# Impact of Blockchain technology on the Supply chain industry

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1.Introduction

This paper gives a short summary about Blockchain technology (BCT) regarding to the Supply chain industry (SCI).

BCT „is a ground-breaking innovation in decentralized information technology” (Abeyratne and Monfared, 2016) and also it “can increase the transparency of physical distribution process and eliminating the ability to cheat and provides each participant end‐to‐end visibility based on their level of permission. In addition, this technology could reduce operational costs by removing intermediaries’ fees. For government, BCT could help to track, monitor, and audit the supply chain and serving manufacturers to record the transactions in authenticity. For customers, BCT would enhancing the products quality and safety.” (Tribis, El Bouchti, Bouayad, 2018)

2. Definition

2.1. Blockchain Technology (BCT)

A chronological chain of blocks, where each block can be defined as a piece of encrypted information, is meant by BCT. Anyone can add Information to the Blockchain, so everyone has access to new data blocks. Everyone can review this data anytime, but not everyone can change the information, therefore authorized personal is needed. Blockchain could also be understood as an “complete and immutable history of network activities, which are shared among all nodes of distributed network”. (Abeyratne and Monfared, 2016) BCT minimizes supply chain management risks and also speeding it up, by using electronic tracking technology.

In general Blockchain can be define as a distributed database, which is “shared among and agreed upon peer-to-peer network.” Also “Trust and decentralization were identified as the two key BCT characteristics, which are closely connected and interrelated.” (Tribis, El Bouchti, Bouayad, 2018)

A third party is not required for exchanging data securely, BCT facilitates entities without knowing or trusting each other via internet. The valid transaction will be achieved through a process which is called “mining”. This process ensures the validity and security of added Data to the chain.

Start-ups are interested in blockchain-technology especially to reduce costs and bureaucracy, and as well traditional systems will be transformed into new more distributed, secure, collaborative and transparent systems.

All in all, Blockchain technology can be seen as a ”ground-breaking innovation in decentralized information technology.” (Abeyratne and Monfared, 2016)

3. Explanation based on Examples

To use BCT it is necessary to use information tags like Barcodes, QR codes or RFID. It is necessary for precise measurement on the travel path right from the beginning. With BCT stakeholders in a supply chain can know all information about their products.

Using BCT signifies an accurate measurement on the travel path from the beginning. With BCT we can analyze data not only from “the travel path and their duration, stakeholders in a supply chain can know whether the product was in a wrong place or whether it remained in a location for too long.” . (Kshetri, 2018, p. 80)

This is important when it is about refrigerated goods, which need to be in a cold environment. BCT helps to improve the confidence on products due to the transparency. There will be information about every step which is taken on each product, for example from which farm and what time a fruit is harvested.

Products are genuine and of high quality and make them significantly more willing to purchase the brand. (Kshetri, 2018, p. 80)

Barcodes, QR codes or RFID will be used as an information tag on each product, which “represents a unique digital cryptographic identifier that links a physical product to its virtual identity on the network.” (Abeyratne and Monfared, 2016)

Demanding supply chain transparency, because consumers often want guarantees for each product. (Francisco and Swanson, 2018)

It is all about transparency during transactions, and as well on trust, therefore is no third party necessary. (Francisco and Swanson, 2018)

End to end supply chain transparency and visibility can help model the flow of products from raw materials to manufacturing, testing, and finished goods, enabling new kinds of analytics for operations, risk and sustainability. (Abeyratne and Monfared, 2016)

On the one hand BCT is a decentralized, transparent, and trustful technology which saves not only time, but also decrease financial costs. But on the other hand “if the supply of a critical component or service is disrupted, the consequences can be severely harmful to companies further along the supply chain, both financially and in terms of reputation.” (Abeyratne and Monfared, 2016)

Security and trust will be improved with BCT, while at the same time, diverse supply chain members are needed for participation. BCT also helps to achieve more robust cybersecurity measures. Although there can be “a severe lack of transparency and accountability across complex supply chains.” (Kshetri, 2018, p. 80)

Blockchain can also help achieve robust cybersecurity measures. Trust and security can thus be improved with blockchain. At the same time, more resources need to be devoted to addressing concerns such as participation of diverse supply chain members and enrichment of the existing blockchain ecosystem in order to realize the full potential of blockchain. (Kshetri, 2018, p. 88)

4. Results

The relationship between supply chain transparency and traceability is not straightforward and linear: while having more information available (i.e., transparent) may lead to increased traceability; increased traceability may not lead to increased transparency if the supply chain is made of few participants with loose affiliations. (Francisco and Swanson, 2018)

The development and implementation of novel technology does not guarantee that it will be used and otherwise succeed. A theoretical insight is required to better understand the underlying motivators and barriers that will lead companies, or discourage them, from adopting blockchain technologies for supply chain traceability. Previous work has pointed to the importance of behavioral intention and its antecedents in influencing technology use. (Francisco and Swanson, 2018)

References

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