

# HOW DOES STARBUCKS IMPLEMENT THE BLOCKCHAIN SYSTEM IN SUPPLY CHAIN MANAGEMENT TO MAINTAIN ITS PRODUCT QUALITY?

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## ABSTRACT

In many different industries, including finance, healthcare, government, manufacturing, and distribution, the blockchain itself has taken on a life of its own and permeated a wide variety of applications. The optimal fusion of efficiency and transparency can be achieved by combining Supply Chain Management and Blockchain technology. In order to set itself apart from other coffee shops, Starbucks' quality control procedure is quite tight when choosing the raw materials used to produce its coffee products. Starbucks is able to uphold high product standards in any nation or city by using locally obtained ingredients and suppliers to preserve the quality of its products. This research also analyzed how blockchain positively impacts Starbucks' supply chain management to preserve product quality. This research uses the qualitative approach that collects primary data and secondary data. The coffee beans that Starbucks buys from its suppliers, however, must be roasted in the closest Starbucks roastery in the nation before being turned into beverages. Unfortunately, the majority of Starbucks locations in Asia are still lagging in the adoption of cutting-edge technologies like blockchain to support their supply chain management operations. One such location is Starbucks Indonesia. The conclusion is that incorporating a blockchain system into Starbucks's supply chain management could result in a multitude of positive outcomes for the company. The following recommendations for Starbucks Indonesia to consider when exploring the implementation of blockchain technology in its supply chain management Pilot Testing and Proof of Concept, Collaborate with suppliers and partners, Training and Education, and Continuous evaluation and improvement.

*Keywords: Blockchain, Supply Chain, Supply Chain Management, Starbucks, Starbucks Indonesia*

## BACKGROUND

Blockchain is a distributed digital data storage system composed of numerous servers (multiserver) (Nugraha, 2022). Blockchain technology allows the data or digital assets to be transferred directly between users, without the need for a third party (Ahmed & Afif, 2019). All committed transactions are stored in a chain of blocks in a blockchain, which could be regarded as a public ledger. This chain expands continuously as new blocks are added. Blockchain technology has key characteristics such as decentralization (Wang et al., 2018b). Blockchain can be utilized in a variety of industries, including the recording of the transaction process, documentation, and even voting (Nugraha, 2022). Blockchain can also be used to improve Supply Chain Management. This is because every stage of the supply chain records all data. The lifecycle of a product can be tracked at each step, and it is easy to pinpoint where in the supply chain a nonconformity (such as a product defect or a missing product quantity) has occurred.

Supply Chain Management is the process of moving and storing raw materials, work-in-process inventory, and finished goods from point of origin to point of consumption (Oliver and Webber, 1982). The objective of supply chain management is to synchronize the needs of the customer with the flow of materials from suppliers in order to achieve a balance between goals that are frequently viewed as competing: high customer service, low inventory management, and low unit

cost (Stevens, 1989). Combining Supply Chain Management and Blockchain technology can be the ideal combination of efficiency and transparency. Blockchain technology enables businesses to monitor all categories of transactions more securely and transparently. Businesses can trace the history of a product from its origin to its current location using Blockchain. Each time a product changes hands, the transaction is securely recorded, creating a permanent record from manufacture to sale. Blockchain increases the efficiency of global supply chains by enabling companies to conduct transactions directly and without third parties. Because of the many benefits that can be gained from adopting blockchain technology into a company's supply chain management, the usage of blockchain technology in the management of a company's supply chain has been increasingly widespread in recent years.

Starbucks is a coffee shop that was founded in 1971 by Jerry Baldwin, Zev Siegl, and Gordon Bowker and now has approximately 15,000 stores worldwide. Starbucks is able to access the local partners' knowledge easily and share development costs and risks besides being politically acceptable (Speiser, 2003). Starbucks is a company that introduces the sensation of a more diverse coffee-drinking experience and its coffee is known for its delicious and quality coffee which is one of the factors that makes Starbucks successful in becoming a big player in the coffee trade. Starbucks' quality control process is very strict in selecting the raw materials used to make its coffee products to become a separate standard that is different from other coffee shops. The Starbucks team travels to coffee-growing countries and builds good relationships that enable the company to purchase high-quality beans. They do extensive quality checks throughout the process. And they roast, taste, and evaluate samples that they received. Then how does Starbucks maintain the quality of its products? Starbucks maintains the quality of its product by purchasing locally sourced ingredients and supplies, Therefore Starbucks is able to maintain high product standards in any country or city. So, this is what underlies the author to make an analysis of how Starbucks maintains product quality and quality control systems by attaching the research questions below.

## **THEORITICAL FRAMEWORK**

### **Blockchain System**

The most recent advancement in information technology is blockchain, which is currently seeing widespread use across a wide range of industries. This technology was developed in order to support the era of information disruption, which offers alternative options to a centralized technological architecture. Data in the blockchain is permanently stored in data records that will be communicated peer-to-peer in the internal network and collaborate actively (Ade Chandra, 2020). A blockchain is fundamentally a distributed digital ledger of transactions across the entire blockchain network of computer systems. But, it is essential to be aware that there is no clear definition of a blockchain because the blockchain is characterized as permissionless, permissioned, or both (so it depends on what type of blockchain). Permissionless blockchain allows any user to join the blockchain network anonymously and does not limit the rights of the nodes, while permissioned blockchain limit certain nodes' access to the network and may also limit their rights on that network. Permissionless blockchains are more secure than permission blockchains since there are numerous nodes to validate transactions, and it would be challenging for malicious actors to cooperate on the network. On the other hand, permissioned blockchains are more efficient because network access is limited, and there are fewer nodes on the blockchain, resulting in faster transaction processing. Therefore, there are 4 types of blockchains: 1) Public blockchain: In nature, Public blockchain is permissionless and decentralized. 2) Private blockchain: In nature, Private blockchain is permissioned and controlled by a single organization. 3) Consortium blockchain: Consortium blockchain is controlled by a group of the organization not only one entity, and the character of this blockchain is permissioned. 4) Hybrid blockchain: The hybrid blockchain combines elements from the private and public blockchain.

According to its name, blockchain is composed of two words: block and chain. The "blocks" of the blockchain can be thought of as a file containing information (the data) and blocks linked one after another will become a "chain". Each block contains data, hash, and hash of the previous block.

Hash is a unique code in the form of a string of numbers or letters. The hash code identifies the block and everything it contains, and the hash is always unique, like a fingerprint. So any changes that occur within the block will cause the hash to change. In addition, the blockchain also has a validator called a node or we can also call it a "blockchain producer" or validators, block producers play an important role in validating the transactions. The following are the steps on how the blockchain works: 1) The new data is entered into a blockchain. 2) The block is sent to every block producer in the network. 3) Block producers on the network will check for the validity of the transaction. 4) And after the transaction is validated by the block producers. 5) A block is added to the existing blockchain, permanently.

### **Blockchain system in Supply Chain Management**

Supply chain management is one of the greatest challenges global businesses face today. Globalization, diverse regulatory policies, and diverse cultural and human behavior in supply chain networks make it nearly impossible to evaluate and manage risk in this complex network (Sarpong 2014; Ivanov, Dolgui, and Sokolov 2018). Many companies are looking into blockchain as a technology that has the ability to revolutionize the supply chain, experts believe that blockchain technology has the potential to enhance the current supply chain model by enhancing supply chain trust, efficiency, and transparency. According to Dawson B. (2007: 8), the use of technology in companies will support company activities, namely: 1) reducing costs, 2) increasing productivity, 3) increasing product quality, 4) reducing dependence on skilled labor, 5) so that can compete with competitors. Blockchain has the ability to address many of the difficulties affecting supply chain management in an efficient manner. Since a transaction is validated by the network of participants, supply chain transparency and the actual accuracy of transactional data are enhanced. It is well known that blockchain has tremendous potential to transform the entire supply chain, from the acquisition of raw materials to the delivery of goods to customers. (Babich & Hilary, 2020). In contrast to traditional supply chains, blockchain-based supply chains would immediately update data transaction records whenever there is a change, thereby enhancing the overall traceability of the supply chain network.

When a company is developing a blockchain solution to meet its supply chain needs, it has to decide what kind of blockchain to use. There are four major entities that play significant roles in blockchain-based supply chains, Registrars, who provide actors with unique identifiers for the network. Standardization organizations define standardization schemes, such as Fairtrade for sustainable supply chains or the policies and technological requirements for blockchain. Certifiers who provide certifications to actors for supply chain network participation. Actors, including manufacturers, retailers, and customers, must be certified by a registered auditor or certifier to maintain the system's trust (Steiner and Baker 2015).

### **How Starbucks Supply Chain Management Works**

The key to Starbucks' success is its ability to create a "customer experience". Over the years, they were able to leverage the supply chain not only to support but also to increase customer satisfaction. As a component of its overall supply chain strategy, Starbucks controls a substantial portion of the purchasing, roasting, packaging, and global distribution of coffee used in its operations. This is done to assist in ensuring that Starbucks' stringent coffee requirements are met. Effective operations rely heavily on Supply Chain Management (SCM), SCM can be applied to customer satisfaction and company success (Risya Syafira, 2021). Starbucks has a supply chain that is vertically integrated, which involves the company in every step of the supply chain process, from the coffee bean to the cup of coffee that is sold to the consumer. Starbucks' supply chain management consists of two activities: primary activities and support activities.

In Starbucks' primary activities, there are 5 activities, namely: 1) Sourcing, In this activity involves the procurement of raw materials from suppliers, the raw material is the coffee beans. 2) Operations: After receiving coffee beans from suppliers, Starbucks company will process the coffee beans to become quality coffee beans. 3) Inbound & Outbound logistics: Inbound logistics is when

entering raw materials such as the coffee beans that have been roasted by the roastery into the Starbucks inventory warehouse. 4) Sales & Marketing: In making sales, Starbucks frequently collaborates with a variety of parties for product sales and promotion. 5) Services: Starbucks always tries to provide the best service to its customers.

## RESEARCH METHODOLOGY

The purpose of this research is to determine how Starbucks implements the blockchain system in supply chain management and logistics to maintain its product quality. This research will use the qualitative approach that collects primary data and secondary data. The research collects data method will be used in this research case study research, interviews, focus groups, record keeping, and qualitative observation. This collects data method is used for the purpose of gaining a deeper understanding of certain concepts or experiences.

## RESULTS AND DISCUSSION

Supply chain management is a chain of approaches that integrate the supplier, manufacturer, distributor, warehouse, logistics and end customers with the right quantity, the right time, the right place, and the right cost. Every company has its own way to manage its supply chain so is Starbucks. Starbucks' supply chain management consists of 5 stages:

1. Sourcing: Starbucks searches for raw materials and capital products, such as the machines it will use. Starbucks separates it into five sections: Supplier's Supply, Supplier, Sustainability, Compliance, Governance

2. Integrated enterprises: Demand & Supply forecasting (Starbucks performs forecasting of market demand planning & also the company's needs in order to meet market demand); Supply Planning (Starbucks engages in supply planning to optimize the goods and achieve a balance between supply and demand); Procurement (Starbucks purchases goods from its suppliers); Warehouse (Entering goods into the company Warehouse); Production & Quality Assurance/Quality Control (After the goods have been placed in the warehouse, they will be inspected to ensure that the goods Starbucks receives from its suppliers match the ordered quality and quantity)

3. Logistics: Inventory Management (Determine which items will be distributed first); Fleet & Route Design (Starbucks makes plans regarding the grouping of goods to be placed in trucks whose areas or destinations are the same so that logistics are efficient and the quality of the goods in the truck does not degrade by the time the truck arrives at the Starbucks branch store); Direct & Cross Docking (Direct; shipment of products from the central Starbucks warehouse to Starbucks branch locations); War Room (a kind of GPS that can track the location of the goods trucks); SLA (service level agreement) & Return Management (an agreement regarding logistics services. Such as how long and how many products will be delivered from the center to Starbucks branch stores).

4. Store operations: Revenue Channel, Operation Management, Service Management

5. End customers: Customers' Customers; Satisfactory Level, Customers Perception, Customers Engagement

After successfully determining suppliers, the next step is for Starbucks to purchase raw materials from its suppliers, such as the coffee beans it purchases from Latin America, Indonesia & Japan. Starbucks uses the same composition of coffee beans for each cup of coffee. The composition of Starbucks coffee beans is called espresso hall bean, which consists of several variants of coffee beans and then combined into one precise composition and that is the coffee that will be used by Starbucks. Before being processed into beverages, however, the coffee beans that Starbucks purchases from its suppliers must undergo a roasting process at the nearest Starbucks roastery in the country. Example: Starbucks Indonesia roasts its coffee beans at Starbucks' roastery facility in Malaysia. After the coffee beans have been roasted, the roastery will ship them to Starbucks Indonesia, where they will be stored in the Starbucks Indonesia Inventory warehouse.

Logistics stores or delivers products to the customer, regardless of whether the customer is a manufacturer, distributor, or consumer. Starbucks has its own logistics distribution plan, such as the Starbucks Indonesia logistics distribution plan. Starbucks Indonesia has two warehouses located



in Surabaya and Jakarta. . The Jakarta-based Starbucks Indonesia inventory facility will supply the Starbucks Indonesia locations in the west. Meanwhile, the yellow warehouse is a Surabaya-based inventory warehouse that will service Starbucks Indonesia's eastern branch.

Starbucks in the United States and Starbucks in other countries have similar supply chain management, but it cannot be denied that there are still some distinctions between how Starbucks America and Starbucks in Asia manage their supply chains. For instance, the use of the blockchain system in the Starbucks supply chain. Unfortunately, the majority of Starbucks located in Asia have not yet implemented a blockchain system for their supply chain management; they are still lagging behind in adopting advanced technologies such as blockchain to support their supply chain management operations, example: Starbucks Indonesia. Despite the fact that supply chain activities can be made more efficient by using blockchain. Experts and studies have demonstrated that blockchain technology has the potential to address numerous problems inherent to the supply chain and to facilitate the achievement of crucial strategic objectives for supply chain management, such as cost, quality, speed, and dependability. Blockchain has a positive impact on supply chain management because the blockchain system is secure, transparent, and immutable which helps Starbucks have a transparent and traceable supply chain. Participants of the Starbucks supply chain, such as farmers, distributors, warehouses, roasting facilities, coffee shops, and customers, are the validators of the blockchain system. Blockchain will process data entered into the system accurately & in real-time, data that has been entered into the system will not be changed and can be viewed & maintained by all participants within the Starbuck supply chain. Adopting blockchain technologies will facilitate the verification of the origins, production time, and production location of raw materials for quality management purposes. However, the use of blockchain must be adjusted according to goals and needs. If blockchain wants to be used for supply chain operations, Starbucks should use a blockchain that is not centralized but also not decentralized, namely a hybrid blockchain. Because only Starbucks supply chain participants are permitted to access the data, as the information is confidential and cannot be shared with the public.

## CONCLUSION

Through interviews conducted with Starbucks supply chain employees and blockchain experts, valuable insights were obtained regarding the company profile, Starbuck supply chain management, the blockchain system, and its potential impact on Starbucks' operations. The analysis revealed that Starbucks, with its global presence and commitment to sustainability Through initiatives like C.A.F.E practices, Starbucks ensures the ethical sourcing of its coffee beans and promotes sustainable agricultural practices. The company's commitment to quality, transparency, and environmental responsibility is evident in its mission to inspire and nurture the soul of every human being, cup of coffee, and the environment.

Starbucks follows a well-defined business process known as "The Journey of Starbucks" to achieve its goals. This process includes activities such as portfolio and category management, market insight and sales forecasting, product development, supplier management, logistics management, demand and supply planning, operation management, and target and strategy revisiting. These activities are crucial for Starbucks to maintain its position as a global coffee shop and ensure the quality and consistency of its products. Starbucks has a clear-cut and structured supply chain management process, consisting of sourcing, integrated enterprises, logistics, store operations, and end customers. Each stage plays a crucial role in ensuring the right quantity, time, place, and cost of products, from sourcing raw materials to delivering them to end customers. It also focuses on ensuring a reliable and consistent supply of raw materials, efficient production, and quality control processes, effective logistics and distribution, and ultimately, customer satisfaction. Starbucks places importance on sustainability, compliance, and governance in its supply chain practices, as demonstrated through partnerships and initiatives to support ethical sourcing and environmental conservation.

Blockchain technology is a distributed ledger system that cryptographically links data blocks to create an immutable and transparent record of transactions. Blockchains can vary in terms of centralization, permissions, and privacy levels. They can be centralized, decentralized, or hybrid in nature. Public blockchains are fully decentralized and can be accessed and maintained by anyone, while private blockchains are controlled by a single entity. Hybrid blockchains involve multiple parties collaborating to maintain the system. Blockchain offers several advantages such as immutability, transparency, traceability, and security. Immutability ensures that data entered into the blockchain cannot be altered, while transparency and traceability allow for increased accountability. It has the potential to revolutionize supply chain management by eliminating intermediaries, reducing costs, and automating processes through the use of smart contracts. The implementation of blockchain can enhance accountability, ensure data integrity, and facilitate secure transactions.

Although Starbucks has not yet fully implemented the blockchain system in its supply chain management, particularly in most Asian locations, the findings indicate great potential for its adoption. A blockchain system could enhance transparency, traceability, and trust in the supply chain by recording every transaction and ensuring the accuracy of data. It can ensure the quality and consistency of raw materials, streamline logistics operations, and improve customer satisfaction. Implementation of a blockchain system could further align with Starbucks' commitment to sustainability, ethical sourcing, and maintaining its product quality to stay up to the standard. By embracing blockchain, Starbucks can further enhance its sustainability efforts, strengthen supplier partnerships, and provide a seamless and transparent experience for its customers. The integration of blockchain technology aligns with Starbucks' mission to inspire and nurture the soul of every individual, cup of coffee, and the environment. However, it is important to consider the level of decentralization and control in implementing blockchain systems.

In conclusion, the findings underscore the significance of supply chain management in Starbucks' operations and the potential benefits of implementing blockchain technology for supply chain management. By leveraging blockchain's advantages, Starbucks could enhance transparency, traceability, and efficiency in its supply chain. Exploring the potential of blockchain and its different types could align with Starbucks' sustainability goals and commitment to quality, while also providing benefits such as cost reduction and process automation. Incorporating a blockchain system into Starbucks' supply chain management could result in a multitude of positive outcomes for the company.

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