

Blockchain in Supply Chain and Procurement

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Abstract - Experts amalgamated with logistics and supply chain are always on their heels to shape the operational chain uniquely that will address the challenges more efficiently and reduce the risk that caused otherwise. When the experts seek for new possibilities, blockchain can be always present for help! In spite of the fact that the concept of Blockchain is quite nexus, it is well on its course to ameliorate the lives of people slowly by making it facile and efficient. Most of the businesses try collaborating blockchain into various processes as it is capable of performing various tasks efficiently within a short period.

I. INTRODUCTION

Supply chain has become complicated, few would say incommodious. It takes days to transact payment between a manufacturer and supplier because these agreements are contractual and requires services of lawyers and bankers each of which adds extra cost and delay. Also, production parts are often hard to trace back to supplier making defects challenging to eliminate. Blockchain shall be answer to these obstacles. This recent technology is what drives bitcoin and other so called cryptocurrency. However, it goes much further than an unhackable way of holding an exchanging money. So basically in supply chain payment which is one of the most crucial part gets easier and faster using the blockchain technology.

II. BLOCKCHAIN IN SUPPLY CHAIN

Supply chain has witnessed major changes in recent times, two of which stand out:

Firstly, it is not the traditional network of original equipment manufacturers and suppliers that it used to be during most of the part of twentieth century. Now, a number of entities have sprung up making the current supply chain much more complex. A single OEM like 'Apple' can have multiple contract manufacturers who have their own set of suppliers which overlap in many cases. This creates new challenges in terms of coordination and tracking.

Secondly, supply chain and manufacturing are a lot more dynamic today than they ever have been. Product life cycles have turned shorter and organizations have realized the value of optimizing their inventory. Also, the turnaround time has shrunk in the face of relentless competition.

These evolutions require a new set of ecosystem to manage them and Blockchain is well positioned to facilitate it. The organizations still run on decades old legacy systems which are proving to be inadequate for their changing needs.

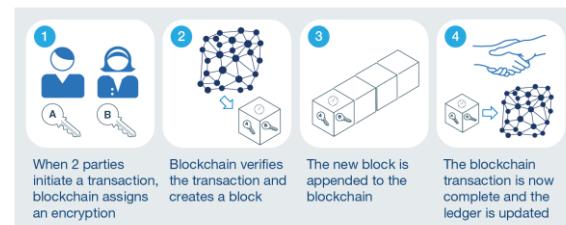
Even though middle men are generally despised but there was little scope to conduct supply chain operation till now without their involvement. They were the only way to address the trust issues in transactions. Questions such as whether the buyer will be able to pay for the goods on time

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or whether the supplier has the wherewithal to manufacture and deliver the consignments were traditionally settled by intermediaries such as banks, rating agencies and insurance companies. However, with the advent of Blockchain, the need for middlemen has been replaced by the system of distributed ledger. This will enable the complex negotiations and terms and conditions to be recorded permanently with almost immutable certainty. Also, it takes away the long lead times in establishing such contracts, thus making the movement of goods lot more agile.

How to create a blockchain transaction



McKinsey&Company

Blockchain also provides end to end tracking of material. This provides validity to the supply chain and helps the organizations in planning their demand accordingly. In the distributed ledger system each transaction has to be verified by all the involved stakeholders (In private Blockchain networks) and this involves each stakeholder verifying the calculation and changes done by the other ones. This sounds like a highly redundant process but this redundancy is what provides Blockchain its legitimacy. As a transaction is verified multiple times, any alteration is nearly impossible to go undetected and each copy of the ledger is in sync with real time movement of the goods, thus bringing transparency to the supply chain.

It has been particularly helpful for the supply chains in food industry as they are now able to track the origin of the food products within seconds. For manufacturing industries, it can be a great way to ensure sustainability as this will provide transparency regarding the origin of the components that they are procuring. Also, they can use it to track the shipments of their raw materials, thus providing real time visibility to the users regarding the shipment of materials. In terms of third party logistics providers, Blockchain can be a great boon as it will help to resolve the conflict between vendors and 3PL as the transferring of goods will be digitally recorded and claim settlement can be quickly resolved in case of any damage, theft or loss of goods.

III. BLOCKCHAIN IN PROCUREMENT

Volume based discounts are one of the major levers during negotiation. However, determining the total volume of buy is not that easy. Category managers have to struggle to find the total purchases made from an Original Equipment Manufacturer/Organizational Chain Management as goods are supplied by multiple aggregators and dealers. Keeping track of these transactions is a difficult task for the category managers as well as for the vendors. Also the exercise is painstakingly difficult to conduct before each and every negotiation. And even if the category manager is able to do that for large value contracts, they will certainly miss out to account in the purchases from the sister organizations and subsidiaries.

Blockchain can be an apt solution to tackle this problem. With each transaction being recorded with all the details in the distributed ledger, the category manager can always have a real time access to the total volume of buy not only in their organization but also in all other sister organizations and subsidiaries. The interesting point is that the value would have been vetted by the seller as a part of the shared Blockchain ecosystem and will eliminate any potential for dispute. With the help of it, category managers can get maximum possible discounts which can save millions of dollars for the organization.

Another big challenge for the procurement professionals is to optimize their inventory. Most of the times, they have little visibility of the goods/shipment and end up buying more than required. This results in trapping working capital and affects the cash flow negatively, thus having a dent on overall profitability levels. According to Mr. Paul Brody, Global Innovation Blockchain Leader for Ernst & Young, "At its most basic level, the core logic of Blockchains means that no piece of inventory can exist in the same place twice". This statement means that as soon as a good is moved, the transaction has to be updated and verified by all the entities thus reflecting across the supply chain in seconds. This entails that the location of inventory will be the same for every stakeholder and no record will be out of sync, thus enabling the category managers to track inventory, consumption and shipment in real time thus optimizing the inventory. According to an estimate by EY, each dollar of inventory costs upto 20 to 40 cents annually when we account the cost of capital and depreciation. With the help of enhanced accuracy through Blockchain, this leakage can be minimized.



Smart contracts can solve the payment related issues in procurement. Every purchase order can be turned into a smart contract which will be executed upon the fulfilment of some preset condition. For instance, a contract can be programmed to execute itself upon successful delivery of the product. Once the delivery is done, the contract will make sure that the payment to the vendor is done within the time frame specified in the contract. Also, it can automate the PVC processes as any increase or decrease in the linked indices can be automatically captured by the contract and the resulting benefit/loss will be passed on to the supplier.

Blockchain can also help to fight off the defaulting vendors/suppliers. Any tampering with the goods can be traced back to its origin, thus, eliminating the risk of counterfeit products. Also the vendors cannot make any changes to the accompanying documents as it would be stored in distributed ledger. Also, supplier will know the price charged by the dealer and any deviation from standard pricing will be immediately caught off. Also, many OCMs/OEMs provide favorable pricing to large organizations. When these goods are sold through dealers, these OEMs/OCMs have no way of knowing if the product is going to the intended organization or is being sold off by the dealer in open markets. With Blockchain, such kind of discrepancies will be immediately addressed.

Blockchain can also make the audit process a lot easier for the procurement divisions. With a verifiable trail of each and every transaction, audit will require much less work and any discrepancy can be immediately traced back to its origin with the associated person responsible for it. This can make the procurement process much more transparent and can also impose trust in this part of the supply chain.

Blockchain use cases in Supply Chain and Procurement IBM recently partnered with Maersk to develop TradeLens, a Blockchain enabled platform for digital supply chain enabled by distributed ledgers. The platform currently boasts of having 90 organizations sharing critical data and recording more than a million transactions each day.

An organization named Bext360 is using Blockchain to track all the elements of worldwide coffee trade. This provides end to end visibility and transparency from farm to the cup. While it increases productivity at one end, it also ensures that farmers get their fair share of deal thus providing verifiability and legitimacy to Coffee trade which has traditionally been mired with conspiracy. It has completed its pilot in California, Uganda and Ethiopia and has now on boarded Ireland's Moyee coffee.

Much closer to home, Bajaj Electricals, in coordination with Yes Bank has developed a Blockchain enabled payment system for the vendors. This has brought down the payment cycle from 4-5 days to almost real time for the company. The company has implemented this with the help of Blockchain enabled smart contracts. This has resulted in increased level of vendor satisfaction for the company.

IV. CONCLUSION

Friction in the supply chain is one big problem. There are too many go-betweens. There is too much back and forth. This makes supply chain inefficient. Suppliers, providers, and clients must interact via central third-party entities instead of

directly with each other. Ostensibly simple transactions turn into lengthy multi-step procedures. Blockchain could be the answer to many of these issues. Blockchain will simply make the payments faster and help in overall increasing efficiency of supply chain.

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