

A STUDY ON USING BLOCKCHAIN IN SUPPLYCHAIN FOR MANUFACTURING INDUSTRIES

Submitted in partial fulfillment of the requirements for the award of

Master of Business Administration

by

S.HARESH

Register NO: 42410015



SCHOOL OF BUSINESS ADMINISTRATION

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

**Accredited with Grade "A" by NAAC | 12B Status by UGC | Approved by AICTE
Jeppiaar Nagar, RAJIV GANDHI SALAI,
CHENNAI - 600 119**

November 2023



SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
CATEGORY - 1 UNIVERSITY BY UGC**

SCHOOL OF BUSINESS ADMINISTRATION

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **S.HARESH 42410015** who have done the Project work entitled **A STUDY OF USING BLOCKCHAIN IN SUPPLYCHAIN FOR MANUFACTURING INDUSTRIES"**.

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DECLARATION

I **S.HARESH 42410015** here by declare that the Project Report entitled, **A STUDY OF USING BLOCKCHAIN IN SUPPLYCHAIN FOR MANUFACTURING INDUSTRIES”** done by me under the guidance of **Dr.K.SEETHAL** at **SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY, CHENNAI** is submitted in partial fulfillment of the requirements for the award of Master of Business Administration degree.

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(HARESH.S)

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ABSTRACT

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 report suggests that the real time transparency and cost savings secured by blockchain technology improve the profitability and completeness of manufacturing firm and also explains the limitations of blockchain adapting to manufacturing industries.

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CHAPTER-1

1.1 INTRODUCTION

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. People are prone to numerous varieties and options in prices, models, quality, and brands in purchasing any product. With more connectivity and digitalization, awareness of people knowing about various companies and products they produce is on a rise. This eventually leads to a widened scope of business and heavy competition for sustainable competitive advantage. Managing the business with a motive to satisfy the changing customer needs now and then is a challenge most companies face. It takes a very little time frame for a change to happen. Yesterday's techniques and methods used seem less effective as technology and needs keep improvising, and so, today's methods and tools might not be sufficient in handling the constant change for the future to come. This establishes the idea for the industries to constantly adopt new methods and techniques to have an unceasing competitive advantage.

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.

1.1.1 BLOCKCHAIN

What is blockchain?

Blockchain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system. A blockchain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain. Each block in the chain contains a number of transactions, and every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant's ledger. The decentralized database managed by multiple participants is known as Distributed Ledger Technology.

1.1.2.History

The blockchain technology was described in 1991 by the research scientist Stuart Haber and W. Scott Stornetta. They wanted to introduce a computationally practical solution for time-stamping digital documents so that they could not be backdated or tampered. They develop a system using the concept of cryptographically secured chain of blocks to store the time-stamped documents.

In 1992, Merkle Trees were incorporated into the design, which makes blockchain more efficient by allowing several documents to be collected into one block. Merkle Trees are used to create a 'secured chain of blocks.' It stored a series of data records, and each data records connected to the one before it. The newest record in this chain contains the history of the entire chain. However, this technology went unused, and the patent lapsed in 2004.

Further, in 2008, Satoshi Nakamoto conceptualized the theory of distributed blockchains. He improves the design in a unique way to add blocks to the initial chain without requiring them to be signed by trusted parties. The modified trees would contain a secure history of data exchanges. It utilizes a peer-to-peer network for timestamping and verifying each exchange. It could be managed autonomously without requiring a central authority.

1.2 INDUSTRY PROFILE

1.2.1.MANUFACTURING INDUSTRIES

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.

Industrial development is a precondition for eradication of unemployment and poverty from our country. This was the main philosophy behind public sector industries and joint sector ventures in India. It was also aimed at bringing down regional disparities by establishing industries in tribal and backward areas.

Export of manufactured goods expands trade and commerce, and brings in much needed foreign exchange, Countries that transform their raw materials into a wide variety of finished goods of higher value are prosperous. India's prosperity lies in increasing and diversifying its manufacturing industries as quickly as possible.

Over the last two decades, the share of manufacturing sector has stagnated at 17 per cent of GDP — out of a total of 27 per cent for the industry which includes 10 per cent for mining, quarrying, electricity and gas. This is much lower in comparison to some East Asian economies, where it is 25 to 35 per cent. The trend of growth rate in manufacturing over the last decade has been around 7 per cent per annum.

The desired growth rate over the next decade is 12 per cent. Since 2003, manufacturing is once again growing at the rate of 9 to 10 per cent per annum. With appropriate policy interventions by the government and renewed efforts by the industry to improve productivity, economists predict that manufacturing can achieve its target over the next decade. The National Manufacturing Competitiveness Council (NMCC) has been set up with this objective.

1.2.2. INDIAN MANUFACTURING INDUSTRY PROFILE

The Indian economy is firmly on the path of steady growth. Even during the last decade when other countries were in the grip of a massive slowdown, India continued to enjoy a comfortable economic position. This recent spurt in growth is propelled by radical reforms such as the removal of restrictions on foreign investment and industrial de-licensing. Tailoring the EXIM policy to promote exports and aligning the import duties to meet WTO commitments further contributed to this development. This trend is expected to continue over the next five years, driven by a favorable business policy environment in terms of tax cuts, broadening tax base, and reduced interest rates.

The liberalization of the economy has opened new windows of opportunity for manufacturing sector. Increasingly the success of manufacturing industries is dependent on innovations, research and development. It is critical not only to remain competitive but also, significant advantages can be gained by developing and commercializing new technologies.

1.3. Need for the study

On a global scale, many industries are shifting towards new technology to improve Supply chain efficiency and gain profit, where the emerging technology blockchain will have major part in future markets. The successful implementation of Blockchain is a hard thing to accomplish in most industries, especially in India.

This study aims to understand the reason why industries should adapt blockchain and its benefits and limitations while implementing the blockchain technology. This will allow many industries to revisit their strategies and review whether Blockchain technology should be adopted or not.

1.4. Scope and Significance of Study

This project aims to get understand about using the blockchain technology in manufacturing industries and make people aware about emerging technology and its various benefits in various sectors.

1.5. OBJECTIVES OF THE STUDY

1.5.1.Primary Objective

- A study on using Blockchain in supply chain for Manufacturing Industries

1.5.2. Secondary Objective

- To analyze the impact of blockchain in supply chain
- To study the different aspects of Blockchain
- To study impact of blockchain in various sectors
- To study impact of Blockchain in Indian Markets

1.6. LIMITATIONS OF THE STUDY

- It is difficult to check the accuracy of information provided
- The way things are measured may change over time.
- 110 numbers of respondents were considered

CHAPTER 2

REVIEW OF LITERATURE

Anna Roy (2020): 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

Vincenzo Morabito (2017): Technological advancements and innovation is constantly evolving and growing at such a fast rate that everyone is required to stay abreast of these advancements and innovations. The paradigm change of Blockchain is not left out from this evolution. The technological concept behind the Blockchain is interestingly closely identical to that of a database. However, it is clearly one of the key concepts that needs to be understood for the future.

Matthias Heater (2018): 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.

Gavin Smith (2018): We've seen distributed ledger technology move out of the lab and onto the C-suite agenda of our clients, from startups to multinational giants with centuries of transactions behind them. While perspectives are many and varied, the overwhelming view is that distributed ledger technology has the power to shift economies, businesses and behaviors. Whichever side of the ledger they're on, businesses need to understand how the technology works and its potential applications, and how it interacts with existing legal frameworks.

Anders V Hua (2017) Blockchain being a technology that ensures a trusted, secure and transparent technology has the potential to fix some of the current problems with supply chains today. An example is an blockchain implementation that registers all transactions of goods on a blockchain: The parties involved, date, price, location, state and quality of the product and other information that is relevant to management of the supply chain.

Mouzadar's (2016) and Drescher's (2017) books provide introductory explanations of the algorithm and the current 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.

Drescher (2017) clarifies the basic procedures through which blockchain technology works. In addition, Kossow and Dykes (2018) and Initiand Lakhani (2017) offer a well-organized discussion of the recent state of blockchain technology, its various applications, and its limitations. These works provide substantial insights into blockchain technology.

Catalini and Gans (2016) review 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.

Yermack (2017) investigates the potential effects of blockchain technology on corporate governance. He suggests that investors (i.e., shareholders) can increase their profits through the improved liquidity and lower costs achieved via blockchain technology. Moreover, the real-time transparency of blockchain technology allows investors to more easily supervise managers, and markets can form more efficient prices, as information asymmetries among managers, investors, and other market participants are resolved.

Ryan and Donohue (2017) describe blockchain technology's uses for trading securities, discuss the limitations of blockchain technology applications and suggest guidance for corporate lawyers assisting corporations that are willing to transact securities over a blockchain platform.

Walker and Venables (2017) devise specific application of blockchain technology to securities exchange, which they call Setline, and Hallam et al. design a network payment system for securities settlement using blockchain technology.

Tanner and Valtanen (2017) explain the applicability and usefulness of blockchain technology in various fields of manufacturing industry.

Mondragon, and Coronado (2018) specifically examine the trade of composite materials in the manufacturing industry using a blockchain platform, emphasizing that the quality of products can be secured through blockchain technology.

Tian (2016) designs a method of combining blockchain technology with radio-frequency identification (RFID) to improve the quality of agri-food, focusing on Chinese agri-food markets, which has a complicated and often fraudulent supply chain system. Korpela,

Hallikas, and Dahlberg (2017) also discuss about the digitalization of supply chain system through blockchain technology. Based on the studies of Mouzadar (2016) and Yermack (2017), we elicit the logic of the effects of blockchain technology on the sustainability of manufacturing firms.

mouzadar (2016) suggests 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.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

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. It will cover all the major information about Blockchain.

3.2 Sampling Technique

A convenience sampling is one of the main types of non-probability samplings methods, a convenience sample is made up of people who are easy to reach.

3.3 SOURCES OF DATA

3.3.1 PRIMARY DATA

The source of information in my project will be through data collected by taking survey through Questionnaire from people working in different manufacturing industries and the sample size is 110.

3.3.2 Secondary Data sources

Secondary data refers to data that was collected by someone other than the user. Common sources of secondary data for Journal, Books, Websites, organizational records.

3.4 STRUCTURE OF QUESTIONNAIRE

There are two broad types of questions open ended or open questions, and closed ended or closed questions. Open questions enable respondents to answer as they wish. Closed questions provide respondents with a list of options from which they choose

3.5 Sample Size

The sample size is 110.

3.6 PERIOD OF STUDY

The period of study is from September 2023 to November 2023.

3.7 Analytical Tools

The data collected from the employee's during the survey is analyzed using various tools. Some of the statistical tools applied in study are

- Percentage method
- Chi-square
- Correlation

CHAPTER 4

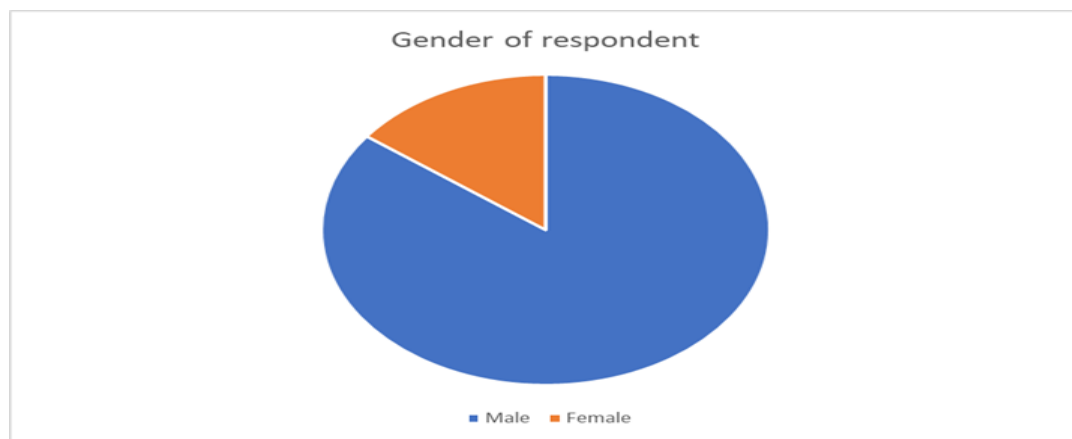
DATA ANALYSIS AND INTERPRETATION

4.1. PERCENTAGE ANALYSIS

Table 4.1.1. Table showing Gender of the respondents

S.No	Particulars	Percentage
1	Male	85.3%
2	Female	14.7%

Source: Primary data



4.1.GENDER OF RESPONDENTS

Interpretation

From the above table it is interpreted that the number of Male respondents is 85.3% and Female respondent is 14.7%.

Inference

Majority (85.3%) of the respondents are Male.

Table 4.1.2. Table showing age of the respondents

S.NO	Particulars	Percentage
1	18-25	15%
2	25-35	77%
3	35-45	11%
4	Above 45	7%

Source: Primary data

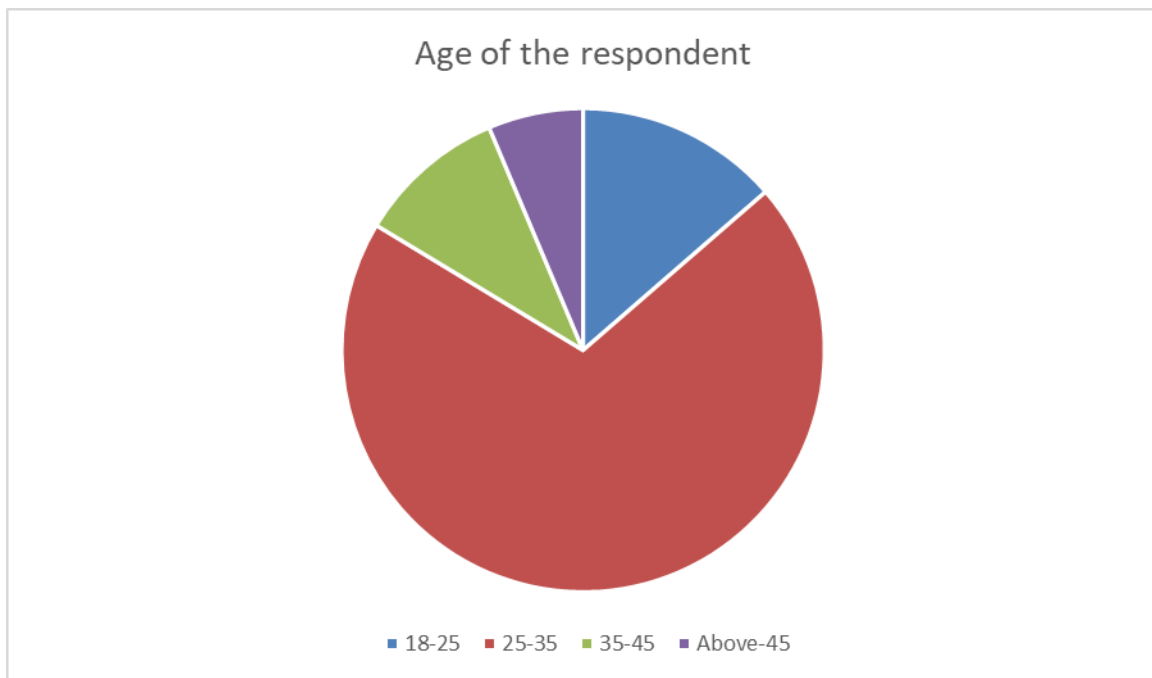


CHART 4.1.2. AGE OF RESPONDENTS

Interpretation

From the above table it is interpreted that the number of respondents between 18-25 is 15%, 25-35 is 77%, 35-45 is 11%, above 45 is 7%.

Inference

Majority (77%) of the respondents fall in the age category of 25 to 35 years

Table 4.1.3. Table showing type of industry respondents working in

S.NO	Particulars	Percentage
1	Electronics	60%
2	Clothing & Textiles	6%
3	Food Industry	19%
5	Automobile Industry	15%

Source: Primary data

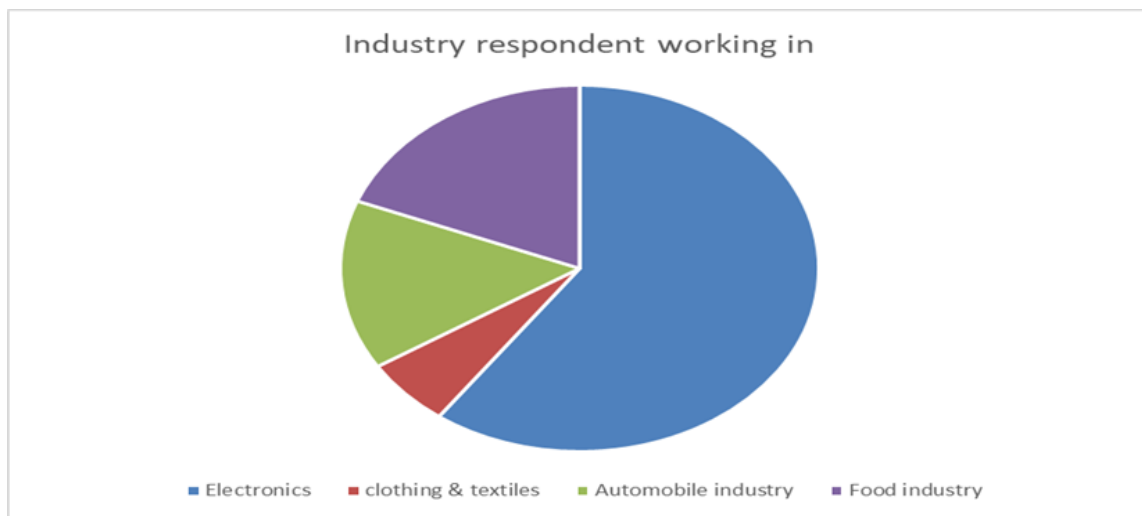


CHART 4.1.3. TYPE OF INDUSTRY RESPONDENTS WORKING IN

Interpretation

From the above table it is represented that the number of respondents were 60% in Electronics Industry, 6 % in Clothing & Textiles, 19% in Food Industry, 15 % in Automobile Industry.

Inference

Majority (60%) of respondents are working in Electrical & Electronics Industry.

Table 4.1.4. Table showing location of organization respondents working.

S.NO	Particulars	Percentage%
1	METRO	10%
2	CITY	40%
3	TOWN	60%
4	VILLAGE	0%

Source: Primary data

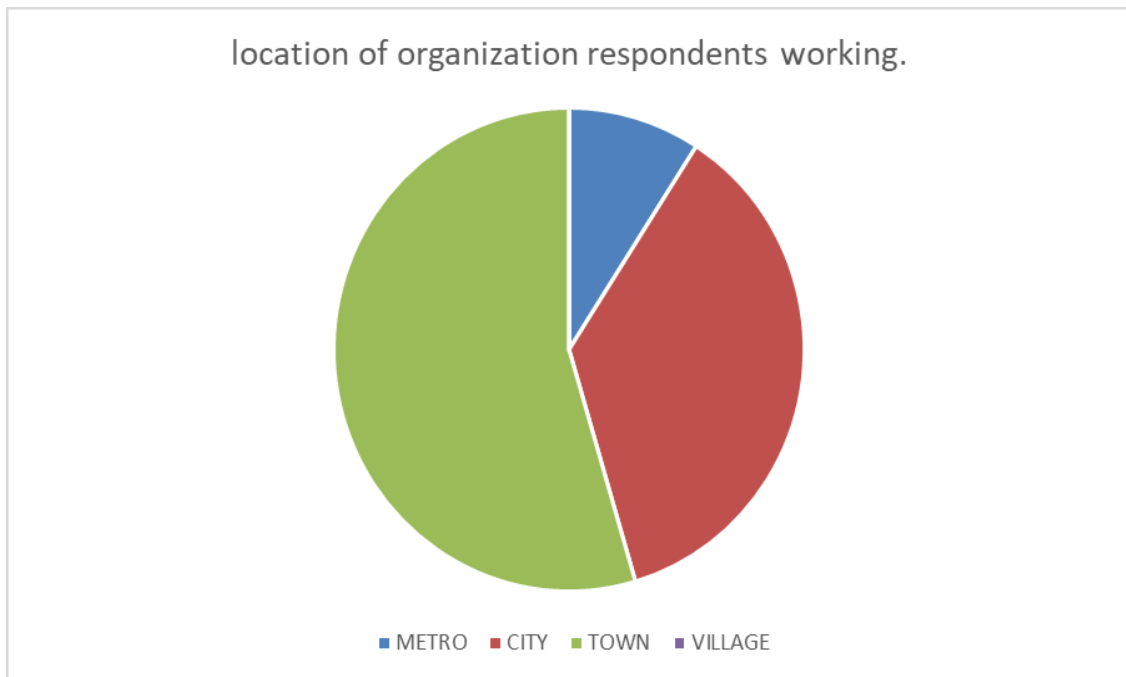


CHART 4.1.4 LOCATION OF ORGANIZATION

Inference

Majority (60%) of respondents working organization was Located in Town .

Table 4.1.5 Table showing age of Company

S.NO	Particulars	Percentage
1	0-10	11.7%
2	11-20	27.7%
3	21-50	49.3%
4	50+years	25.3%

Source: Primary data

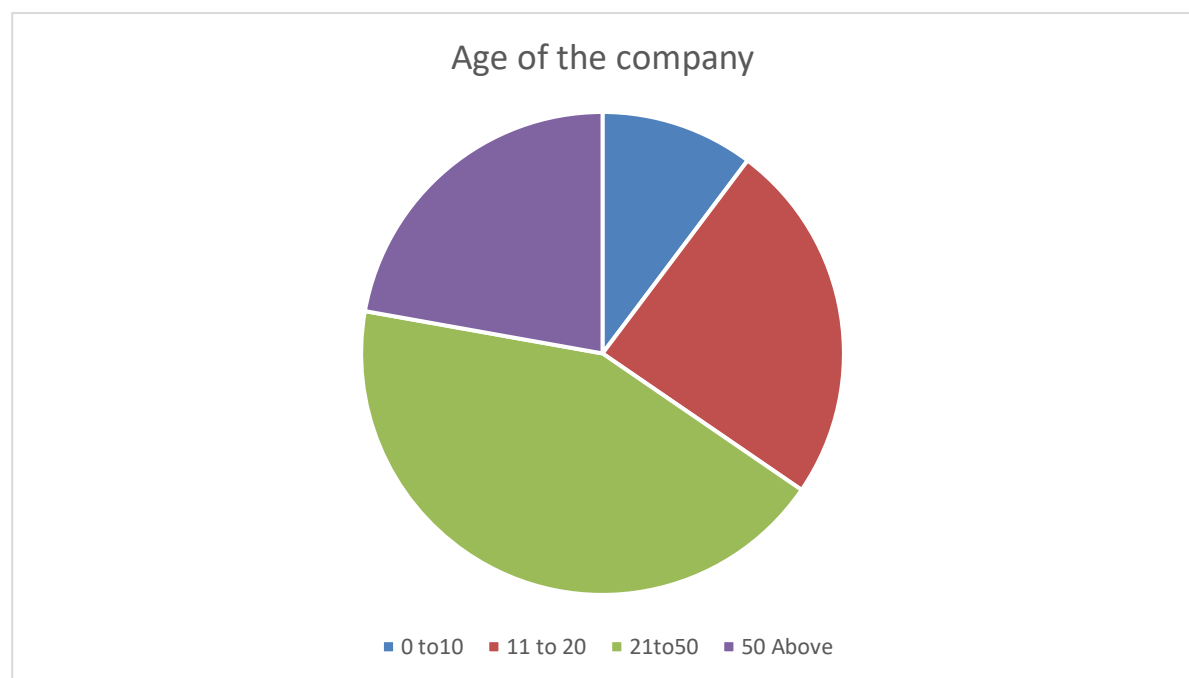


CHART 4.1.5.AGE OF THE COMPANY

Interpretation

From the above table it is interpreted that 11.7% of respondents say age of their working organization is between 0-10 years, 27.7% say between 11- 20 years, 49.3% say 21-50 years, 25.3% say 50+ years.

Inference

Majority(49.3%) of respondents age of their working organization is 21-50 years.

Table 4.1.6 Table showing size of the company

S.NO	Particulars	Percentage
1	Micro (less than 10 persons employed)	6%
2	Macro (10 to 50 persons employed)	14%
3	Medium sized industry(50 to 250persons employed)	20%
4	Maximum sized industry(250 or more persons employed)	60%

Source: Primary data

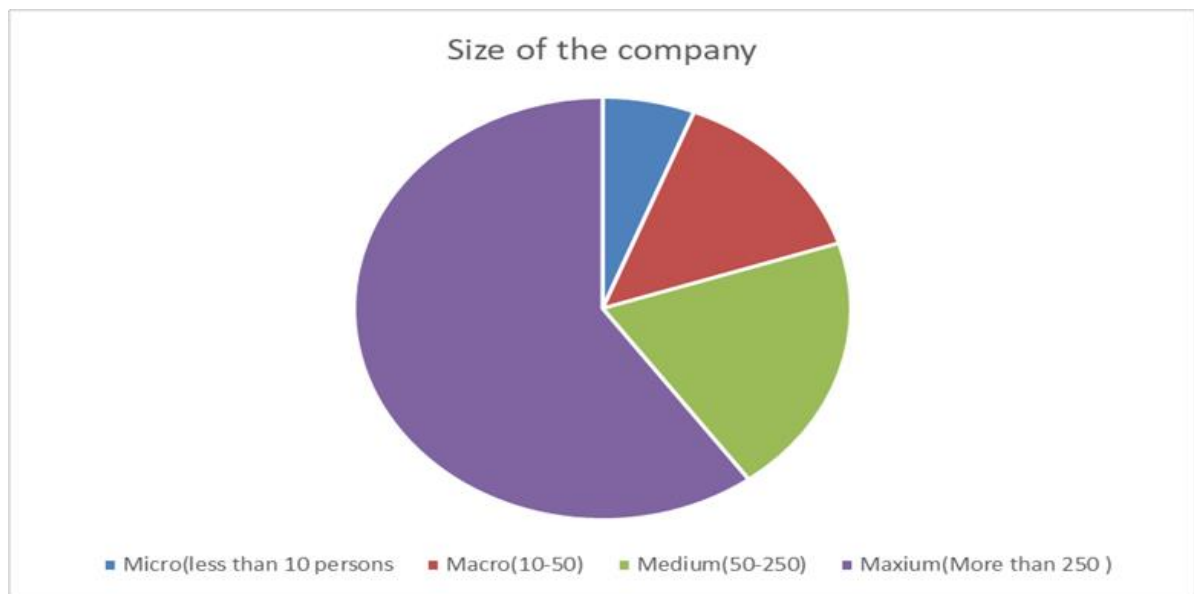


CHART 4.1.6.SIZE OF THE COMPANY

Interpretation

From the above table it interpreted that respondents size of their working company was 6% in Macro Industry,14% in Macro Industry, 20% in Medium Sized Industry, 60% in Maximum Sized Industry.

Inference:

Majority (60%) of respondents size of their working company is Maximum Sized Industry.

Table 4.1.7. Table showing respondents about IOT (Internet of Things)

S.NO	Particulars	Percentage
1	I haven't heard about it	15%
2	Yes, I know about it	65%
3	Our company is doing some project about it	20%

Source: Primary data

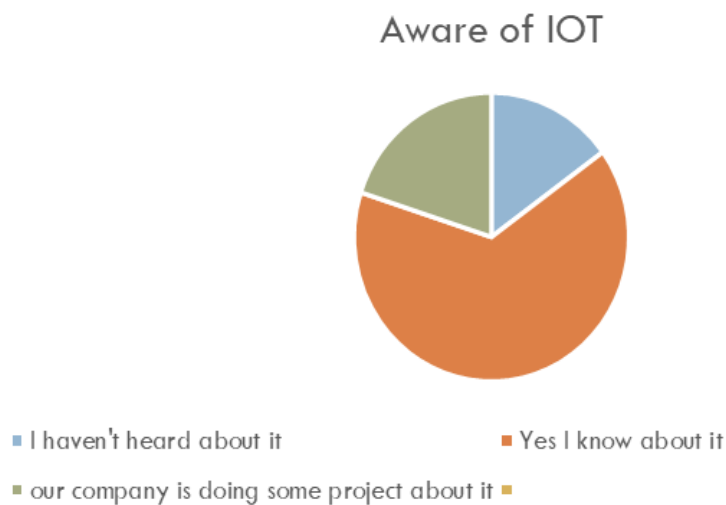


CHART 4.1.7. RESPONDENTS ABOUT IOT (INTERNET OF THINGS)

Interpretation

From the above table it is interpreted that as 15% of respondents haven't know about IOT, 65% say they know about IOT, 20% respondents say their company is doing project about IOT

Inference

Majority(65%) of respondents know about IOT.

Table 4.1.8. Table showing respondents view on benefit of IOT.

S.NO	Particulars	Percentage
1	Cost Savings	53.8%
2	Increased Efficiencies	9.7%
3	Time Saving	39.5%

Source: Primary data

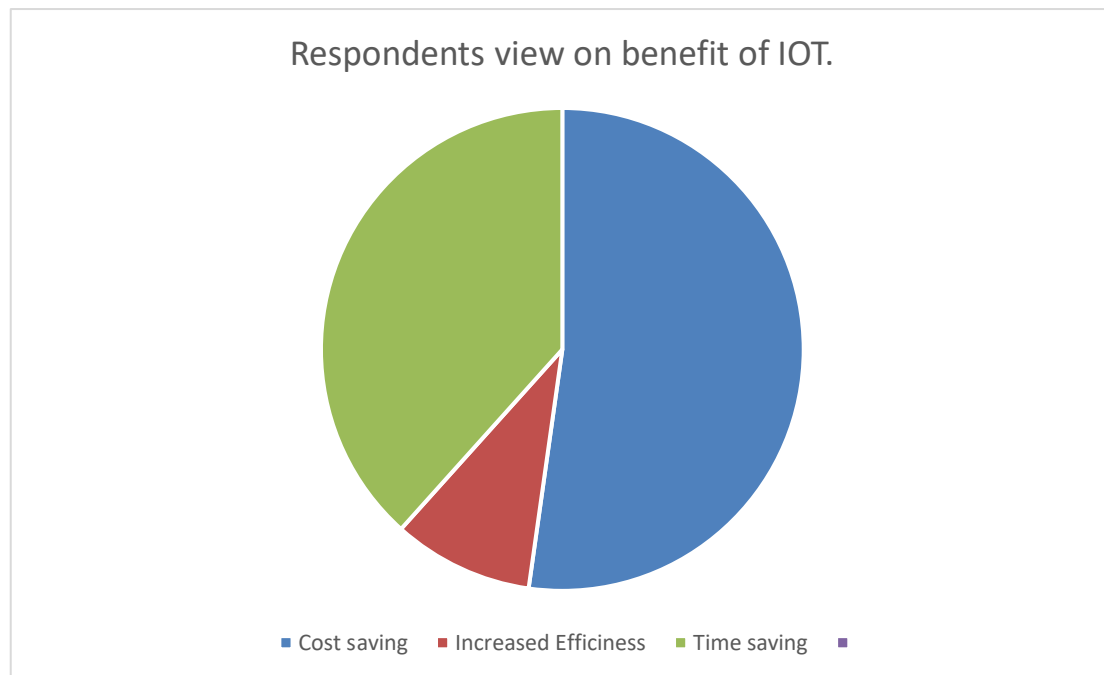


CHART.4.1.8 RESPONDENTS VIEW ON BENEFIT OF IOT

Interpretation

From the above table it is interpreted that as 53.8% of respondents say IOT has benefit of Cost Savings, 9.7% say Increased Efficiencies, 39.5% say Time Saving.

Inference

Majority (53.8%) say IOT has benefit of time saving that's why Businesses are investing in development of IOT.

Table 4.1.9. Table showing respondents view on how they came to know about Blockchain Technology

S.NO	Particulars	Percentage
1	Social medias	10.2%
2	Friends & Relatives	8.5%
3	Workplace	11.3%
4	Internet	70%

Source: Primary data

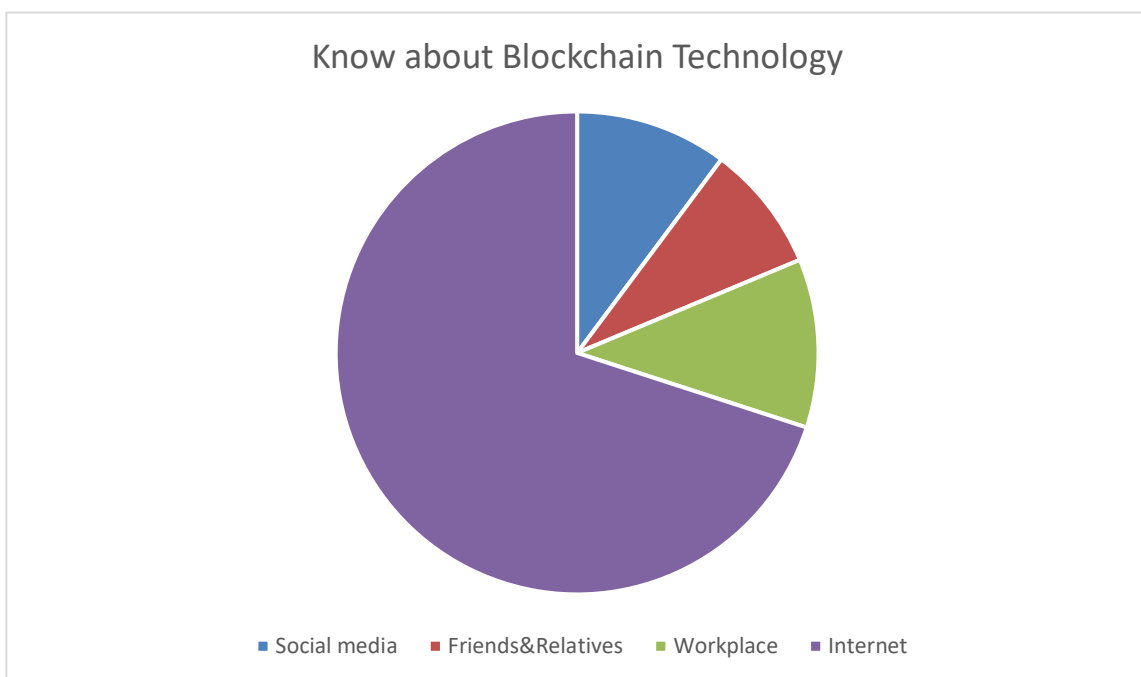


CHART 4.1.9. CHART SHOWING FROM WHICH SOURCES RESPONDENTS CAME TO KNOW ABOUT BLOCKCHAIN

Interpretation

From the above table it is interpreted that as respondents came to know about blockchain technology were 10.2% through social media, 8.5% through Friends & Relatives, 11.3% through Workplace, 70% through Internet.

Inference

Majority(70%) of respondents came to know about Blockchain Technology through Internet.

Table 4.1.10. Table showing Organizations status on Blockchain implementation

S.NO	Particulars	Percentage
1	Implemented	7.5%
2	Planning to Implement	0.8%
3	Currently No	93.7%

Source: Primary data

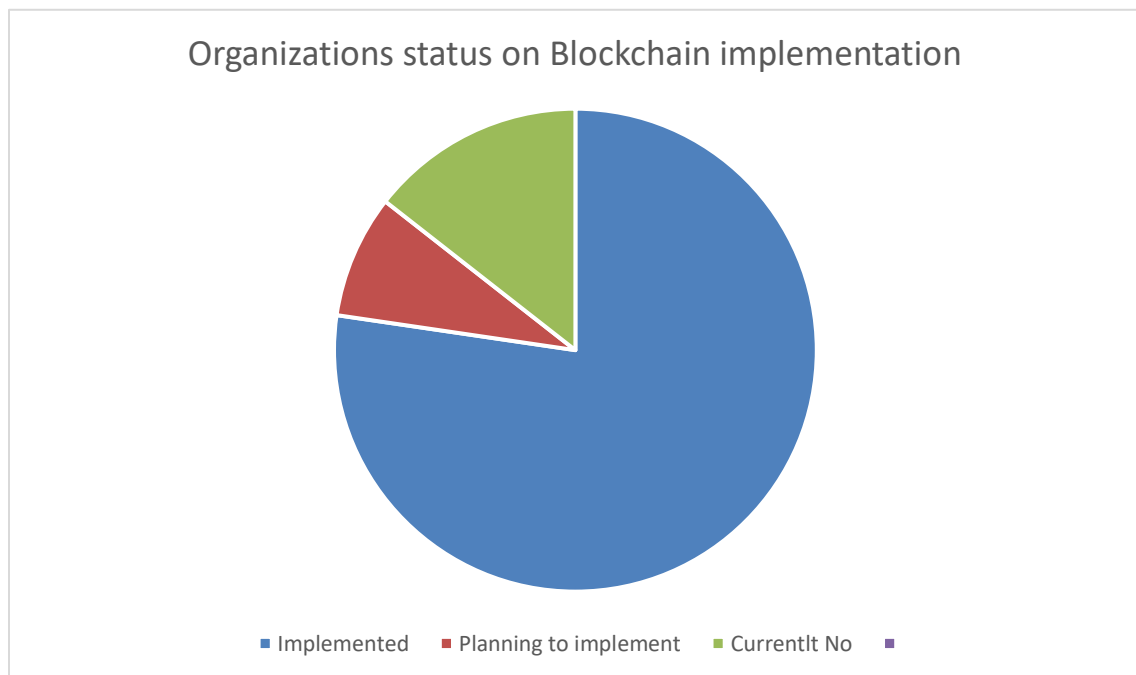


CHART 4.1.10. Organizations status on Blockchain Implementation

Interpretation

From the above table it is interpreted that as 7.5% of respondents say their organization has implemented blockchain technology, 0.8% say they are planning to implement, 93.7% say Currently No.

Inference

Majority (96.7%) of respondents organizations are not implemented with Blockchain Technology nor planning to implement.

Table 4.1.11. Table showing respondents satisfactory level on Insufficient Funds is one of the challenges while implementing Blockchain

S.NO	Particulars	Percentage
1	Strongly Agree	65.7%
2	Agree	30.8%
3	Disagree	20.5%

Source: Primary data

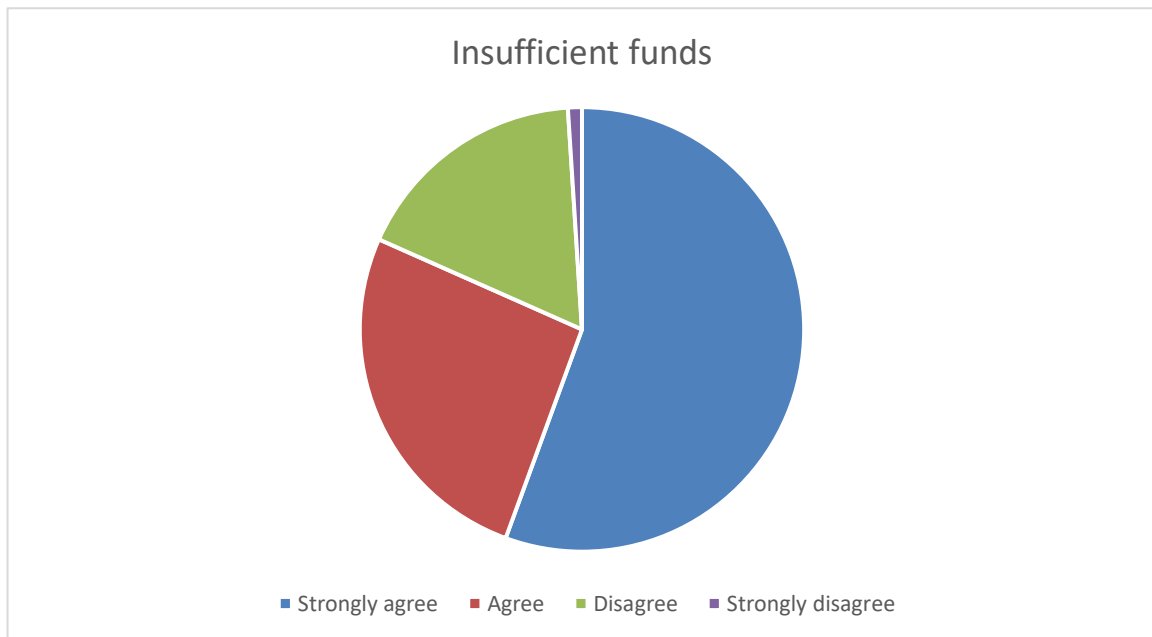


CHART 4.1.11 INSUFFICIENT FUNDS

Interpretation

From the above table it is interpreted that the 65.7% of respondents say Strongly agree , 30.8% say Agree, 20.5% say Disagree in Insufficient funds,1.2% say Strongly disagree

Inference

Majority (65.7%) Strongly agree that Insufficient Funds is one of the challenges Industry faces while implementing or they plan to implement Blockchain.

Table 4.1.12. Table showing respondents satisfactory level on Insufficient Time is one of the challenges while implementing Blockchain

S.NO	Particulars	Percentage
1	Strongly Agree	65%
2	Agree	25.2%
3	Disagree	14.7%
4	Strongly disagree	3.1%

Source: Primary data

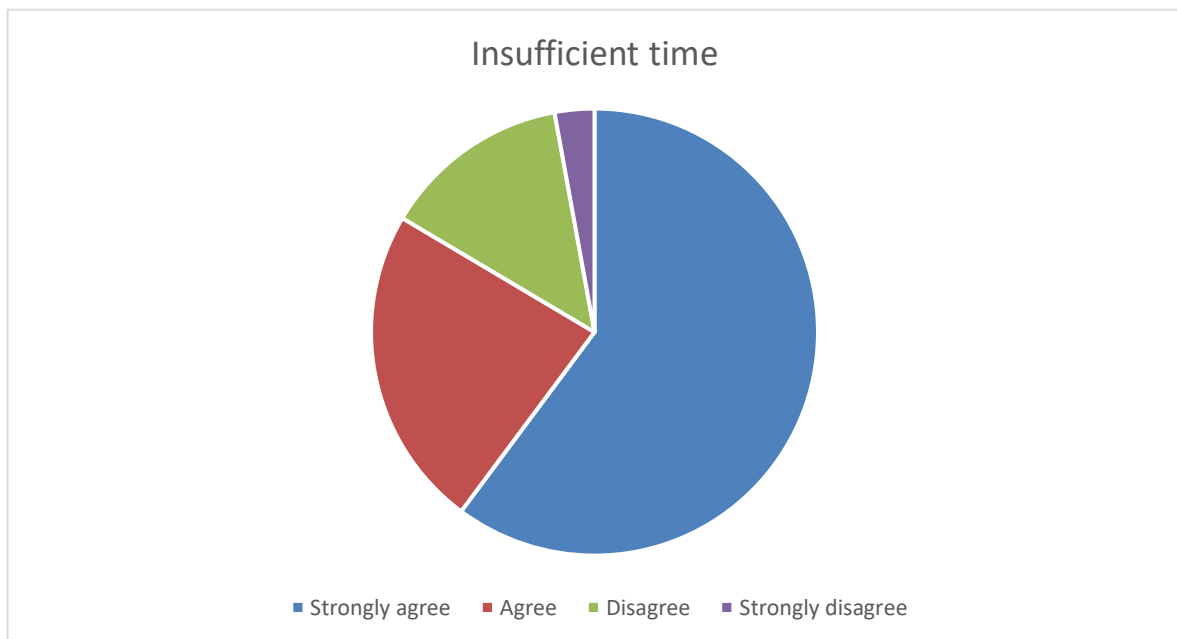


CHART1.1.12.INSUFFICIENT TIME

Interpretation

From the above table it is interpreted that the 65% of respondents Strongly agree in Insufficient time, 25.2% say Agree, 14.7% say Disagree in Insufficient time. **3.1% say Strongly disagree.**

Inference

Majority (65%) Strongly agree that Insufficient time is one of the challenges Industry faces while implementing or they plan to implement Blockchain.

Table 4.1.13. Table showing respondents not having knowledge about latest digitalization.

S.NO	Particulars	Percentage
1	Strongly Agree	80.2%
2	Agree	14.8%
3	Disagree	13.3%
4	Strongly Disagree	10.7%

Source: Primary data

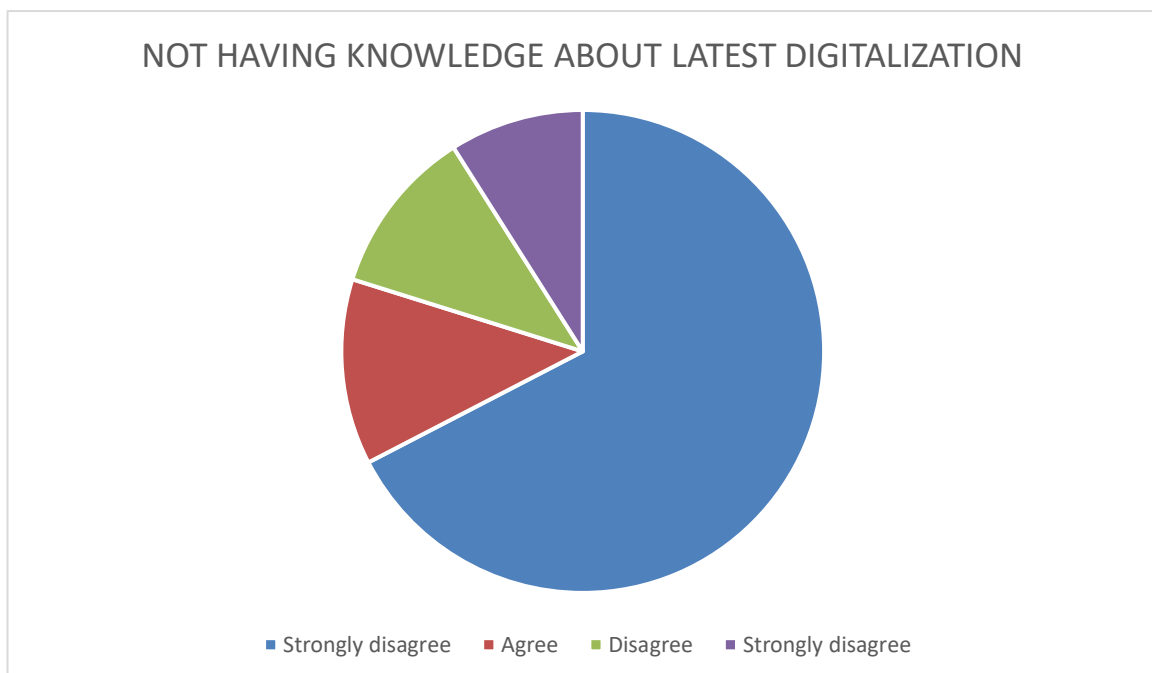


CHART 4.1.13 NOT HAVING KNOWLEDGE ABOUT LATEST DIGITALIZATION

Interpretation

From the above table it is interpreted that the 80.2% of respondents Strongly agree in not having knowledge in latest digitalization, 14.8% say Agree, 13.3% say Disagree, 10.7% say Strongly Disagree.

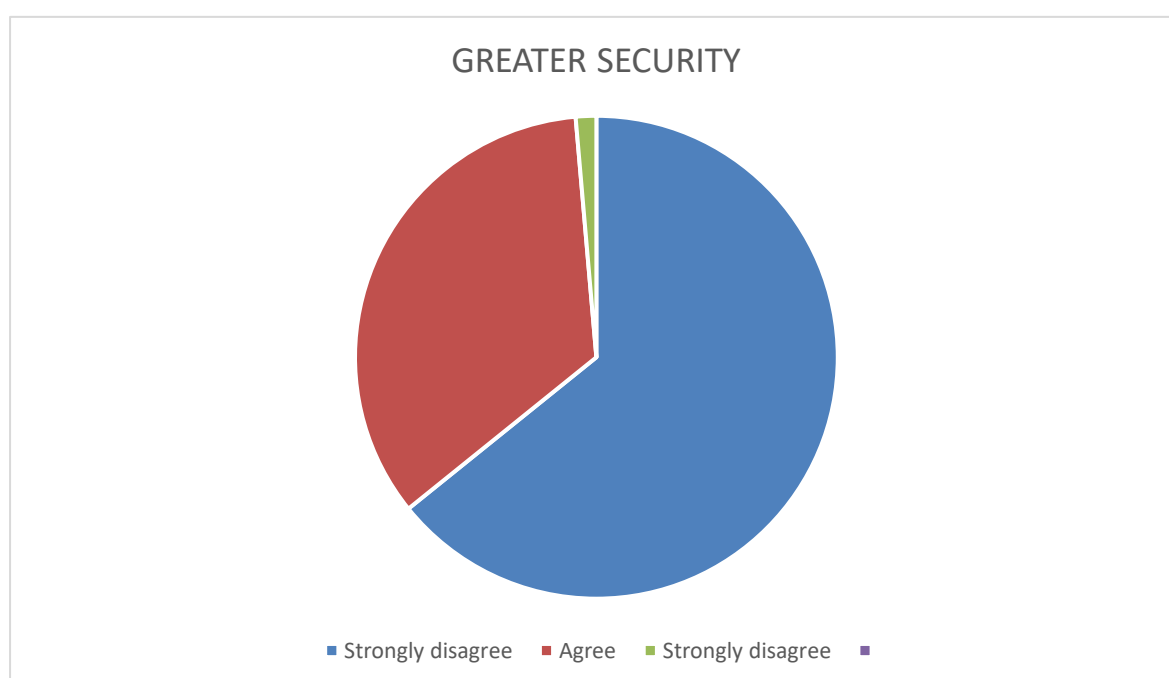
Inference

Majority (80.2%) Strongly agree that not having knowledge in latest digitalization is one of the challenges Industry faces while implementing they plan to implement Blockchain.

Table 4.1.14. Table showing satisfactory level of respondents for Greater Security is the advantage of blockchain.

S.NO	Particulars	Percentage
1	Strongly Agree	65.3%
2	Agree	35%
3	Strongly Disagree	11.7%

Source: Primary data



Interpretation

From the above table it is interpreted that the 65.3% of respondents Strongly agree in Blockchain has advantage of greater security, 35% say Agree, 11.7% say Strongly Disagree.

Inference:

Majority (65.3%) Strongly agree that Blockchain has advantage of Greater Security.

Table 4.1.15. Table showing satisfactory level of respondents for fraud reduction is the advantage of blockchain

S.NO	Particulars	Percentage
1	Strongly Agree	75%
2	Agree	7.8%
3	Strongly Disagree	19.2%

Source: Primary data

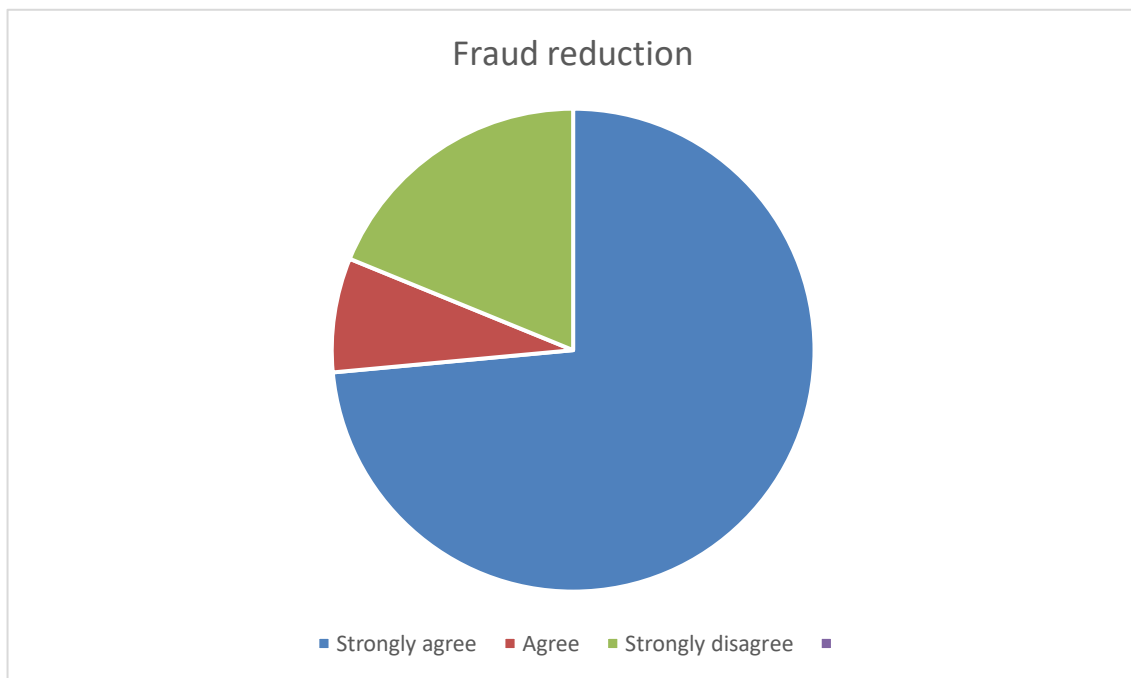


CHART 4.1.15.FRAUD REDUCTION

Interpretation

From the above table it is interpreted that the 75% of respondents Strongly agree in Blockchain has advantage of fraud reduction where 7.8% say Agree, 19.2% say Strongly Disagree.

Inference

Majority (75%) Strongly agree that Blockchain has advantage of Fraud reduction.

Table 4.1.16. Table showing which has major benefit in using blockchain in supply chain

S.NO	Particulars	Percentage
1	Improved business efficiency	1.3%
2	Increase transaction speed	8.7%
3	Time saving	9.5%
4	Reduction of counterfeiting	57.3%
5	High security	23.8%

Source: Primary data

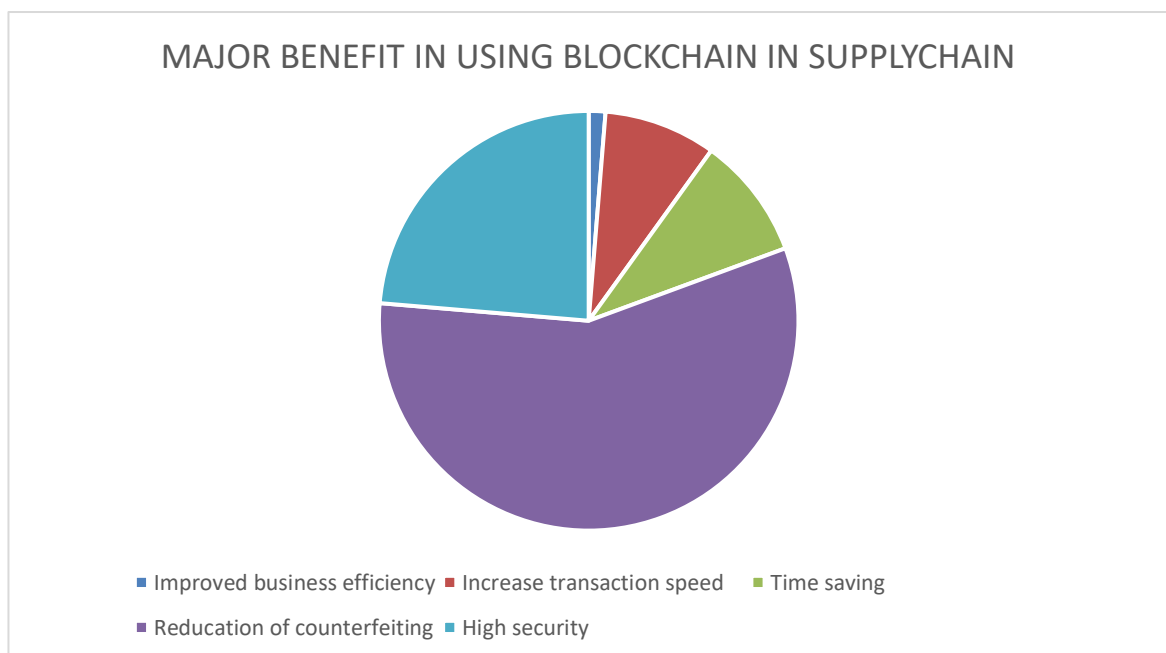


CHART 4.1.16. MAJOR BENEFIT IN USING BLOCKCHAIN IN SUPPLYCHAIN

Interpretation

From the above table it is interpreted that 1.3% say improved business efficiency, 8.7% say increase transaction speed, 9.5% say time saving, 57.3% say reduction of counterfeiting and 23.8% say high security for major benefit in blockchain

Inference:

Majority (57.3%) respondents say Reduction of counterfeiting is the major benefit in using Blockchain in Supply chain.

Table 4.1.17. Table showing in which sector does blockchain has significant.

S.NO	Particulars	Percentage
1	Manufacturing	6.2%
2	Supply chain & Logistics	69.3%
3	Banking	1.8%
4	Healthcare	5.5%
5	Food	23.3%

Source: Primary data

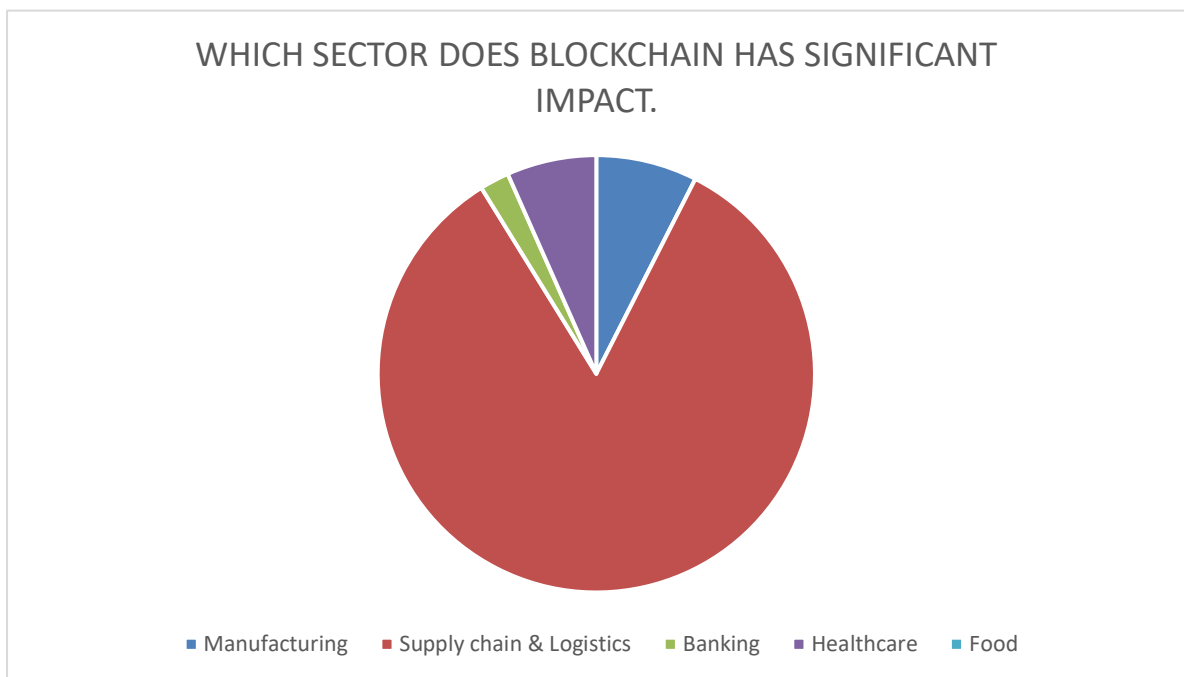


CHART 4.1.17. CHART SHOWING IN WHICH SECTOR DOES BLOCKCHAIN HAS SIGNIFICANT IMPACT.

Interpretation

From the above table it is interpreted that 6.2% respondent say Manufacturing, followed by 69.3% in Supply chain & Logistics, 1.8% in Banking, 5.5% in healthcare, 23.3% in Food sector.

Inference

Majority (69.3%) respondents say that in Supply chain & Logistics sector blockchain has significant impact.

Table 4.1.18. Table showing whether adopting Blockchain technology will disrupt the industry.

S.NO	Particulars	Percentage%
1	Yes, it will disrupt	60.2%
2	No, it doesn't disrupt	29.8%
3	Too early to tell	10%

Source: Primary data

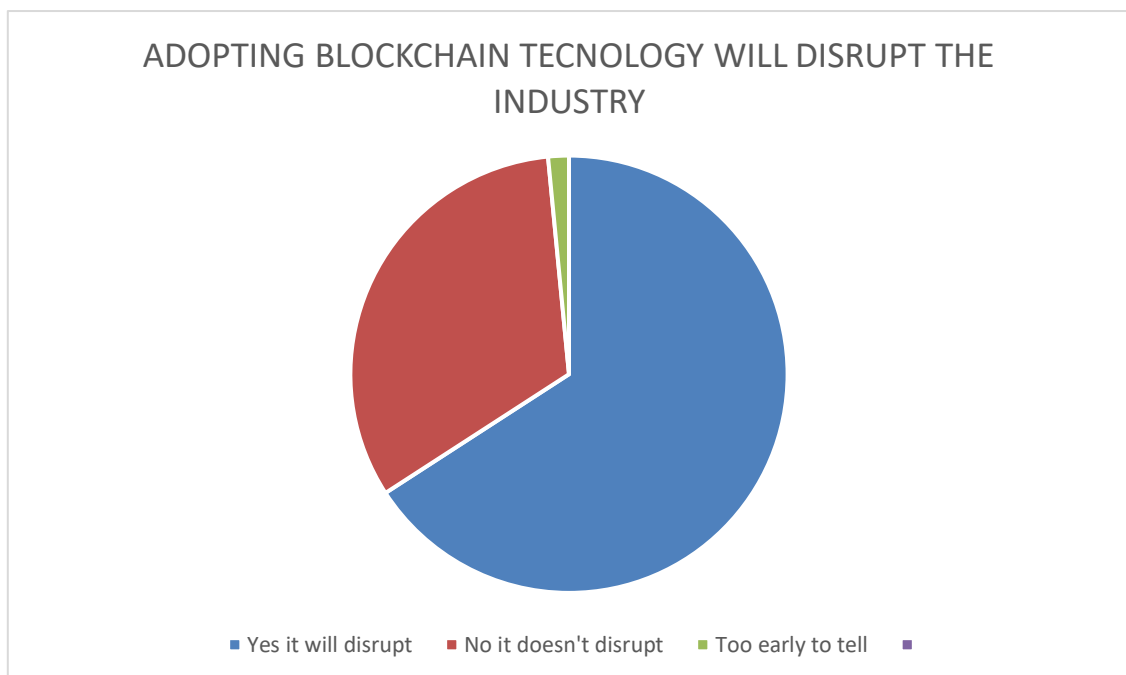


Chart 4.1.18. CHART SHOWING WHETHER ADOPTING BLOCKCHAIN TECHNOLOGY WILL DISRUPT THE INDUSTRY

Interpretation

From the above table it is interpreted that 60.2% of respondents say yes it will disrupt, 29.8% say no it doesn't disrupt, 10% say too early to tell.

Inference

Majority (60.2%) respondents say that adopting blockchain technology will disrupt the industry.

Table 4.1.19. Table showing respondents satisfactory level on whether adopting Blockchain Technology improve Indian Markets

S.NO	Particulars	Percentage
1	Strongly Agree	88.3%
2	Agree	10%
3	Disagree	1.7%

Source: Primary data

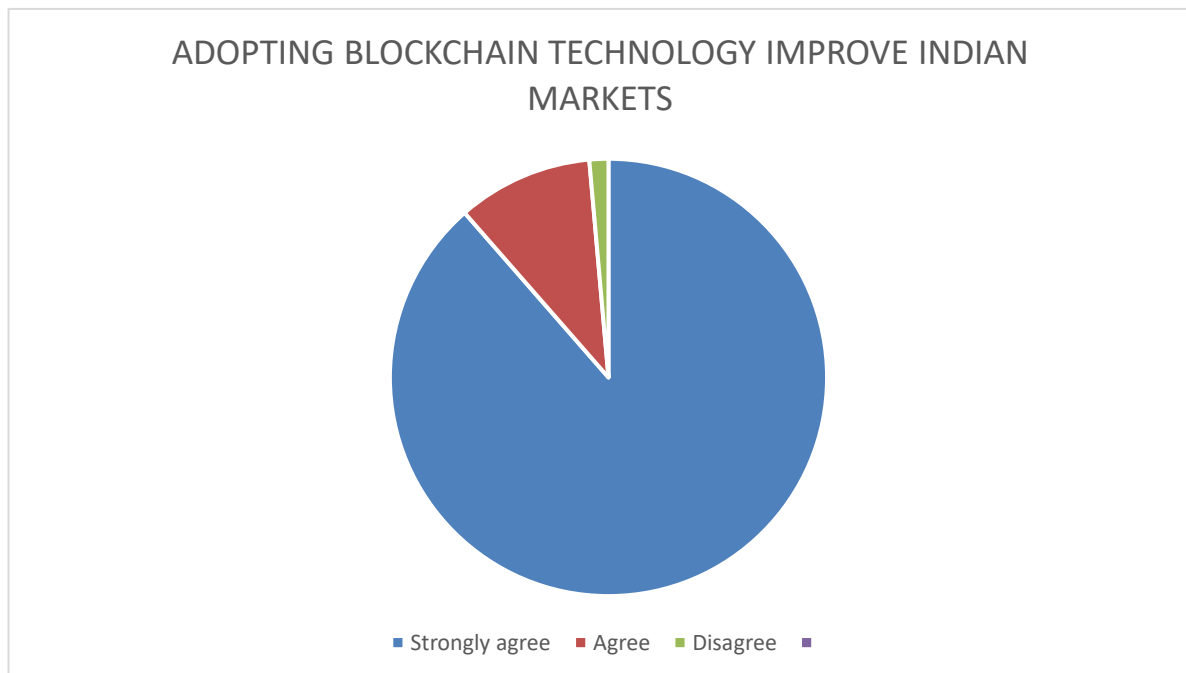


CHART.4.1.19. ADOPTING BLOCKCHAIN TECHNOLOGY IMPROVE INDIAN MARKETS

Interpretation

From the above table it is interpreted 88.3% of respondents Strongly agree, 10% Agree, 1.7% Disagree that adopting Blockchain Technology improve Indian Markets.

Inference

Majority (88.3%) of respondents Strongly agree that Blockchain will improve Indian Markets

4.2.T-TEST

To test the significance difference between Size of Industry and Satisfactory level in whether Blockchain can improve Indian Markets.

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
typesofindustry	122	1.92	1.270	.115
blockchainindian	120	1.13	.387	.035

One-Sample Test

Test Value = 0

	t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
			One-Sided p	Two-Sided p		Lower	Upper
typesofindustry	16.681	121	<.001	<.001	1.918	1.69	2.15
blockchainindian	32.041	119	<.001	<.001	1.133	1.06	1.20

One-Sample Effect Sizes

		Standardizer ^a	Point Estimate	95% Confidence Interval	
typesofindustry	Cohen's d	1.270	1.510	1.249	1.769
	Hedges' correction	1.278	1.501	1.241	1.758
blockchainindian	Cohen's d	.387	2.925	2.511	3.335
	Hedges' correction	.390	2.906	2.496	3.314

a. The denominator used in estimating the effect sizes.

Cohen's d uses the sample standard deviation.

Hedges' correction uses the sample standard deviation, plus a correction factor.

HYPOTHESIS

Null Hypothesis (H0):

There is no significance difference between Size of Industry and Satisfactory level in whether Blockchain can improve Indian Markets

Alternative Hypothesis(H1):

There is significance difference between Size of Industry and Satisfactory level in whether Blockchain can improve Indian Markets

Inference:

So, we conclude that there is significance difference between Size of Industry and Satisfactory level in whether Blockchain can improve Indian Markets.

4.3.CORRELATION ANALYSIS

Table showing the significance difference between the Type of industry respondents working and their assumption on whether blockchain technology improve Indian markets

HYPOYTHESIS

H0: There is no significance difference between the type of industry and Satisfactory level in whether Blockchain can improve Indian Markets.

H1: There is a significance difference between the type of industry and Satisfactory level in whether Blockchain can improve Indian Markets.

Correlations			
		typesofindustry	blockchainindi an
typesofindustry	Pearson Correlation	1	.587**
	Sig. (2-tailed)		<.001
	N	122	120
blockchainindian	Pearson Correlation	.587**	1
	Sig. (2-tailed)	<.001	
	N	120	120

** . Correlation is significant at the 0.01 level (2-tailed).

Interpretation:

Since the Pearson 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.

CHAPTER 5

FINDINGS, SUGGESTIONS AND CONCLUSION

5.1 FINDINGS OF THE STUDY

- Majority (85.3%) of the respondents are Male.
- Majority (77%) of the respondents fall in the age category of 25 to 35 years.
- Majority(60%)of respondents working organization was Located in Town
- Majority(49.3%) of respondents age of their working organization is 21-50 year
- Majority(60%) of respondent's size of their working company is Maximum Sized Industry.
- Majority(53.8%) of respondents know about IOT.
- Majority(55.8%) say IOT has benefit of time saving that's why Businesses are investing in development of IOT
- Majority(70%) of respondents came to know about Blockchain Technology through Internet.
- Majority (96.7%) of respondent's organizations are not implemented with Blockchain Technology nor planning to implement.
- Majority (65.7%) Strongly agree that Insufficient Funds is one of the challenges Industry faces while implementing or they plan to implement Blockchain.
- Majority (65%) Strongly agree that Insufficient time is one of the challenges Industry faces while implementing or they plan to implement Blockchain.
- Majority (80.2%) Strongly agree that not having knowledge in latest digitalization is one of the challenges Industry faces while implementing they plan to implement Blockchain.
- Majority (65.3%) Strongly agree that Blockchain has advantage of Greater Security.
- Majority (75%) Strongly agree that Blockchain has advantage of Fraud reduction.

- Majority(57.3%) respondents say Reduction of counterfeiting is the major benefit in using Blockchain in Supply chain.
- Majority(70.8%) Strongly agree that Blockchain Tracking and Information Transparency increase trust in Supply chain
- Majority(75%) Strongly agree that Blockchain Tracking and Information Transparency increase trust in Supply chain.
- Majority (68.3%) respondents say that in supply chain& Logistics sector blockchain has significant impact.
- Majority (69.3%) respondents say that adopting blockchain technology will disrupt the industry.
- Majority (88.3%) of respondents Strongly agree that Blockchain will improve Indian Markets
- The most significant advantage of using blockchain is that it creates transparency.

5.2. 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 employee's don't know about latest digitalization; Organization should train about IOT. Automation in smart manufacturing depends on many parties in the supply chain and distribution networks. A smart manufacturer needs to track the location and state of materials from its suppliers and products to its customers/distributors to manage the corresponding production schedule. The need for such information can be fulfilled by the use of Industrial Internet of Things IOT devices installed at each respective place. However, even though all industry may trust one another, they have confidential data produced by the IOT devices that are not allowed to be shared with other parties, or only allowed to be exchanged with certain parties. Even though the data are not confidential, they may still be required to share partial data based on the needs of each party.

5.3. 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 have 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 limitations 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 using it effectively bring out profit to organization and helps to improve Indian markets. Furthermore, research has to be done on other industries to study the exceeding impacts of blockchain.

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APPENDIX – I (Questionnaire)

1. Gender

- Male
- Female

2. Age group

- 18-25
- 25-35
- 35-45
- Above 45

3. What type of Manufacturing industry you are working in?

- Electrical & Electronics
- Clothing & Textiles
- Food Industry
- Automobile Industry

4. What is the size of your company?

- Micro (less than 10 persons employed)
- Macro (10 to 50 persons employed)
- Medium sized industry (50 to 250 persons employed)
- Maximum sized industry (250 or more persons employed)

5. Are you aware of IOT (internet of things)?

- I haven't heard about it
- I heard about it but not know much about it
- Yes, I know about it
- Our company is doing some project about it

6. If yes, what do you think are the main reason that businesses are investing in development of IOT?

- Cost Savings
- Increased Efficiencies
- Market share growth
- Time Saving

7. From which source you came to know about blockchain?

- Social medias
- Friends & Relatives
- Workplace
- Internet

8. Is your organization currently implementing or does it plan to implement Blockchain technology?

- Implemented
- Planning to implement
- Currently no

9. If no what are the challenges does your company faces in implementing blockchain?

	Strongly agree	Agree	Disagree	Strongly Disagree
• Insufficient funds				
• Insufficient Time				
• Not having Knowledge about latest digitalization's				

10. If planning to implement, what do you think blockchain has advantage of?

	Strongly Agree	Agree	Disagree	Strongly Disagree
Greater Security				
Greater Speed				
Greater Transparency				
Fraud Reduction				

11. What benefits specific to your industry do you hope to obtain from using blockchains?

- Improved business efficiency
- Increase transaction speed
- Time saving
- Reduction of counterfeiting
- High security

12. Blockchain can enhance towards more touchless business process?

1 2 3 4 5

Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

13. Blockchain Tracking and information transparency increase trust in supply chain

1 2 3 4 5

Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

14. Blockchain reduces Cost an Time.

1 2 3 4 5

Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

15 . In which sector do you think blockchains has most significant impact?

- Manufacturing
- Supply chain& Logistics
- Banking
- Healthcare
- Food

16. Do you think that adopting blockchain technology will dramatically disrupt the industry?

- Yes, it will disrupt
- No, it doesn't disrupts
- Too early to tell

17. Blockchain Technology can improve Indian markets?

- Strongly agree
- Agree
- Strongly disagree
- Disagree

APPENDIX- II (ARTICLE)

A STUDY ON 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 completeness 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.

Keywords: blockchain, supply chain, disruption, IOT, manufacturing, proof of work, 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.

Mouzadar's (2016) and Drescher's (2017) books provide introductory explanations of the algorithm and the current 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.

Drescher (2017) clarifies the basic procedures through which blockchain technology works. In addition, Kossow and Dykes (2018) and Initiand Lakhani

(2017) offer a well-organized discussion of the recent state of blockchain technology, its various applications, and its limitations. These works provide substantial insights into blockchain technology.

Catalini and Gans (2016) review 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.

Yermack (2017) investigates the potential effects of blockchain technology on corporate governance. He suggests that investors (i.e., shareholders) can increase their profits through the improved liquidity and lower costs achieved via blockchain technology. Moreover, the real-time transparency of blockchain technology allows investors to more easily supervise managers, and markets can form more efficient prices, as information asymmetries among managers, investors, and other market participants are resolved.

III OBJECTIVES

- A study on using Blockchain in supply chain for Manufacturing
- Industries To analyze the impact of blockchain in supply chain
- To study impact of Blockchain in Indian Markets

IV RESEARCH METHODOLOGY

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.

V RESULTS AND DISCUSSIONS

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

- Majority (68.3%) respondents say that in supply chain & 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.
- There is a significance difference between the type of industry and Satisfactory level in whether Blockchain can improve Indian Markets.

Hypothesis

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 in determining the improvement of Indian markets when it uses blockchain.

Correlations

		typesofindustry	blockchainindian
typesofindustry	Pearson Correlation	1	.587**
	Sig. (2-tailed)		<.001
	N	122	120
blockchainindian	Pearson Correlation	.587**	1
	Sig. (2-tailed)	<.001	
	N	120	120

** . Correlation is significant at the 0.01 level (2-tailed).

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 employee's 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 IoT 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 supply chain if it adapted in the Manufacturing Company.

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 limitations 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 using it effectively bring out profit to organization an helps to improve Indianmarkets. Furthermore, research has to be done on other industries to study the exceeding impacts of blockchain.

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