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APPLICATION OF BLOCK CHAIN TECHNOLOGY IN MANUFACTURING INDUSTRIES TO OPTIMIZE SUPPLY CHAIN AND LOGISTIC OPERATIONS

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ABSTRACT

Now a days supply chain and logistics are two core issues need to be addressed by Indian manufacturing giants as these operational have been suffering from various factors like competition by global traders , outsourcing, ever diversified geographies etc. Simultaneously logistic operations are also facing problems like improper planning, irregular procurement movements, inferior stationing etc. In the most recent Block Chain Technique has emerged as a key solution to address above inconsistencies to achieve transparency, real-time monitoring and proactive view.

Keywords: *Block Chain Technology, Logistics, Supply Chain , Ledgers.*

INTRODUCTION

Block Chain Technique is not the new one into the commercial world. Though initially it was to make financial transactions swift and transparent but now it is revolutionizing the manufacturing Industries specially supply chain and logistic operations. Every single activity that affects the business directly or indirectly is recorded in the Blocks and these Blocks gradually get linked to each other in the cascading manner to form Block Chain .This smart ledger solves most of the problems associated with supply chain and logistic operations.

ISSUES TO BE ADDRESSED BY BLOCK CHAIN TECHNOLOGY TO ENHANCE SUPPLY CHAIN AND LOGISTIC OPERATIONS IN MANUFACTURING UNITS.

- A. **Price Risks-** As we know that price of various commodities / raw materials depends on many factors like availability, seasoning, demands etc. This factors must be aligned with business operations and production processes to nullify their adverse impact on smooth logistics, swift supply chain and product's price.
- B. **Intact and Fast delivery-** This factor causes the most adverse effect on supply chain management and logistic operations as any sort of inconsistency disturbs the whole product cycle badly.
- C. **Risks associated with suppliers-** For any Business giant it is mandatory to adhere to government authorities duly .To get emerged as esteemed conglomeration it is necessary to maintain transparency .This needs removal of reputational and monetary risks associated with illegal and discarded suppliers.
- D. **Delaying and frequent accidents-** This are two major problems which are generated due to shortage of trained drivers , lack of registered drivers and lack of training skills.
- E. **Obsolete resources-** Non compliant facilities, poor and outdated equipment's , inferior warehousing , Obsolete or deteriorated vehicles.
- F. **Incompetency-** Lower K.P.I.(Key Performance Index) , inability to participate in global logistics, limited I.T. linkages , limited overseas network, no access to I.F.F.(International freight forwarder) , lack of EDI(Electronic data interchange) technique.

BLOCK CHAIN TECHNOLOGY TO COUNTER ABOVE ISSUES

- Block Chain provides streamline procurement of raw materials in efficient and contiguous manner .It eliminates invoice disputes and it encourages on time payments. Information about availability of raw materials with minimal cost is accessible by manufacturing units through smart ledgers.
- There is a series of contiguous consultations among clients, suppliers , contractors , government authorities etc. Sometime this may cause delaying. This problem can be rectified using smart ledgers which are distributive in nature and having different schema.
- Risks involved with suppliers are easily removed by distributed ledgers as the entire records are available in transparent manner to each and every node of the peer to peer network. This discourages any sort of illegal practices.



Fig 1: Peer To Peer Network

- Workforce providers give all the information about workforce, registration, training data , experience etc through these distributed and smart ledgers. This process limits delaying and frequent accidents.
- Block Chain Technique provides efficient technology to remove the inconsistencies of claimed hours between suppliers and clients , excessive number of blocked invoices , frequent and manual invoice reconciliation.
- To increase K.P.I. Block Chain Technique helps to reduce multiple systems, manual work , budget uplifting , invoice issues. It also encourages joint venture with international giants and agencies.

HASHING IN BLOCK CHAIN TECHNOLOGY

This Technique has already been used in financial world since it's advent in 2009. There is Chain of blocks which is created by using hashing. Each Block of data has three fields which are data of that field, hash to the following Block and the same to the preceding block. The very first Block is known as Genesis Block. These Blocks are tamper proof as they can't be altered because of constraints on time and quantum of data to be modified.

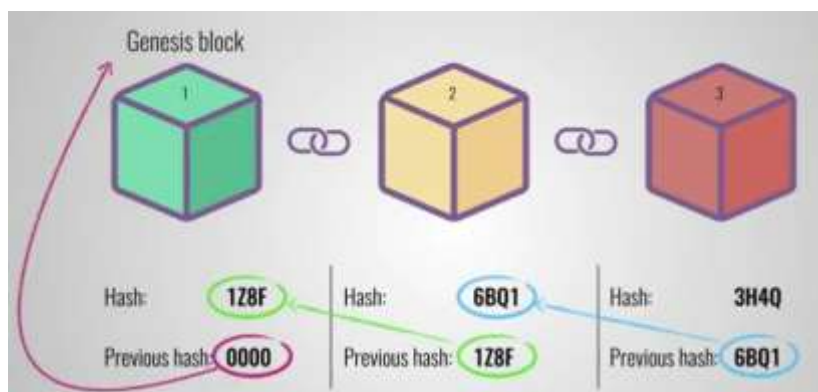


Fig 2: Genesis Block

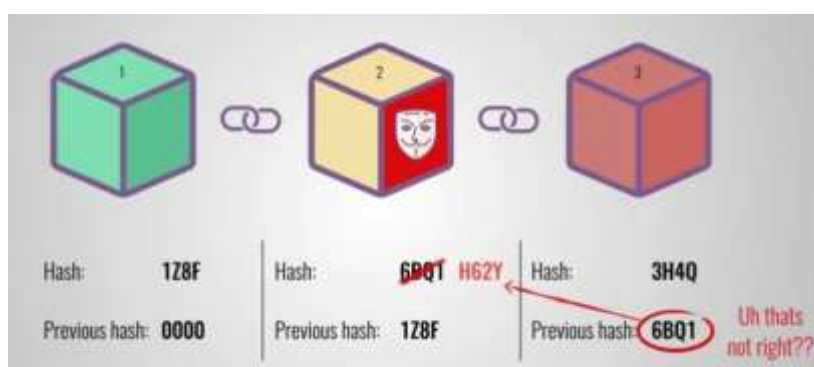


Fig 3: Hashing and Elements of block



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CONCLUSION

The above article states how Block Chain Technique helps manufacturing industries on various factors to increase their efficiencies. It also promotes transparency and protects them from variety of disturbing elements

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