furthermore, there is a lot of association of blockchain spread out all over the country and they have implemented in daily lives not only for personals

purposes but also for corporate financial matters. Finally, to sustain the progress of blockchain implementation in daily lives as well as in corporate financial matters, the role of Indonesia government especially for Bank of Indonesia and the Financial Services Authority (OJK) should actively involve to guarantee all implemented financial matters using blockchain technology. Finally, technology of blockchain will surely increase national GDP in the following decade and Indonesia rupiah blockchain based as a digital currency will become real at the end of 2023 in the country. Indeed, Indonesia will become the biggest digital economy in the ASEAN region by 2025.

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