Blockchain in supply chain

Business, Management

Today, supply chains are innately complicated because they involve differents people from the entire world. Sometimes, they get difficulties on the problems of cost, quality and speed. But, benefits from the system of supply chain are clear which have many ways to get improvement on their efficiency. Therefore, blockchain technology provide benefit which able to give opportunities to organization to drive value of business on their company’s supply chain for better efficient.

Blockchain is an advance system which including all of the digital information on the products or people that can be get by many consumer. Blockchain is crucial to make improvement on supply chain management of company to decrease mistakes, delays of product, disqualify those counterfeit activities and improve trust of consumer and supplier. However, blockchain still not widely used in supply chain management because of the issue of poor market awareness and lack of technology trust. It took long time to make the logistics and supply chain management community catch on to understand the impact of Blockchain on their industry. Therefore, this report is crucial to understand the influence of blockchain implementation on supply chain management of industry.

Given that blockchain is able to improve the performance of supply chain in industry, hence, what is the influence of blockchain implementation on supply chain? Additionally, how is the blockchain implementation affect supply chain? This study is aimed to gain in depth insight on the factors of blockchain implementation which influence supply chain in industry.

Below are the objectives of this study:

1. to analyse critically the impact of blockchain implementation in supply chain.
2. to analyse critically the methods of blockchain implementation which influence supply chain.

The Concept of Technical Innovation Adoption is applied in this study on blockchain implementation. This research framework has been adopted from the research of Francisco and Swanson (2018). Trust of technology is providing from this theoretical model to frame trust as a contrast with the respect to technology innovation adoption. Hence, trust of technology is important to both of the supply chain and blockchain implementation. This is because blockchain as a new technology, it can enable supply chain to work more effectively which influences people's behavioral intention to use this new technology (Francisco & Swanson, 2018).

The conceptual framework below has been developed to investigate the influence of blockchain implementation on supply chain in industry. The independent variables are transparency and traceability, trust and security, lower losses from counterfeit and gray-market trading and reduce paperwork and administrative costs while the dependent variable is adoption of blockchain implementation on supply chain management. Supply chain's transparency is the matter of all their stakeholders to get a shared understanding of data and is able to access to the related information of product that they request. Traceability enables timely identification of supply chain's defection or source of contamination where inputs from different supplier are commix during stage of processing. Traceability also is adopted

as a tool to maintain supply chain’s trust as reputation enables to build and produce products which in high quality during firm’s behavior cannot perfectly observed by those consumers. Hence, transparency and traceability of shared data which improve the accuracy of end-to-end tracking enable to improve supply chain management of a business.

Furthermore, blockchain technology also has been implemented by the health care industry. For example, delivery pipeline of drug to the end customer. In this process, the packaging of drug is authenticated with stamps’ time which put on blockchain at all of the delivery point. Thus, the package of drug is able to be tracked. Blockchain enable the medicine’s distribution secure and transparent as it able to avoid the drugs from stealing and decrease price manipulation’s possibility and drug’s delivery that expired. Other than that, based on Deloitte (2018), there are 90% of consumers voted transparency and traceability of product is the critical factor which influences their purchase and this cause 55% of industry are willing to pay premium service from blockchain technology in order to promote social responsibility. Therefore, by adopting blockchain, the transparency and traceabilty of supply chain will be improved which can gain trust from consumers.

There are plenty of consumers give different of reasons when they have been asked the questions on the decision that they making to choose and do business with certain organization like from the simplicity of price in buying process to get the product that they want as stock. However, trust is the crucial factor which is common to most of the purchasing decisions.

Company that will provide trust and fulfill the promise that they make which produce requested products and services will never let consumer down. This results is proved by the Harris Reputation Quotient year 2016 which 23000 consumers had been asked on rating the top 100 companies’s reputations.

Blockchain can reduce and eliminate the need of looking for other trusted third party. All of the transactions is recorded by blockchain on a network that distributed on computers and it is visible to all the of the involved companies. It will issues and provide a digital transaction during one of the company purchase for a product and the records is sent simultaneously to the network in computers. The digital transaction will be recorded simultaneously on the network of every single computer that a distributed ledger is created during the confirmation. The distributed ledger is a software which can copy and duplicate the network of computers that trusted. Hence, blockchain technlogy is trusted as if one of the company want to change the transaction, it require being able to change the entry simultaneously on all of the computer since each transaction is applying the mathematical equation that irreversible.

All of the transaction that happened on the network is sequentially added to the network of all of computer and the try of making changes on any transaction will be be apparent immediately. This distributed ledger is reconciling systematically which the sofware is updated in all the computers every time when a new transaction happens and this is secure to all of the users. The internet’s openness and crytography’s security are combined together in blockchain to provide user a safer and faster way to establish

trust and verify the key element which in highly secure. Therefore, there are a total 42% of manufacturing companies had spent $5 million to get security from blockchain technology in order to gain trust from their customer. This can prove that trust and security of blockchain adoption is important in supply chain.

The challenges which extreme on of the distribution of gray market and fraudulent on supply chain are increasing dangerously. Other than the extensive issue on direct costs of fraudulent and distribution of gray market, strength of corporate are drain continually and corporate knowledge base of corporate are distract from their important competencies. Without the controls taht effective and uncontrollable, the business forms’s convergence that destructive will sap the life of alll of the linked company eventually.

Blockchain implementation which can increase supply chain transparency enable to reduce counterfeit which is high in value like pharmaceutical drugs or diamonds. Each of the subcontractor which provide ingredients and completed products can be understood by companies by refering to digitalize blockchain system and is able to reduce losses from fraudulent and trading from gray market. Blockchain is able to improve 30% to reduce fraud medicine that sold which may lead to millions deaths in economies that developing. The reason is blockchain able to make all transactions with fixed record that visible which provide details like quality, location and price to entire linked entities while the records’s tampering are minimizing. Other than having the transparent, decentralizane and secure supply chain, blockchain able to reduce costs like in the problems of tracing and

loopholes’s plug in the genuine medicines’s supply. Thus, end user’s confidence is improved due to fraudulent products are decreasing or disqualified if the company implement the blockchain technology.

Planning and making decision that poor and wrong on supply chain will cause the problems on expenditures that excess, goods become broken and missed the deadlines of delivery. Hence, this is the reason why reducing administrative costs and paperwork are necessary steps. Blockchain can centralize the administrative process by reducing costs and enable data of supply chain. Container shipping in logistic industry still have many paperwork that cost many money and time. By adopting blockchain, it enable shippers, customs, ports, stakeholders track freight in supply chains to replace linked paperwork with records that digitalize. For example, shipping frozen goods from Europe to East Africa needs approvals from approximately 30 people and organizations which communicate with each other on more than 200 occasions. The documents like the lading’s bills are considered as fraud too.

As a conclusion, this study has analysed the influence of the adoption blockchain technology implementation on supply chain management. This study also prove that the factors of transparency and traceability, trust and security, lower losses from counterfeit and gray-market trading and reduce paperwork and administrative costs are largely affect the supply chain management of a company which influence their intention to adopt the blockchain technology. Four of the factors have played essential and crucial role which affect company’s intention to implement blockchain on their

supply chain. Most of the companies face the problems of transparency, security, counterfeit and excess administrative costs on their supply chain which cause them make loss in business. By doing many research, blockchain has been proved that it have strong impact on supply chain management of a company. As there is a huge benefit from the supply chain, the blockchain company may have an interest on market by innovate this technology to increase the user. Lastly, blockchain should be adopt in supply chain management in order to increase company’s profit and become more successful.