

Production Industry Supply Chain Management Based On the Ethereum Blockchain

Sandesh Walunj¹, Akshay Gupta², Anuradha Sonone³, Saurabh Yadav⁴, Puja Gholap⁵

Students, Department of Computer Engineering^{1,2,3,4}

Assistance Professor, Department of Computer Engineering⁵

Sharadchandra Pawar College of Engineering, Pune, Maharashtra, India

Abstract: *Currently, the composition and structure of the production industry's supply chain is becoming increasingly complex. The loss and untimely transmission of supply chain information exacerbated the bullwhip effect. At the same time, due to the lack of a reliable repository of information, difficulties in traceability and accountability have also made supply chain management difficult. Blockchain has the characteristics of supporting distributed networks, synchronization of information between nodes, digital encryption, traceable information and unforgeable block content, which is suitable for use in supply chain and can provide a solution for it. In this paper, a design scheme of an integrated platform for information services provided by supply chain participants and based on the Ethereum blockchain is proposed. Using Ethereum smart contracts, the regular trade involved in the supply chain is realized using blockchain technology, and key information about the production and circulation of the supply chain is stored on the blockchain to ensure that the information cannot be falsified. At the same time, a reputation evaluation method based on smart contracts is used to evaluate the reputation of enterprises in the supply chain, which can provide references for supplier selection among enterprises.*

Keywords: Supply Chain Management, Information Platform, Blockchain, Smart Contract

REFERENCES

- [1]. Zhijun Xu, Yichen Liu, Jun Zhang, Zhaoxiong Song, Jun Li, Jihua Zhou "Manufacturing Industry Supply Chain Management Based on the Ethereum Blockchain" *ondren Library Rice University*: DOI 10.1109/IUCC/DSCI/SmartCNS.2019.00124.
- [2]. Swan, Melanie. *Blockchain: Blueprint for a New Economy*. Blockchain: blueprint for a new economy. O'Reilly, 2015.
- [3]. Bocek, Thomas, et al. " [IEEE 2017 IFIP/IEEE Symposium on Integrated Network and Service Management (IM) - Lisbon, Portugal (2017.5.8-2017.5.12)] 2017 IFIP/IEEE Symposium on Integrated Network and Service Management (IM) - Blockchains everywhere - a use-case of blockchains in the pharma supply-chain." *Integrated Network & Service Management IEEE*, 2017:772-777.
- [4]. Toyoda, Kentaroh, et al. "A Novel Blockchain-Based Product Ownership Management System (POMS) for Anti-Counterfeits in The Post Supply Chain." *IEEE Access* (2017):1-1..
- [5]. Kim, Henry M., and M. Laskowski. "Towards an Ontology-Driven Blockchain Design for Supply Chain Provenance." (2016).
- [6]. Shi-Min, Sun, C. Hui-Ying, and L. Zhao-Yun. "Study on Comprehensive Evaluation Index System for Pig Form in High Quality Pork Supply Chain." *Operations Research and Management Science* (2007).