Blockchain Technology Usage in Applications of Productivity and Performance

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Abstract. Definition of Blockchain is a block possess information. Techniques leads to an intended to time framed documents of digital surely not possible to backdate or tamper. From this study it aims to investigate the security threats and attacks of existing in blockchain and to provide the list of outstanding security issues. To list out the consequences faced by the users. To provide the feasible solutions proposed to mitigate these security problems is also attempted. This attempt aims to offer directions for future researchers in developing solutions for providing the focused problems. It also focusses to uplift the security of this technology. Lot of open issues need to be considered for further research for creating workable and efficient industrial applications.

Keywords: Block chain technology, awareness on block chain, data security. Privacy.

1   Introduction

Block chain is a database helps storing information in digital type. Blockchains are also known role of cryptocurrency, Bitcoin, transactions Decentralization. Difference is based on the data structure. Information collected as blocks to holds storage, filled blocks of data known as the blockchain. Block added with new information is compiled as a block. The functions of blockchain are to secure property, contracts, money. It is known to that no intermediary is necessary like a bank or government. The blockchain is a protocol software. Blockchain technology needs decentralization by the members' participation across a distributed network. User will not be able to change record of transactions. Projected Blockchain growth from USD 4.9 in 2021 to USD 67.4 billion by 2026, during the forecast period it is at (CAGR) of 68.4%. Reasons to the high growth rate of blockchain market is by high adoption of blockchain solutions for transactions of payment, smart way of contracts, digital identities, use of technology of solutions in banking and cybersecurity. The study will provide a complete analysis, drivers, and challenges, size of the market forecast, growth as per the vendor analysis. The description of respondents are 25 vendors who tried to explore the access to technology as one of the prime reasons driving the market growth during the next few years. The Study helps to do vendor analysis to do evaluate the leading blockchain technology vendors like:

- Accenture PLC
- Amazon.com Inc.
- Huawei Investment & Holding Co. Ltd.
- Infosys Ltd.
- Intel Corp.
- International Business Machines Corp.
- Microsoft Corp.
- Oracle Corp.
- Tata Consultancy Services Ltd.

2 Review of Literature

[1] contended that tradeoffs of blockchain, architecture, taxonomy provide a comparison between mechanisms including scalability, privacy, regulatory problems. Blockchain is an inherent part of this decentralization and peer-to-peer network. Blockchain of electronic money by not depending the other party, this particular concept is being researched [4]. Innovative method is also an essential subject matter that need to concern [6]. [2, 4] studied an overview, the structure, algorithms, etc., Compares the algorithms based on the utility. [5] conducted an evolution, architecture, comparative analysis, development frameworks, classification of consensus algorithms, and analysis of security risks.

3 Research Design

It is a framework for study to collect and to do analysis of the data. Descriptive research is used for the study. Questionnaire is used for the study. The questions being designed as an opinion, multiple choices. The questions in the questionnaire set on in a sequential and grouped under the various factors of study. The questionnaire was designed in a simple and clear manner that made the respondents to understand and to answer the questions easily. The sampling for this study has been done using questionnaire designed based on the requirement of the primary and secondary objectives. The questionnaire designed contains 40 questions to satisfy both primary and secondary objectives.

3.1 Objectives for the study:

- To study privacy and security issues in blockchain technology.
- To investigate and analyze the blockchain issues and challenges.
- To identify, and explore the possible blockchain technology applications.
- To evaluate Performance and Productivity of the blockchain technology.
- To analyze the performance and satisfaction of blockchain technology.

3.2   Hypotheses of the study

- H0: No positive relationship between source of funding at organization current/future initiatives and blockchain initiative lead on organization.
- H0: No relationship among the employees works experience of the employees and blockchain technology will dramatically disrupt the industry.
- H0: No relationship among the work experience of the employees and biggest adoption challenges efforts to utilize blockchain in organization.

Convenience sampling method used to select the target respondents for conducting survey through questionnaire. Sample sizes of 120 employees are taken for the study. Data collection collects the responses that is needed to carry out the survey. Data collection is of two types: Primary Data are collected by the survey of questionnaire through online. A well-structured questionnaire is prepared through Google Forms and it has been shared to employees to take up the survey. Secondary Data are **having** already been collected by previous researcher.

4   Results and Discussions

Table 1. Respondents Profile

Types	Opinion	Respondents	Percent
Gender	Male	83	69.2
	Female	37	30.8
Age group	Below 22 years	9	7.5
	22 – 26 years	45	37.5
	26 - 30 years	55	45.8
	30-35 years	9	.5
	Above 35 years	2	1.7
Education	HSC	0	0
	UG	90	75
	PG	26	21.7
	Diploma	4	3.3
	ITI Instrumentation	0	0
Work experience	Fresher's	20	16.7
	Less than 2 yrs	14	11.7
	2.1 - 5 yrs	44	36.7
	5.1 - 8 yrs	36	30
	above 8 yrs	8	6.7

Source: Primary data

From the table it is inferred that 69.2% are male and30.3% are female. 7.5% are below22 years age, 37.5% between 22 – 26 years, 45.8% are between 26 – 30 years, 7.5% of the respondents are between 30 – 35years and 1.7% are above 35 years age.75% are Under Graduates, 21.7% are Post Graduates, 3.3% are Diploma and none are others. 16.7% of respondents are fresher's, 11.7% are less than 2 years' experience, 36.7% are between 2.1 - 5 years' experience, 30% are between 5.1 - 8 years' experience and 6.7% are above 8 years' experience.

Table 2: Awareness on Blockchain Technology

Options	Respondents	(Percent)
Yes	100	83.3
No	20	16.7
Total	**120**	**100**

From the above table 83.3% of respondents are agreed that they know about block chain and 16.7% of the respondents are denied they don't know about block chain technology.

Table 2. Currently Using Blockchain Technology

S. No	Particulars	Number of Respondents	(Percent)
1	Experimenting withBlockchains	23	19.2
2	Developing prototype applications	28	23.3
3	Using Blockchain applications in production	12	10
4	Don't know	57	47.5
	Total	**120**	**100**

From the above table 47.5% said don't know that their company is currently experimenting with block chain, 23.3% of the respondents said that they are developing pro-

totype applications, 19.2% of the respondents said that their company is currently experimenting with block chain and 10% of the respondents said their company is using blockchain applications in production.

$H_0 1$: There is no relationship between the employee experience and   perception that the blockchain technology will dramatically disrupt the industry.

Table 3. Association between Work Experience and Biggest Adoption Challenges Efforts toUtilize Blockchains in Organization

			BIGGEST ADOPTION CHALLENGES EFFORTS TO UTILIZE BLOCKCHAINS IN ORGANIZATION							
			Block chains are still an emerging technology	Lack of underst anding	Lack of experts skilled in Blockc hain technol ogy	Lack of industry standar ds	Privacy and security conside rations	Limited market for available Block chain solutions	Don't know	Total
Respondents based on work experience e	Fresher's	N	18	2	0	0	0	0	0	20
		%	3	1	3	1	3.7	1.3	7	20
	Less than 2 years	N	0	4	10	0	0	0	0	14
		%	2.1	0.7	2.1	0.7	2.6	0.9	4.9	14
	2.1 - 5	N	0	0	8	6	22	8	0	44
		%	6.6	2.2	6.6	2.2	8.1	2.9	15.4	44
		N	0	0	0	0	0	0	36	36
	5.1 - 8 yrs	%	5.4	1.8	5.4	1.8	6.6	2.4	12.6	36
		N	0	0	0	0	0	0	6	6
		%	0.9	0.3	0.9	0.3	1.1	0.4	2.1	6
	Above 8 yrs	N	18	6	18	6	22	8	42	120
Total			Chi-Square =290.42** (p=.000)							

From the above table chi-Square = 290.42 (p= .000) is found to be significant at 5% level. Hence, null hypothesis H_0 is rejected. There is significant relationship observed among the work experience employees and biggest adoption challenges efforts to utilize blockchain in organization

$H_0 2$: There is no relationship among the work experience andbiggest adoption challenges efforts to utilize blockchain in organization.

Table 4. Respondents Based on Work Experience and Blockchain Technology Disrupt the Industry

			Block Chain disrupt the industry			Total
			Yes	May be	No	
Respond-ents based on work experience	Fresher's	N	20	0	0	20
		%	9.8	6.7	3.5	20
	Less than 2 years	N	14	0	0	14
		%	6.9	4.7	2.4	14
	2.1 - 5 years	N	25	19	0	44
		%	21.6	14.7	7.7	44
	5.1 - 8 years	N	0	21	15	36
		%	17.7	12	6.3	36
	Above 8 years	N	0	0	6	6
		%	3	2	1	6
Total		N	59	40	21	120
Chi-Square =109.42** (p=.000)						

**Significant at 1% level

Alternate hypothesis (H1) is accepted and null hypothesis (H0) is rejected. Therefore, there is a relationship between the work experience of employees and blockchain technology will disrupt the industry.

$H_0 3$: There is a positive relationship among fund source at organization's current/future initiatives and blockchain initiative lead on organization.

Table 5. Relationship between Source of funding at organization's current/future block chain Initiatives and Blockchain initiative on   organization

	Blockchain initiative

Funding source at organization's current/future Initiatives	Pearson Correlation	0.975**
	Sig. (2-tailed)	0
	N	120

** Significant at 1% level

$$r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$$
$$= .975$$

Since r is positive, there is a positive relationship between the source of funding at organization's current/future blockchain initiatives and blockchain initiative lead onorganization.

5   Major findings of the study

- The respondents are 69.2% male and 30.3% female.
- 7.5% of the respondents are below 22 years age, 37.5% are between 22 – 26 years, 45.8% are between 26 – 30 years, 7.5% are between 30 – 35 years and 1.7% are above 35 years age.
- 75% are Under Graduates, 21.7% are Post Graduates, 3.3% are Diploma
- 16.7% are fresher's, 11.7% are less than 2 years' experience, 36.7% are between 2.1 - 5 years' experience, 30% are between 5.1 - 8 years' experience and 6.7% are above 8years' experience.
- Relationship among the work experience and biggest adoption challenges efforts to utilize blockchain in organization.
- Relationship between the work experience of the employees and blockchain technology of the industry is proved.
- There is a positive relationship between the funding source at organization's current/future blockchain initiatives and blockchain initiative lead on organization.

6   Result and Discussion

Findings gives a valuable insight into the perceptions and attitudes of employees about blockchain technology adoption in organizations. The predominance of male respondents could indicate either a gender imbalance in the technology-related workforce or a potential gender bias in the interest and awareness of blockchain technology. The age distribution results indicate that employees in the mid-career stage (26-30 years) are more represented in the study. This group may have more experience with traditional technologies and be more open to exploring emerging technologies like blockchain. The educational background distribution suggests that the majority of respondents hold undergraduate degrees, which aligns with the general workforce composition. However, it is essential to consider that blockchain technology requires specialized knowledge and skills, which may influence organizations' workforce development strategies. The findings regarding work experience and blockchain adoption challenges and disruption perceptions provide a basis for further investigation into how employees' experience influences their perception of technological changes and challenges. Organizations can use this information to design targeted training and change management initiatives to ensure smooth blockchain integration. The positive relationship between the source of funding and blockchain initiative leadership implies that organizations with better financial support are more likely to have dedicated leaders driving blockchain initiatives. This highlights the importance of investment in blockchain projects to ensure their successful implementation and integration within the organization's operations. Overall, the study's results underscore the significance of understanding the workforce's demographic characteristics and their perspectives on blockchain technology adoption. By considering these factors, organizations can tailor their blockchain strategies, address potential challenges, and provides a positive technology adoption in the organization. However, further studies and more detailed analyses are needed to gain deeper insights into the specific relationships identified in the study.

7   Scope for Future Research

- Investigate solutions for enhancing blockchain scalability and performance to handle a larger number of transactions per second, making it more practical for enterprise-level applications.
- Research privacy-enhancing technologies within blockchain to ensure sensitive data protection while maintaining the transparency and immutability of the ledger.
- Investigate the challenges and opportunities of implementing smart contracts on the blockchain, including legal and regulatory implications.
- Examine various governance models for blockchain networks to ensure fair decision-making, community participation, and effective dispute resolution.
- Investigate the use of blockchain in intellectual property management, including copyright protection, licensing, and content ownership verification.

- Awareness about the Blockchain technology among the general public, policymakers, businesses, propose strategies for increasing awareness and education.
- This provides the development of blockchain implications across various sectors. As blockchain continues as interdisciplinary research and collaboration will be crucial in unlocking its potential and addressing real-world challenges.

8   Conclusion

Further research and analyze will create workable and industrial applications with the use of blockchain goals. Future research must be required to attempt for securing blockchain applications. To provide the tradeoffs regarding different blockchain consensus mechanisms and areas for exploring potential outcomes in related areas. The government should device new policies in formulating new laws and it must be an essential tool for blockchain technologies. The advantage of blockchain technologies bring influence and security issues to be a best Block Chain Technology.

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