IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

STUDY OF USING BLOCKCHAIN IN SUPPLYCHAIN FOR MANUFACTURING INDUSTRIES

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Abstract

The present world is marching towards the digital era, where it is easy for people to gather more information and knowledge about small companies located in the nooks and corners of the world. It's incredibly difficult for customers or buyers to truly know the value of products because there is a significant lack of transparency in our current system. In a similar way, it's extremely difficult to investigate supply chains when there is suspicion of illegal or unethical practices. They can also be highly inefficient as vendors and suppliers try to connect the dots on who needs what, when and how.This project suggests that the real time transparency and cost savings secured by blockchain technology improve the profitability and competiveness of manufacturing firm and also explains the limitations of blockchain adapting to manufacturing industries. This study tried to unveil the areas of blockchain and its' benefit with various other parameters through a structured and customized market research technique. The study has been conducted in the Chennai (India) region among a group of 120 employees of different age group, Types of industry with equal breakup of male and female. The methodology adopted has helped in concluding certain factors with high level of authenticity of relevant support data and information with statistical significance. The conclusion for this study has been derived, after validating the data collected and then processing the same with certain key statistical tools including chi-square test and correlation analysis.

Keywords: blockchain, supplychain, disruption, IOT, manufacturing, proof of work, real-time transparency,time saving , cost saving.

I Introduction

Manufacturing sector is considered the backbone of development in general and economic development in particular mainly because Manufacturing industries not only help in modernizing agriculture, which forms the backbone of our economy, they also reduce the heavy dependence of people on agricultural income by providing them jobs in secondary and tertiary sectors. A promising company would aim at delivering products with high quality at low cost without compromising its profit margin and quality, satisfying the needs of the customers.Managing supply chains nowadays is extraordinarily complicated as stakeholders have to maintain paper-based trails**.**The lack of transparency can cause cost and customer relationship issues, which can negatively influence a brand name.With the help of Blockchain technology, one could easily find out where a product was made, by whom, and if the quality and condition of said product.

The very things that are necessary for reliability and integrity in a supply chain are provided by blockchain. Blockchain provides consensus—there is no dispute in the chain regarding transactions because all entities on the chain have the same version of the ledger. Everyone on the blockchain can see the chain of ownership for an asset on the blockchain. Records on the blockchain cannot be erased which is important for a transparent supply chain. This provides high security and transparency which will increase trust among customers

II Review of literature

Anna Roy: Blockchain:The India Strategy-Blockchain technology has the potential to revolutionize interactions between governments, businesses and citizens in a manner that was unfathomable just a decade ago. Though very often grouped with technologies such as artificial intelligence (AI) or IoT (Internet of Things), the technology is unique in its foundational nature. Unlike other technologies, which have the potential to deliver completely new services to citizens and other stakeholders alike, blockchain has the potential to revamp currently existing processes to unlock new sources of efficiency and value.

Mougayar, W. 'The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology' book provide introductory explanations of the algorithm and thecurrent state of blockchain technology for readers without advanced knowledge of computers .book, The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology, discusses the potential use of blockchain technology in businesses.Hesuggests that large banks should actively employ blockchain technology in their businesses, supporting the active implementation of blockchain technology to avoid ceding profits to start-up financial companies

Catalini and Gans:'Some Simple Economics of the Blockchain' has satedthat blockchain technology's mechanism for enabling cost savings. They provide more specificity around the vague arguments for blockchain technology's cost savings by dividing the cost reduction effects of blockchain technology into two categories: verification costs and networking costs.

Matthias Heutger: 'Blockchain in Logistics': Despite all the hype surrounding blockchain today, we believe that the logistics industry needs to leverage new technologies and embrace ways of rethinking old processes in the digital era. While there are still many challenges to overcome, we invite you to explore with us the opportunities that blockchain presents. By joining forces, we can create the right foundations for successful industry adoption of blockchain and we can ultimately unlock new value in logistics.

Abeyratne, S.A andMonfared, R.P: 'Blockchain ready manufacturing supply chain using distributed ledger' suggest the applications of blockchain technology to supply chains in the manufacturing industry. They describe the positive effects of blockchain technology on the transparency of a supply chain and the quality of products. Extending this discussion, Mondragon, Mondragon, and Coronado (2018) specifically examine thetrade of composite materials in the manufacturing industry using a blockchain platform, emphasizing that the quality of products can be secured through blockchain technology.

III Objectives

A study on using Blockchain in supplychain for Manufacturing Industries

To analyze the impact of blockchain in supplychain

To study impact of Blockchain in Indian Markets

IV METHODOLOGY

Research Design

My research design will be descriptive followed by partially exploratory because the entire project will be based on the data collected from reports, journals and analysis so that the detailed and clear description will be there in the project, so there is a mix of explanation and description design.

Participants

The target population consists of employees who are working in manufacturing industries in Chennai. A total of 150 respondents has participated in research to share their views about blockchain technology. The respondents are based on various age groups of 18-25, 25-35, 35-45 and above 45years and the industry they are working and gender of both male and female.

Measures

A set of questionnaire was prepared which include Demographic variables ,Industry type, Age of industry and respondents knowledge about blockchain and its factors, sectors in which blockchain has significant impact has been asked in the questionnaire and also I have added the video about blockchain for those who don't have any knowledge about it.

Procedure

The questionnaire was spread across to the employees working in Manufacturing industries in Chennai region. From the survey a detailed database has generated from the respondents. The researcher explained the purpose of the study to the respondents. The respondents were assured of their anonymity and confidentially of any information being provided. The respondents completed the questionnaires and out of the 150 copies of the administered questionnaire, all of it were collated and analyzed statistically using percentage analysis, Correlation test and Chi-square test.

V RESULTS AND DISCUSSIONS

From the analysis of the data collected, the following results were obtained:

- Majority (68.3%) respondents say that in Supplychain& Logistics sector blockchain has significant impact.
- Majority (59.2%) respondents say that adopting blockchain technology will disrupt the Industry.
- Majority (88.3%) of respondents Strongly agree that Blockchain will improve Indian Markets
- There is significance difference between Size of Industry and Satisfactory level in whether Blockchain can improve Indian Markets. Reject H0
- There is a significance difference between the type of industry and Satisfactory level in whether Blockchain can improve Indian Markets.Reject H0

Hypothesis 1

- The null hypothesis H0 is is rejected so we conclude that there is significance difference between Size of Industry and Satisfactory level in whether Blockchain can improve Indian Markets. The result depicts that the size of industry determines the improvement of Indian markets when they adapted to blockchain technology because of insufficient funds small and medium industry can't able to adapt to blockchain technology.

Hypothesis 2 Since the spearman correlation is between -1 and +1, we accept H1 and reject H0. Therefore there is a significance difference between the type of industry and Satisfactory level in whether Blockchain can improve Indian Markets. The result depicts that Type of industry

play a Significant role role in determining the improvement of Indian markets when it uses blockchain.

Correlations			
		Type of industry	Satisfactory level in whether blockchain improve indian markets
Type of industry	Spearman Correlation	1	0.15
	p-value Sig.(2-tailed)		0.11
	N	120	120
Satisfactory level in whether blockchain improve indian markets	Spearman Correlation	0.15	1
	p-value Sig.(2-tailed)	0.11	
	N	120	120

VI Suggestions

Since the blockchain is emerging technology it requires some time to implement in industry across india. Due to lack in skills about IOT many of the employees don't know about latest digitalization ,Organization should train about IOT. On the other hand, all industries have their independent systems that differ from each other, which leads to complex integration. Regarding those situations, a private-blockchain-based IIoT is promising to bridge the need for product and material tracking information exchange between parties while maintaining the respective confidentiality. From the survey we came to know that blockchain has many advantages in supplychain if it adapted in Manufacturing industries

VII Conclusion

Blockchain technology is proven that it has many significant advantages like Time saving, Cost reducing, Transparency, Security etc.But in Indian manufacturing companies, most of the established organizations has set up their factories during second industrial revolution. Due to infrastructure cost and implementation cost many industries are still in between 2nd and 3rd revolution .This is one of the limitation where we need to have more research to bring out more

understanding on blockchain. From results and findings we can understand that using blockchain will disrupt the industry because it is an emerging technology and many of employees not knowing about latest digitalization and lack of skills in using it ,but usig it effectively bring out profit to organization anh helps to improve indian markets. Furthermore research has to be done on other industries to study the exceeding impacts of blockchain.

References

- **Anna Roy:**"Blockchain: The India Strategy"(book published on jan 2020)
- **Mougayar, W.** 'The Business Blockchain: Promise, Practice, and Application of the Next Internet Technology"(2016).
- **Catalini and Gans:**'Some Simple Economics of the Blockchain"(2016)
- **Matthias Heutger: "**Blockchain in Logistics"(2018).
- **Abeyratne, S.A and Monfared, R.P:** "Blockchain ready manufacturing supply chain using distributed ledger".
- **MarEx :**"Blockchain currency ready for container shipping", The Maritime Executive, http://maritime-executive.com/article/blockchain-currency-ready-for-container-shipping (2017).