Group 3

Inventory Management with Blockchain

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Presented by

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Introduction

- Blockchain is a growing list of records (blocks) linked together using cryptography
- It is used as a publicly distributed ledger
- It ensures high-security & full transparency in transactions
- Its implementation in supply-chain making inventory system management more efficient and transparent to the stakeholders

Background/Literature-Survey

- Inventory management issues:
  - Excess inventory
  - Poor service levels
  - Low product turnover
  - Failure to keep track of stock
  - Lack of visibility
  - Experiencing difficulty while identifying demand patterns
- The research questions have been formulated as follows:
  - How are businesses currently taking care of their inventory management and what are the current bottlenecks and issues they are facing?
  - What are the characteristics and challenges of blockchain?
  - How is blockchain currently being used in SCM and inventory management, and what are its benefits and challenges?
  - Has blockchain got the potential to solve the previously found inventory management issues? If so, how?
  - What is the current stance of experts working in inventory management on blockchain and could they accept it as a state-of-the-art technology designed to solve the issues?

Ideas/Plans

- Blockchain will be used for record keeping
- Assets such as units of inventory, orders, loans etc will be given unique identifiers, serving as digital tokens
- Participants in the blockchain will be given unique digital signatures to sign the blocks they add to the blockchain

Capturing the Details of a Simple Transaction: Conventional vs. Blockchain Systems

The financial ledgers and enterprise resource planning systems now used don't reliably allow the three parties involved in a simple supply-chain transaction to see all the relevant flows of information, inventory, and money. A blockchain system eliminates the blind spots.
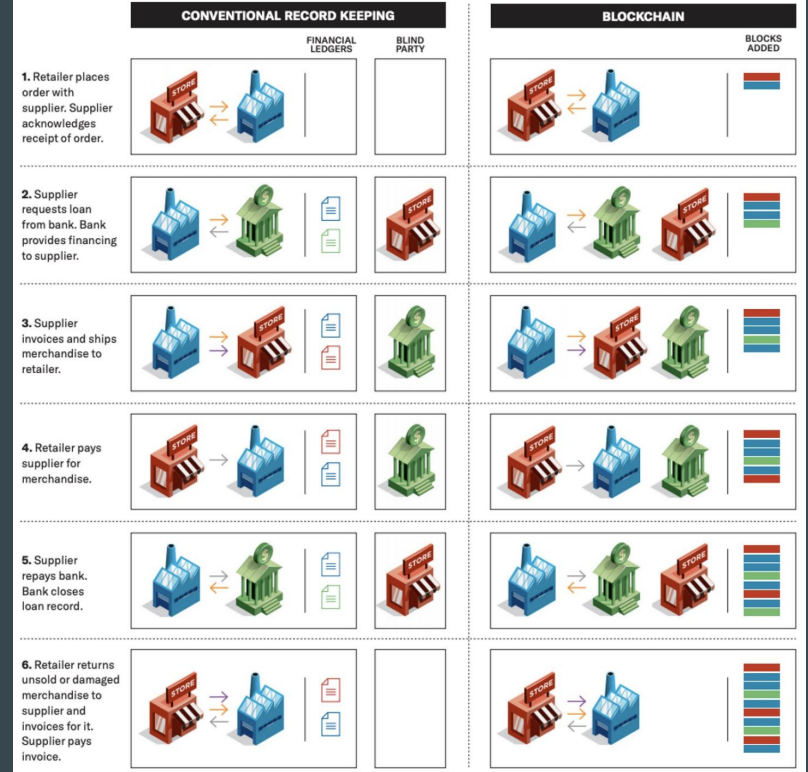
Ideas/Plans

- Every step of the transaction will be recorded on the blockchain as a transfer of the corresponding token from one participant to another
- The blockchain needs to be private

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KEY
Retailer — Information flow
Supplier — Inventory flow
Bank — Financial flow

CONVENTIONAL RECORD KEEPING — BLOCKCHAIN

FINANCIAL LEDGERS — BLIND PARTY — BLOCKS ADDED

1. Retailer places order with supplier. Supplier acknowledges receipt of order.

2. Supplier requests loan from bank. Bank provides financing to supplier.

3. Supplier invoices and ships merchandise to retailer.

4. Retailer pays supplier for merchandise.

5. Supplier repays bank. Bank closes loan record.

6. Retailer returns unsold or damaged merchandise to supplier and invoices for it. Supplier pays invoice.

Potential Challenges

- Need for a governance mechanism to determine the rules of the system
- Another challenge will be to figure out how to address the impact that blockchain could have on pricing and inventory-allocation decisions by making information about the quantity or age of products in the supply chain more transparent

Conclusion

There is considerable room to improve supply chains in terms of end-to-end traceability, speed of product delivery, coordination, and financing. The proposed system with blockchain can be a powerful tool for addressing the deficiencies.

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Thank You!