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Could Blockchain Decentralize Supply Chain? A Dynamic Analysis of Token Delivery Motivations of Mid-tier Suppliers in Blockchain-driven Supply Chain Finance

Research Idea

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Abstract

Blockchain, or distributed ledger technology (DLT), is expected to be a disruptive technology by enabling a highly decentralized and trust-free business environment. Yet the business pursuit for profit maximization calls for a more centralized structure and thereby conflicts with the decentralized ideology of blockchain. In the context of blockchain-driven supply chain finance (SCF), while blockchain technology enables the decentralization of information, the decentralization of cash flow still relies on mid-tier suppliers' token delivery in a centralized transaction structure. In other words, mid-tier suppliers can become a "bottleneck" in blockchain-driven SCF. In this paper, we consider the supply chain network as a complex system where firms are self-organized and adaptive to their competitive environment. Via this theoretical lens, we investigate how the application of blockchain technology (information flow), mid-tier suppliers' token delivery (cash flow) and supply chain transaction structures (goods flow) interplay over time. We propose that in short term, blockchain technology increases mid-tier suppliers' transaction efficiency and thus motivates mid-tier suppliers' token delivery and promotes the decentralization of supply chain transaction structure; in long term, the decentralized supply chain transaction structure will in turn negatively affect mid-tier suppliers' token delivery motivations and drive the centralization of a supply chain. We will test our theoretical propositions by a series of simulation experiments in an agent-based model.

Keywords: Blockchain, Supply Chain Finance, Interorganizational Systems, IT post-adoption, Agent-based Modeling.