Title: Improving transparency and security of supply chain using Blockchain and Knowledge Graphs

Guide: Dr.D.Jeya Mala

Keywords: Distributed Computing, Blockchain, Knowledge Graphs, Neo4j, Smart Contracts

The current supply chain system is riddled with disruptions and inefficiencies. The Covid-19 outbreak demonstrated to us how simple it is to completely disrupt the supply chain, leading to the downfall of entire economies. With the help of knowledge graphs and blockchain, we hope to:

- Increase traceability of goods in supply chain to ensure corporate standards are met
- Lower losses from counterfeit/gray market trading
- Improve visibility and compliance over outsourced contract manufacturing
- Reduce paperwork and administrative hurdles

A shipping company transporting goods across multiple transit points would require active tracking, review and approval causing lots of paperworks in the process. This creates opportunity for fraud at multiple points. By executing smart contracts at each stage to automate the management of products and freight, we hope to reduce this process through blockchain and the ledger. Contract manufacturing that is outsourced might be more tightly managed by businesses. Blockchain possibly reduces communication or data transfer errors by giving all participants in a given supply chain access to the same information. It is possible to supply goods and services more quickly by spending less time confirming data and more time enhancing quality. Blockchain and the data stored in it exist only in the digital realm. Interfacing the data tracked in the blocks to the physical goods being traced requires other technologies. By implementing blockchain technologies, stakeholders can better manage the supply chain by keeping track of information such as price, date, location, quality, certification, and other pertinent details. The availability of this data within blockchain can improve visibility and compliance over outsourced contract manufacturing, increase traceability of the material supply chain, reduce losses from gray market and counterfeit products, and possibly strengthen an organization's position as a pioneer in ethical manufacturing. Businesses can improve their supply chain management through more transparent and accurate end-to-end tracking.

We strive to create a novel solution that would make logistics secure and more transparent using blockchain and distributed ledger.

Sahil Arora
19BCE1366