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Application of Blockchain Technology for Digital Transaction Security on Business Incubator Websites

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Abstract

The application of Blockchain technology in the context of providing security for transactions in the digital era 4.0 to prevent manipulation of transaction recording reports by irresponsible parties. By using research methods 10 (ten) literature reviews and methods of formulating problems, designing research, collecting data, processing & presenting data, analysis & research reports are expected to solve security problems in transactions. At present security in transactions is still very minimal, therefore a blockchain technology is needed to secure transactions where data can still be manipulated. Specifically, there are 2 (two) benefits of this research that use blockchain technology, (1) transactions become safer in the presence of encryption codes, (2) transactions become more transparent with blockchain. This research implements the encryption code into the payment system using AI Coin, where payment is now cashless, to make it more secure and transparent in transactions.

Keywords: Blockchain, AI Coin, Encryption code

1. Introduction

Information-based technology in the digital era 4.0 currently has a very high influence on life. With the existing developments, now contributes to the payment system in daily activities. One of them aims to increase the effectiveness and efficiency [1]. This happens because technological sophistication requires the right time [2]. At present, cashless is becoming a very important payment alternative [3]. Cashless is a proof that someone has made or made a payment [4]. In addition there is a technology that is used as a reliable alternative, Blockchain Technology. These developments are able to encourage us to continue to learn and balance changes so as not to be left behind.

2. Research Method

Explaining research chronological, including research design, research procedure (in the form of algorithms, Pseudocode or other), how to test and data acquisition. The description of the course of research should be supported by references, so the explanation can be accepted scientifically. Tables and Figures are presented in the center, as shown below and cited in the manuscript as (Table 1) and (Figure 1).

Figure 1. Logo AI Coin

ABC (Alphabet Blockchain) is a blockchain technology that is carried by a campus incubator called the Alphabet Incubator which is used to protect all activities in the campus environment and the wider community. This system can issue security codes using blockchain technology, one of which is a certificate and AI Coin [5].

Figure 2. AI Coin Logo

AI Coin is a product produced by Alphabet Blockchain. AI Coin itself already uses blockchain technology where in the AI Coin there is an encryption code that can protect its use. There are 2 (two) problems, the first is that there is no online system for verifying the authenticity of AI Coin or it is still being done conventionally. The second is payment security and records that do not yet exist, so manipulation by irresponsible parties can occur. In addition, the recording process is also difficult to do because it can only be done by the central government [6].
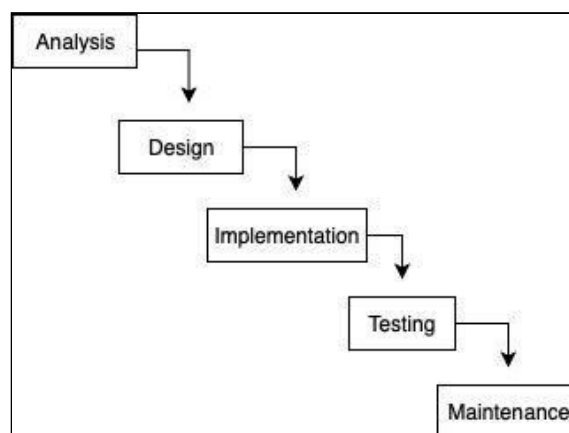

Figure 3. Waterfall Development Method

2. Research Method
2.1 Literature review

This research was conducted using literature review with the literature review method [13]. According to Rahardja, U. (2016), Literature Review discusses the subject of a journal or scientific work with the discussion to be studied relevant to previous or existing research topics [14]. The research that has been carried out becomes the foundation for the achievement of this research. There are 10 (ten) literature studies that are used as information for this research, including:

1. The study was conducted by Zyskind, G., & Nathan, O. (2015). This study describes a decentralized personal data management system that ensures users own and control their data. We implement a protocol that converts block chains into automatic access control that does not require trust in third parties [15].
2. The study was conducted by Wright, A., & De Filippi, P. (2015). This research is about Blockchain which enables the development of new governance systems with more democratic or participatory, and decentralized (autonomous) decision making that operate through computer networks without human intervention [16].
3. The study was conducted by Forte, P., Romano, D., & Schmid, G. (2015). This research implements blockchain technology that can be used not only for cryptocurrency, but to register, confirm and transfer all types of contacts and properties [17].
4. The study was conducted by Huckle, S., Bhattacharya, R., White, M., & Beloff, N. (2016). The focus of this research is understanding how blockchain can be exploited to create decentralized and shared economic applications that allow people to monetize, safely, their goods to create more wealth [18].
5. The study was conducted by Samaniego, M., & Deters, R. (2016). This research manages device configuration, stores sensor data and activates micro.
6. payments. Which presents the idea to use blockchain as a service for IoT and evaluate the performance of cloud and edge blockchain implementations.
7. The study was conducted by Ouadah, A., Elkalam, A. A., & Ouahman, A. A. (2017). This research discusses how blockchain can be very interesting to face the challenges that arise. Therefore Fair Access as a new decentralized pseudonym framework and privacy preservation that maintains the consistency of blockchain technology to manage access control on behalf of restricted devices payments [20]. Which presents the idea to use blockchain as a service for IoT and evaluate the performance of cloud and edge blockchain implementations [19].
8. The study was conducted by Ouadah, A., Elkalam, A. A., & Ouahman, A. A. (2017). This research discusses how blockchain can be very interesting to face the challenges that arise. Therefore Fair Access as a new decentralized pseudonym framework and privacy preservation that maintains the consistency of blockchain technology to manage access control on behalf of restricted devices [20].
9. The study was conducted by Huh, S., Cho, S., & Kim, S. (2017). This research uses a blockchain, which can control and configure IoT devices. Manage keys using RSA public key cryptosystem where public keys are stored in Ethereum and private keys are stored on individual devices [21].
10. Research conducted by Padeli, Sudaryono and Indri Handayani in 2014 Discusses a Program that is able to provide convenience to consumers who seek and want to buy products that are sold so that sales, orders as well as service information and information that is presented the latest or up to date [22]
11. Discussion on a College Grants website, is a website created to serve and provide information. Various developments and updates are carried out by the manager in order to present interesting information, in its application the website management does not yet know exactly how the visitor activity cycle is [23].
12. Research conducted in 2016, that reports using Rinfo Sheets are easier than using Microsoft Excel because they can be accessed and stored online [24].

From the 10 (ten) review literature, it can be concluded that blockchain technology is very influential on transactions that use AI Coin. There is an advantage in this AI Coin that has already implemented a security system using blockchain technology that can not be manipulated by anyone.
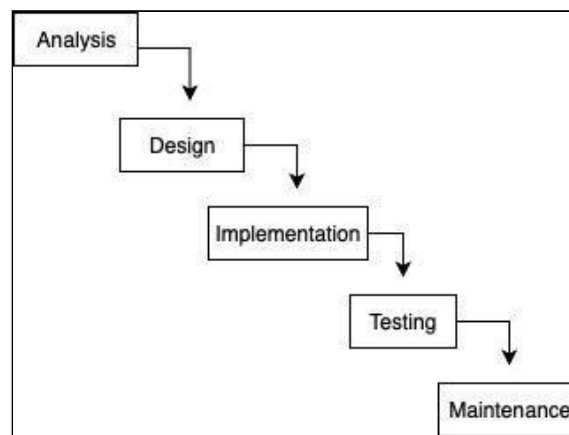
Figure 3. Waterfall Development Method

There are 5 (five) information in this research method:
1. Analysis
   In this analysis, it is necessary to make observations in order to find out the background of what problems occur in recording transactions before using blockchain technology.
2. Design
   Designing payment concepts to make it easier to apply in everyday life.
3. Implementation
   Preparation of data needed in designing AI Coin.
4. Testing
   Merge between AI Coin with a digital payment system to fulfill the recording of transactions. If the data has been processed, information that will be useful to the general public will appear. And the information presented must be clear and easy to understand.
5. Maintenance
   Improved software updates and improved implementation of the blockchain system

3. Results and Analysis
3.1 Problem Analysis
If seen from the current problems, the payment system does not yet have a high security system and a conventional recording system. This method was less successful in utilizing technology in the increasingly sophisticated digital era [25] [26] [27]. Currently the system is running well but still has shortcomings such as payments that do not have security that is easily manipulated.

3.2 Blockchain integration into AI Coin
AI Coin convicted will continue to grow. At present, AI Coin uses a centralized system. In terms of consumers, there is a view of a lack of trust that is easily understood [28]. Therefore, transparency is needed security.

3.3 Solution to problem
In the verification path that is run very detailed, will cause problems. Therefore, a system that can minimize the problem is found by implementing encryption codes for digital payment security systems. This is done transparently and can distribute data safely. Blockchain with a distributed system is the right solution at this time.

The concept of digital transaction security through encryption codes reduces the risk of manipulation and duplication of digital documents. Where the encryption code will have a unique ID that is different [29] [30].
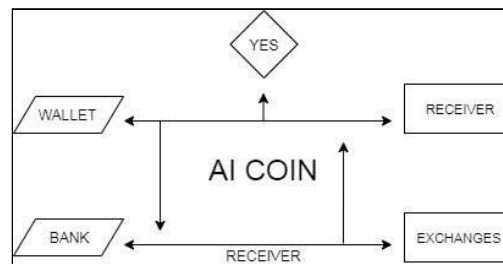
Figure 4. Flow of AI Coin.

The picture above explains how AI Coin works, starting from the wallet that will send funds to the recipient, before the funds are received will be checked by a system that has used blockchain technology, then after display implementation in the Alphabet Blockchain website which has many kinds of features.
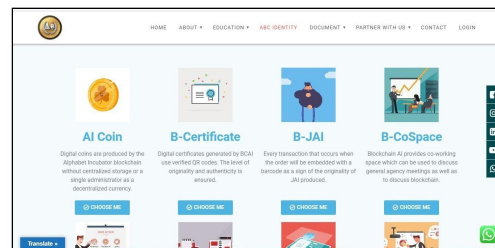

Figure 5. Display the BCAI Platform menu.

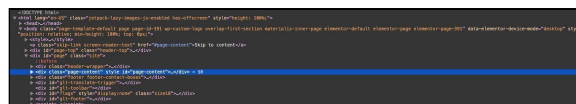In the BCAI Platform menu display there are 10 Identities from the Alphabet Incubator Blockchain.

Figure 6. Listing of BCAI Platform menu programs

It is listed in the BCAI Platform menu, where AI Coin is a service for the wider community and can be obtained through the Alphabet Blockchain website.

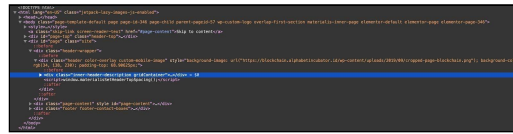Figure 7. Display of the AI Ledger Blockchain

Figure 8. Listing of the AI Ledger Blockchain program

AI Ledger to record all transactions that run on the Alphabet Blockchain website. The public can also see transactions in digital form that can be scanned and verified so that if there is fraud on the transaction then the public can know that [31]. The encryption code will be sent to the user to verify their account, the results of the evaluation of the AI Ledger blockchain system can be viewed on the website.

3.4 AI Coin Test

Figure 9. ABC Ledger

In AI Ledger there are shares, expenditures and remaining shares that are already well represented. So that transactions are transparently seen by members increases and decreases from AI Coin. 1 AI Coin in the amount of IDR 25,000. The achievement of 7 (seven) member contributions proves that AI Coin is going well with the Blockchain.

4. Conclusion

With the integration of Blockchain Technology in everyday life, changes in the industrial and academic world are bound to happen. In the application of Blockchain Technology as a security in a digital transaction system produces 3 (three) conclusions, namely:
1. Blockchain technology as a security in digital payment systems and transaction recording is a medium that can be used to verify payments online.
2. With the Blockchain technology, it is able to increase payment security, in order to avoid official or informal manipulation
3. Blockchain technology is a system that can connect computer networks in a centralized and distributed manner.

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