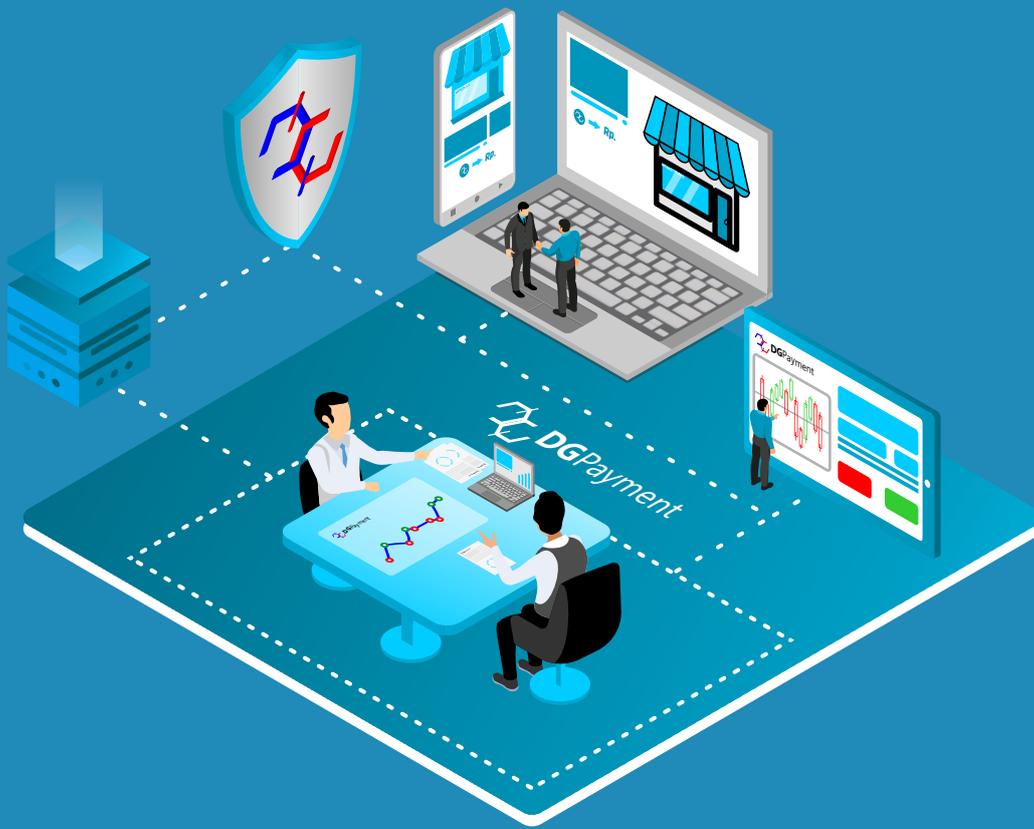


DGPayment

Whitepaper



Global Payment processor based on
Blockchain to use in E-Commerce,
small and medium business
INDUSTRIES

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Introduction

Blockchain technology promises to facilitate fast, secure, low-cost international payment processing services (and other transactions) through the use of encrypted distributed ledgers that provide trusted real-time verification of transactions without the need for intermediaries such as correspondent banks and clearing houses. Blockchain technology was initially used to support the digital currency Bitcoin, but is now being explored for a wide variety of applications that don't involve bitcoin.

The growth of technology and information system encourages change to individual and company in many aspects. One of them is digitalization in commerce. E-commerce payments are the first use case for DGPayment as a currency, and a primary path to achieve mass adoption. The DGPayment economy launches soon, and a variety of large e-commerce platforms throughout Asia are partnering with DGPshop to drive initial adoption. Merchants can save potentially hundreds of millions of U.S. dollars-worth of transaction fees annually, and stand to gain additional market share from competitors. In this way, DGPay will begin creating a more useful and trusted decentralized marketplace with its existing alliance of e-commerce partners.

With DGPAYMENT, which enables to use convenient and rapid payment service anytime and anywhere with all digital asset including crypto currency. DGPAY is an open payment system for every main agent of economic systems such as E commerce, business owner, government organization, finance company, medium-sized company, retail shop, Distribution Company, and fin-tech Company.

Vision

DGPAYMENT has a vision to help entrepreneurs, business owners and the creative industry by providing a marketplace platform that can bring together buyers and sellers in a cryptocurrency-based payment ecosystem that is fair, anti-fraud and also at a lower cost.

DGPAYMENT believe that one of the key roles of succession crypto currencies industries in the digital age is to facilitate transactions in easy way and serve as a secure payment method with broad acceptance.

Our vision is to make online payments worldwide easy, fast, safe and cheap.

Problem

DGPAY platform, which is an open type ERC20 cryptocurrency payment system, can compete with legacy centralized payment system by resolving the problem that cryptocurrency could not be applied to real life with combination of blockchain technology and network.

Despite the industrial disruption and technological advances that blockchain provides, one area that is still largely untapped is digital payments between buyers and sellers of physical services. Digital payment systems have been a holdout of larger industry incumbents, with more legacy APIs and agreements with traditional financial institutions, banks and credit cards. Despite the advantages of crypto payments, such as ultra-low fees, speed and low barrier of entry, clear and developed advancement in transactional security has yet to be implemented to the market. Buyers desire and have come to expect a robust consumer protection system that protects their purchases and provides refunds. Sellers on the other hand would love to earn more revenue but are cautious of the volatility issues associated with accepting cryptocurrencies. Wouldn't it be amazing if we could have the best of both worlds? This is a mutual trust dilemma we aim to solve with the DGPAYMENT Platform.

Our aim is to build payment platform use blockchains technology with next-generation payment gateway allowing buyers to use their favorite cryptocurrency to buy goods and services with confidence from merchants, incorporating a robust PayPal-like consumer protection and dispute resolution scheme. We aim to drive adoption of the API by merchants by providing them a way to receive fiat currency directly from cryptocurrency buyers, shielding the merchant from market volatility and decreasing the risk of accepting crypto-currency.

The growth of technology and information system encourage change to individual and company in many aspects. One of them is digitalization in commerce. Digitalization refers to the use of digital technologies to change a business model and provide new revenue and value-producing opportunities, in short moving to digital business.

Digitalization creates new ways to working, communicating, connecting, and cooperating simplify the process of transactions, collaborations, and social interaction occur in many processes such as customer servicing, approval, shipping, buying, selling and auction. Many companies such as in Indonesia including small and medium-sized enterprise (SMEs) change their commercial process from manual to e-commerce for the sake of benefits such as efficiency, productivity, easy access, security, competitive, cost reduction, customer's segment, marketing, promotion and information distribution.

Conventional commerce becomes unpopular and replaced by e-commerce e.g. traditional market replaced by e-marketplace. In Indonesia and other developing country, growing market for e-commerce rapidly increasing. Unfortunately, it is faced with any problem, like fraud, commission fees, limited contact between seller and customer and misuse of personal data. Fraud will affect buyers trust, purchase behavior, willingness to buy, attitudes toward the store, and risk. Blockchain has potential on redefining the idea of trust which is a major factor for e-commerce usage. Recent research has started exploring the idea of using it for financial transactions, logistics and securing contracts. In this paper, the details of blockchain will be demonstrated in which provide a new perspective to resolve e-commerce problem through increased security.

BLOCKCHAIN, E-Commerce and Future Payment

Improve transparency of transaction while also making it easier to communicate sensitive and confidential data without compromising security and privacy. E-commerce offers new ways of communication between the parties that involved in the transaction. It brings value for the seller through an option to sell, buyers through an option to buy and the platform itself in the form of seller's or buyer's reliance. It is focused on B2B (business-to-business) e-commerce because companies across many industries are seeking to negotiate lower prices, broaden their supplier bases, and streamline procurement processes using e-commerce. Using Blockchain as e-commerce platform can lead to more secure, efficient, faster, cheaper, transparent, reliable and low-risk e-commerce platform. This paper will propose using blockchain as e-commerce platform system and architecture.

Literature Review

The most famous cryptocurrency is bitcoin. Cryptocurrency is electronic cash that works as currency to secure financial transactions like buying, selling and trading between any users. It uses strong cryptography and decentralization manner unlike virtual currency or any centralization e-money that controlled by platform operator. Cryptocurrency can be described as decentralized e-money that does not have a central bank or authority using peer-to-peer (p2p) computer network between users so that none is in control of the network. The concept of cryptocurrency is every transaction need to be approved anonymously and saved permanently i.e. cannot be traced back easily and cannot be tempered. The main innovation that cryptocurrency like bitcoin bring is blockchain, a decentralized ledger containing all transactions for every single unit of currency that employ verification based on cryptographic proof, where the various member of the network validates the transactions. Every transaction data is signed using hash which then encrypted with a private key to create a digital signature. While the public key is sent to the receiver and then used to verify the transaction. Therefore, every member of blockchain must have a private key and public key that corresponds with each other so that ownership can be traced but disclosed in the blockchain. We can differentiate between virtual currencies and Cryptocurrency as follows:

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 & Online	Online Only
Currencies Flow	Through 3rd party	Directly
Value Generate	Have backing	Purely artificial

Table 1. Table Virtual Currencies VS Cryptocurrencies

The financial service sector uses blockchain's security, immutability, transparency, and ability to cut out third party or middleman while in commercial service focused on securing data and identity & legitimacy object. Blockchain concept work just like cryptocurrency in which used a decentralized ledger containing all transactions for every single unit of currency that employ verification based on cryptographic proof, where the various member of the network validates the transactions. Blockchain also used as Smart contracts that refer to a contract that is automatable and enforceable which have the ability to automate processes and control behaviours. The application of smart contract can be seen in product manufacturing, supply chain management, vehicle provenance, and sharing resources such as electricity. The advantages are cost-efficiency, processing speed, autonomy, and reliability. The implementation of smart contracts for companies could bring out the following benefits which consist of a faster working process, eliminate the risk of fraud or manipulation, dispose the needs and reliance on 3rd parties, reduce cost services, enable transparency for all involved parties, guarantee security, suppresses the presence of intermediaries.

Blockchain can be implemented in many fields such as IoT E-business system transaction the combination between IoT and blockchain facilitates the devices to create a marketplace between devices and allows automate several existing time-consuming workflows in a cryptographically

verifiable manner pushing IoT to full potential. Applied in voting system is decentralized so that no one can manipulate and does not rely on trust, because auditable, not vulnerable to security attack, and voter fraud, applied in government could be as a great tool for social innovation and enchantment of the effectiveness of government with “Blockchain Statute Law”, “Transparent Disclosure”, “An automated process”, and “A direct democratic governance system”

Applied in healthcare blockchain used as authentication log govern access while patients with comprehensive record review, care auditability and data sharing. Blockchain in supply chain provides secure data exchange and repository for documents and shipping event that free from manipulations, reduce delays and fraud saving cost. While in identity management blockchain without 3rd party's involvement will reduce the attack and misuse of personal data.

Blockchain as a platform for smart cities that consist of smart contracts, smart assets, digital identity, and voting.

Research methodology

The methodology that implemented by this paper start with the process to collect and analysis current conventional commerce and e-commerce. Then identify the problem and chance for improvement. The results will be used to decide aim and objective. With objective decided we can derive the requirement that will be used as a parameter to find technology. The technology candidate implementation will be learned and then used as a foundation to propose architecture & system.

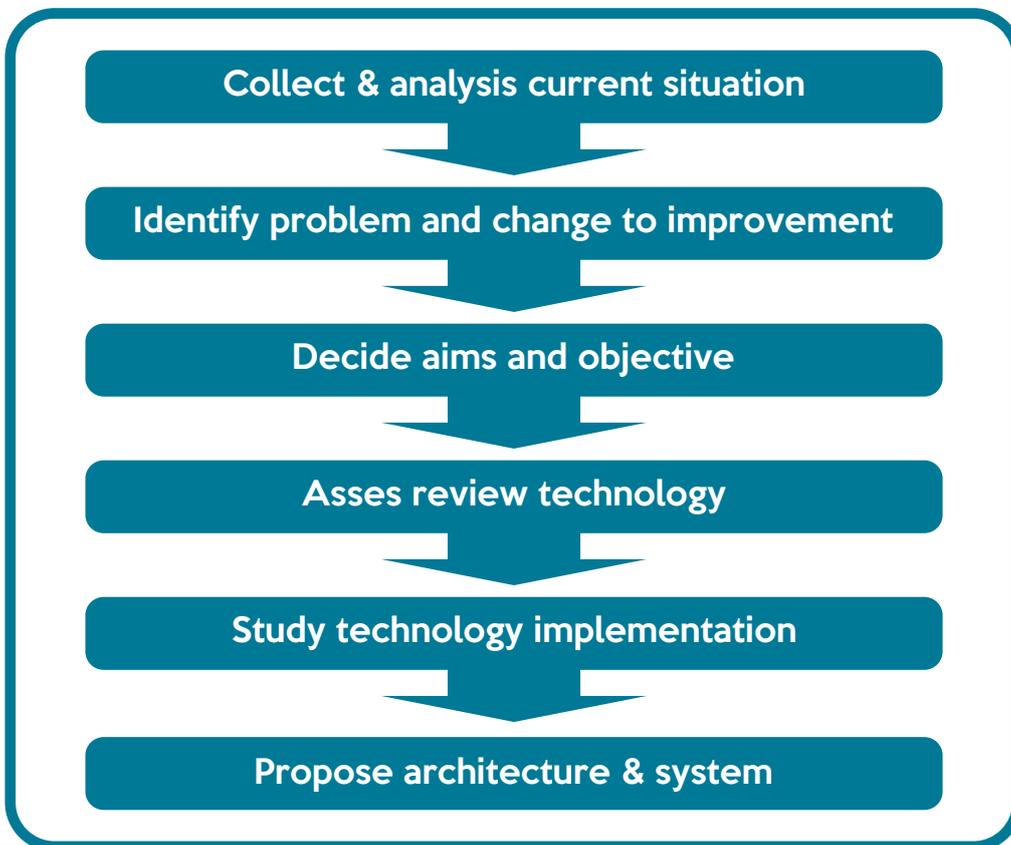


Figure 1. Online Transaction Through Blockchain

Discussion

As mentioned above, Blockchain has big potential to provide more secure, efficient, and transparent in many fields and offer an innovation that can create a new model, platform, and system for the better. Blockchain as e-commerce platform offers a new model and concept that solve the disadvantage of e-commerce. Although e-commerce has been growing, the offline transaction still exists, because of easier, more secure and direct transaction between buyers and sellers. In an offline transaction, P2P payment is already applied through the use of cash and it is the reasons that offline transaction more secure and easy. Beside Offline transaction, there is an online transaction. Online transaction is an indirect transaction that buyers and sellers do through media online. Buyers will pay the seller through 3rd party using the online method like transfer and virtual currencies. It is what e-commerce and fintech (finance technology) use, and it is involved them as the 3rd party.

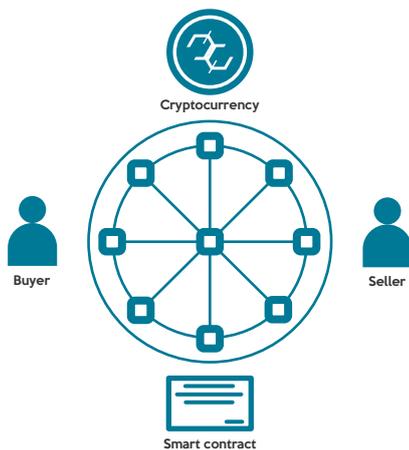


Figure 2. Online Transaction Through with Blockchain

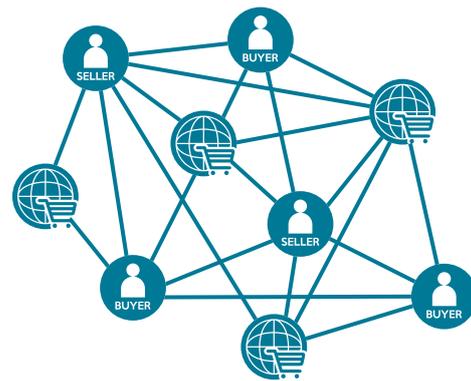


Figure 3. Distributed Ledger Buyer, Seller, and E-commerce

Solving the disadvantage of the online transaction which adopted by e-commerce and fintech, we propose (figure 2) online transaction through blockchain which will support P2P payments with Cryptocurrency [10]. Imagine if you can use digital payment directly like cash payment, that's what cryptocurrency try to achieve. Same with cryptocurrency, blockchain implementation also use a P2P.

Network to validate transaction data and ledgers to store the data. We propose a ledger model (figure 3) that has e-commerce, sellers, and buyers as nodes, the model will give ownership of data to all parties involved so that no one is in control of data. With this ledgers model, the users are anonymous to reduce the misuse of data and also supports cryptocurrency as payment across e-commerce platforms involved. To ensure the security and enforce rule the smart contract will be used to seal the deal or transaction that happen.

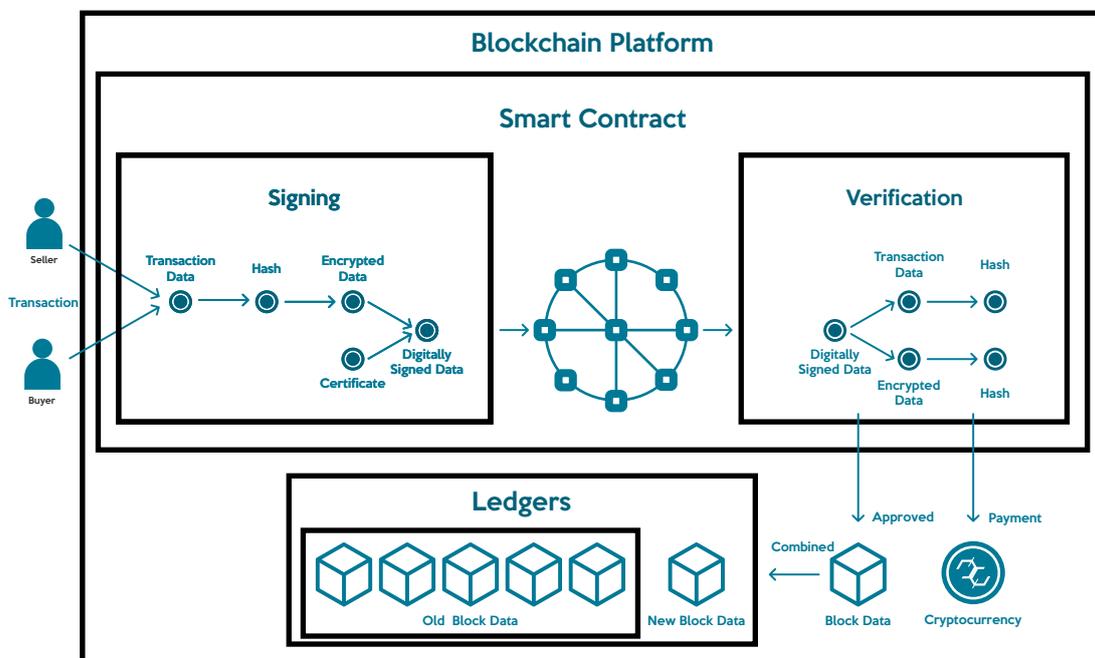


Figure 4. Blockchain as E-commerce Platform Architecture

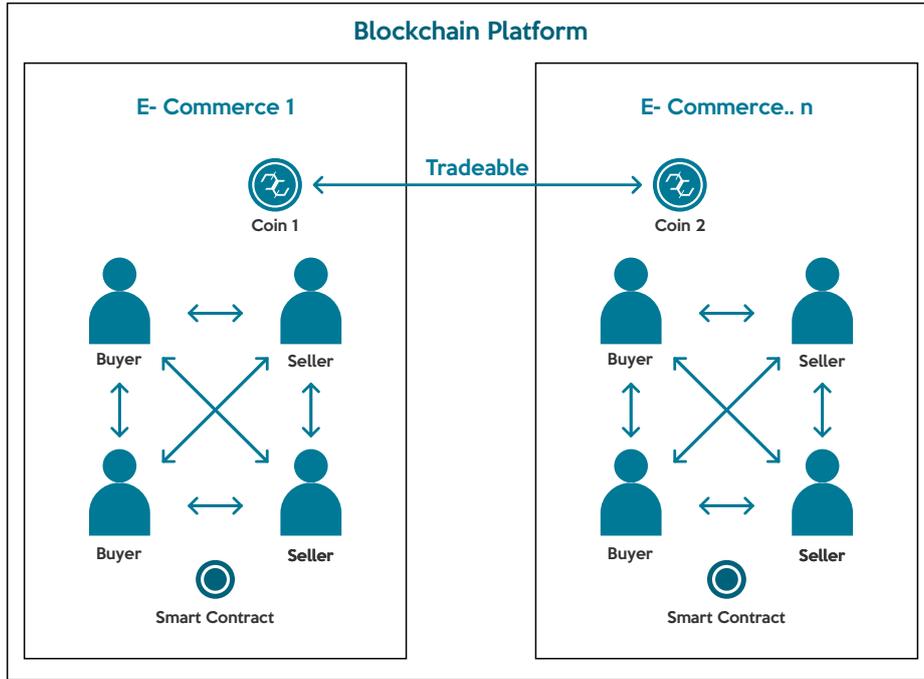


Figure 5. Blockchain as E-commerce Platform System

The process happens when buyers or sellers initiate the transaction. The data will be use hash function that will be encrypted using signer private key. The encrypted data will be signed (smart contract) then broadcasted to P2P network which consists of computers known as nodes that will validate the transactions. The nodes are consisting of a node that involved in a transaction. If we use the ledgers with anonymous users, then the users don't need permissions to participate on validation process. The verification process involves comparing signature from digitally signed data that will be decrypted using signer's public key. Once verified the transaction will be combined with other transaction to create a block of data. The block then will be added to existing blockchain or ledgers. Payment is done through cryptocurrency and transaction completed.

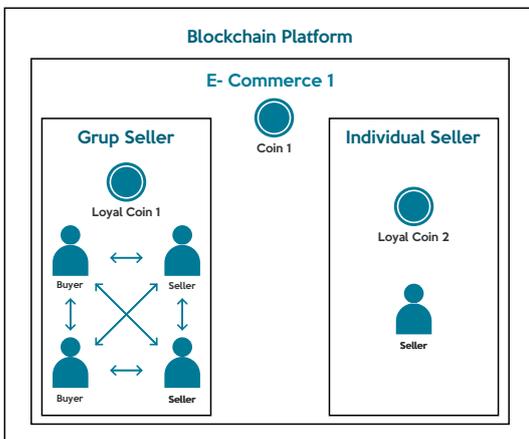


Figure 2. Blockchain as E-commerce Platform Loyalty System

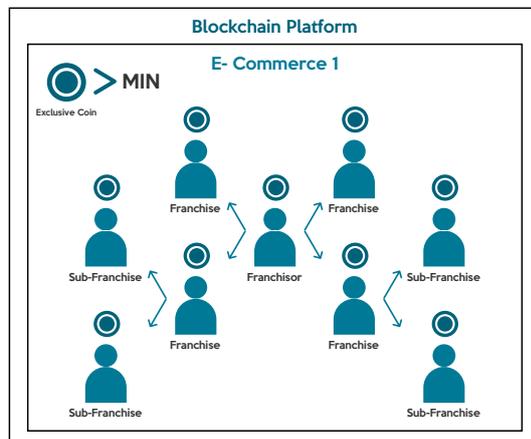


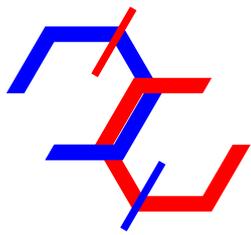
Figure 3. Blockchain as E-commerce Franchising System

BLOCKCHAIN, E-Commerce and Future Payment

With the architecture (figure 4) as the base, we propose the blockchain platform that integrated much e-commerce into one system (figure 5). In this system, all e-commerce virtual currencies will be converted into cryptocurrency in the form of a coin that is tradeable with each other. Because crypto integration buyer or seller can exchange their e-commerce coin to others coins and then spend it easily. This system will support a direct interaction between all entities even buyer to buyer using a peer-to-peer approach. Peer-to-peer approach aim is to not involve 3rd party and cutting the commission fee. Without the 3rd party, the role to ensure enforce the rule goes to smart contract. The smart contract will automatically enforce the predetermined rule to all party involved. The smart contract also recreates the backend and inventory database. Without the 3rd party, the chance misuse data is gone while smart contract will secure the transaction. To complement the system, we propose the loyalty system. In this loyalty system, a group of a seller or individual seller can create the exclusive coin. Exclusive mean that this coin can only be used in their group and cannot be exchanged. Therefore, the coin will influence the buyer to do a transaction in the same shop. This coin can be gain from using the coin as mining reward and transaction reward. Using exclusive coin we also propose a franchising system. The Owner can become a franchisor when they create exclusive coin and set the minimum coin threshold for the franchise. If a buyer or seller can pass the minimum threshold then they can become a franchise and have the privilege to sell the product. And if they pas others set threshold then they have the privilege to create sub-franchise. Based on the research conducted, it can be seen that the blockchain implementation provides good benefits. Unfortunately, Indonesian regulations regarding cryptocurrency are not enough at all. The regulation still prohibits the use of cryptocurrency as a legitimate payment instrument. We analyze that even though it's possible some e-commerce will not join in using cryptocurrency because it can reduce their profit. If it can be implemented, it will create a decentralized e-commerce that secure, cannot be manipulated, cannot be misused, and free from interaction limitation.

Conclusion

The usage of e-commerce in Indonesia has been adopted by many companies. However, 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 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 far, many countries including Indonesia doesn't have clear regulation about blockchain implementation because there are some risks in using blockchain and cryptocurrency such as money laundry and a black market. Although this paper we hope this paper can contribute to future research about blockchain.



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