Chapter 6
Developing Smart Contracts for Financial Payments as Innovation

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ABSTRACT

Innovation in smart contract systems helps to create decentralized payment systems. These developing concepts will be a new perspective to solve transparency issues. Smart contracts can prove all transactions and flow of funds and money between parties. Business deals and financial payment methods are expected to be a hybrid approach in both traditional and smart contracts in the future. Empirical analysis of smart agreements among their emerged platforms, different applications, and design views will enlighten future needs of trade payment methods. This chapter investigates the concept of smart contracts and critical issues for developing on financial payments environment. This research also aims to examine possible advantages of the application of smart contracts as innovation, legal, and technical aspects of the emerging business environment. The analysis will compare new mechanisms securing a block-chain applied to financial payments. This chapter also reviews the mechanisms of smart contracts and block-chain and focus on predicted future areas on the financial system.

INTRODUCTION

The effects of technological developments are seen in the field of finance as well as in every field. With the emergence of the concept of crypto money, new technologies, called block chains, form underneath this virtual money. One of the application areas of blockchain technology is creating smart contracts. The smart contract is a byproduct of the development of the internet of things. Improvement of complex, decentralized trusted computing and its algorithms has emerged that becoming a promising structure for future. Block-chains create an environment for a distributed peer-to-peer network. This network lets users who are non-trusting members, can trade funds and promised contracts without a trusted intermediary. This study also reviews the mechanisms of smart contracts and block-chain and focus on predicted future areas on the financial system (http://ieeexplore.ieee.org, 05.07.2018).

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Decentralized trusted trade environment will transform many industries that create new business models. Smart contracts will be some critical elements of this new business management system. One of the well-known forms of block-chain can be defined as cryptocurrencies recorded transactions in a decentralized structure. This feature evolved and shaped by smart contracts concept (https://dl.acm.org, 05.07.2018).

The future agreement will shape in this decentralized trusted environments and future of transactions emerged on block-chain ledgers. As the business environment adopts on smart contracts global money management and the world of banking will take shape (https://link.springer.com, 05.07.2018).

Economic concepts and infrastructures are also transforming new opportunities on cryptocurrencies and smart contracts. Smart contracts become a new tool for applying artificial intelligence (AI) systems. This AI will form legal and safety regulations more dominantly in the modern business environment (https://dl.acm.org, 05.07.2018).

Smart contracts need also increase in specific industries such as e-commerce sites, courts, credit card companies, insurance contracts. Future of business mainly becomes depended on the decentralized execution of programmable agreements. Block-chain technology widely adopted on trade, legal issues, business contracts which all interconnected with virtual currencies and payment systems.

LITERATURE REVIEW

Smart contracts widely found in the literature along with the application area of blockchain technology. Lian Yu et al., (2017) stated that work processes are doing consist of operational processes and that these processes are related to contracts and regulations. They have evaluated the use of smart contracts to model, organize and implement these processes and to maintain a provable reliable data history. They stated that smart contracts are executable code that runs on the blockchain. The definition of smart contracts defined as "a collection of computer protocols that verify, enforce, or enforce contract negotiation or performance, by automatically implementing the contractor's conditions, reducing the transaction costs associated with the contract, and hoping to provide better assurance than traditional paper-based contract management."

This study also emphasized that smart contracts operate on a blockchain supporting a digital currency and that they are used to build smart contracts, as an open source project which is called Ethereum. They pointed out that a smart contractor is mostly an automated device in the Ethereum blockchain that has an address and a balance and can send and receive transactions.

In the smart contracts at the base of the blockchain, there are a number of distributed authentication nodes that communicate and synchronize with each other over a high-speed peer-to-peer (P2P) network. There is a voting mechanism to keep each node consistent. In order to store the transaction states and save the results, the account block-chains are separated, and in case of a fault, there is a recovery mechanism to recover the transactions.

In the study, it is stated that there is a blockchain structure divided into three categories. These categories are trade blockchain (TBC), account blockchain (ABC) and message block chain (MBC). The trading blockchain (TBC) involves trading between nodes, and these transactions do not involve accountability. After the transactions are applied, updated information is sent to the account blockchain. The transactions in the account blockchain include accounting calculations and do not contain information on the trading block. If information about trade transactions included, it will send to the trade block.