

Business Plan: Blockchain Technology for Supply Chain Management

Background

A supply chain is a key determinant of organizational success because it influences efficiency. It enhances customer service by availing the right products and services in the appropriate quantities to clients. Excellent supply chain management ensures that customers get commodities and services in the right location as they expect. It also aids in cost reduction through efficient sourcing, distribution, and delivery of products. However, most private and public entities experience a huddle in controlling their logistic providers, suppliers, and trading partners. Effective supply chain management requires appropriate integration of taxation, localization, and invoicing into an organization's material sourcing, distribution, production, and invoicing functions. Therefore, an organization's supply chain management function should track components or products from the supplier to the client. However, it is difficult to trace all materials and components through the supply chain (D'heur, 2015). Therefore, public and private organizations should utilize current technology to enhance their supply chain management. The current report is a proposed business plan on how blockchain technology can be utilized by organizations to enhance their supply chain management.

Problem Statement

According to Wang, Heng, and Chau (2005), organizations have been making efforts to streamline their supply chain through the deployment of Information Technology. However, most of the companies have not integrated efficient IT into their business successfully (Lee, 2016). Therefore, it is apparent that such firms face huddles in controlling their logistic providers, suppliers, and trading partners (Kirk, 2010). The problem is caused by a lack of or inefficient supply chain management technologies. Additionally, some organizations use

historical figures in calculating costs and predicting sales. However, accurate estimates of costs can only be made in real time because the current market is characterized by price fluctuations due to volatility. Effective supply chain management requires appropriate integration of taxation, localization, and invoicing into an organization's material sourcing, distribution, production, and invoicing functions. Various organizations face the risk of increased fraud, committed by suppliers, employees, and logistics providers.

Currently, a majority of medium and large organizations have integrated Information Technology into their supply chain. However, such organizations have not utilized important aspects that can streamline the supply chain appropriately to enhance efficiency, prevent and detect fraud, and guarantee prove of work before receiving or making payments. Blockchain technology is an effective integrated system that can be used by organizations, but it has not been utilized in managing the supply chain. A blockchain is a public network that records all BitCoin transactions (Lane, 2010). However, blockchain is not only limited to BitCoin. It can be applied in other organizational aspects such as management. According to Swan (2015), blockchain tracking can assess and attribute all contributions to a system by all involved parties in a seamless and automated way for later roll-up to the macro level. Blockchain-related transactions enhance the speed of transactions between companies and individuals interconnected by an information system because they are conducted in real time (He, et al., 2016). Therefore, organizations and individuals can make verified instantaneous payments.

The current problem facing organizations is that their supply chain system cannot track all transactions effectively to verify their validity. In addition, supply chain management in most organizations does not integrate verification of work done before payments are remitted or received. Consequently, there are numerous fraud cases where suppliers who did not supply

anything are paid while employees receive money from clients to whom they did not deliver any goods or services. Blockchain technology can be integrated to the supply chain to solve the above-mentioned challenges and enhance efficiency.

Proposed Solution

Development of installable blockchain system that will be integrated to the supply chain system of any organization will solve the identified problem. The reason for this is that blockchain technology is internet-based. Therefore, it can be designed and be incorporated into an organization's supply chain management system to connect it to its suppliers and customers. The installable blockchain system will be available in the form of software that links an organization's supply chain management system to a national or global blockchain, depending on the company's operation territories.

Installable blockchain system software that links an organization to the global blockchain system will have to be designed. The software will to allow for compatibility with supply chain management systems of organizations. During installation of the blockchain system software, the organization's supply chain management system should be redesigned. Consequently, the organization's supply chain management system data has to be digitalized to enhance compatibility with blockchain technology. Therefore, the first stage will entail the digitalization of organizational data in a local area network. Digitalization enhances management of information storage and retrieval within the company. The second stage will involve the deployment of the Electronic Data Interchange (EDI) as communication infrastructure. EDI enhances the standardized exchange of information between computer systems without the intervention of people (Hill & Ferguson, n.d). Therefore, organizations can exchange important business documents electronically.

During the third stage, an electronic commerce front-end system will be installed. The process will entail the implementation of procurement, verification, and distribution processes that will utilize web sites and search engines. The final phase of redesigning the organization's supply chain management system will involve the integration of a vertical portal that will enhance information processing with third-party service providers for logistics and financial transactions. Now the organization's supply management system will be ready for installation of the blockchain system. After installation, it is expected that the system will automate procurement, verification of reception of goods on both client and organizational ends, as well as, verification of proof-of-work. The system will prevent fraud by identifying valid transactions that can be verified by the system. In addition, efficiency in the supply chain will be enhanced through an automated procurement system that verifies reception of information by suppliers. The blockchain system will be available as software, but client organization will require the services of an expert in installation because the supply chain management system should be redesigned to enhance compatibility.

Challenges in Implementation

The main challenge in implementing the blockchain system is linking it to an automated financial system. Blockchain technology works well with BitCoins. Therefore, financial institutions require authorization of transactions before funds are transferred from one party to another. Separately, it will be difficult to verify the identity of parties involved in the automated supply chain management system due to security pitfalls. Therefore, unauthorized suppliers may hack the system and transact with the organization. However, challenges can be mitigated through various ways. For instance, the blockchain system will be designed in such a way that it performs all automated functions of the supply chain management system apart from

authorization of payments. Therefore, a senior officer of the organization should authorize any payment to be made. Similarly, clients or senior officers of client organizations should be allowed to authorize payments to the organization. As for security concerns, the organization should design Electronic Identities for all the parties that it deals with for verification before they transact through the supply chain management system. Encryption of the system such that only authorized parties can access it will also increase security.

Conclusion

It has been established that integration of blockchain technology to an organization's supply chain management system can increase efficiency. The proposed solution of designing an installable blockchain that links an organization's supply chain system to the global blockchain system will solve the current supply chain problems because it will automate the whole process. However, the system has to allow human intervention in authorizing payments because money will have to be used in all transactions and financial institutions may be involved. It is imperative that the supply chain management system is encrypted to ensure its security.