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RISK EVALUATION OF BLOCKCHAIN POWERED SUPPLY CHAIN FINANCING

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ABSTRACT: This paper seeks to conduct a comprehensive risk assessment of blockchain-enabled supply chain financing serving as the basis for supply chain operations of Tomorrowland. The purpose is to identify main risks associated with blockchain implementation in supply chain finance and ways to mitigate them to enable the most secure and reliable financial processes possible. This research paper delves into the critical examination of risk factors associated with blockchain-enabled supply chain financing. Through a thorough literature review and empirical analysis, this study identifies and evaluates the various risks inherent in utilizing blockchain technology for supply chain financing. The findings provide valuable insights for stakeholders to mitigate risks and optimize the efficiency and security of supply chain finance processes.

KEYWORDS: Research Paper, Blockchain, Management, Risk Evaluation, Empirical Analysis

INTRODUCTION

Blockchain in Supply Chain Financing – An Overview: Define what a blockchain is and how it integrates into supply chain financing. Provide a general understanding of the topic, including benefits and challenges. Research objectives: Explain the goals and objectives of this paper, outlining blockchain-based supply chain financing's risk assessment as a key focus.

The importance of risk assessment: Describe why it is important to evaluate the risks in transitioning to blockchain in financial processes to ensure the validity and safety of the latter.

In recent years, the integration of blockchain technology into supply chain management has garnered significant attention for its potential to revolutionize traditional processes. One area where blockchain shows promise is in supply chain financing, a critical aspect of global trade and commerce. By leveraging blockchain's inherent features such as immutability, transparency, and decentralization, supply chain financing stands to benefit from enhanced efficiency, reduced fraud, and increased trust among participants.

However, as with any emerging technology, the adoption of blockchain in supply chain financing also introduces various risks and challenges that must be thoroughly evaluated and addressed. This research paper

aims to delve into the risk landscape associated with blockchain-powered supply chain financing, providing insights into potential vulnerabilities, mitigation strategies, and the overall impact on stakeholders.
Through a comprehensive examination of the existing literature, case studies, and expert opinions, this paper seeks to:

1. Identify the key risks inherent in blockchain-powered supply chain financing, including but not limited to security vulnerabilities, regulatory compliance, interoperability issues, and scalability concerns.
2. Analyse the implications of these risks on different stakeholders involved in the supply chain financing ecosystem, including suppliers, buyers, financial institutions, and regulators.
3. Evaluate existing risk management frameworks and strategies utilized by organizations to mitigate the identified risks associated with blockchain adoption in supply chain financing.
4. Propose recommendations and best practices for effectively managing and mitigating risks in blockchain-powered supply chain financing initiatives, thereby maximizing the benefits while minimizing potential drawbacks.

KEY RISKS IN BLOCKCHAIN POWERED SUPPLY CHAIN FINANCING

- **Security Risks:** Debate security imperialities of the blockchain networks including data breaches, smart contract flaws, and 51% attacks.
- **Regulatory Risks**: Examination of the institutional challenges including the compliance issues related to the process of integration of blockchain technology in supply chain finance, e.g. anti-money laundering (AML) regulations, and data privacy laws etc.
- **Operational Risks** – Analyze the operational risks from system failure, transaction delay, and human errors on blockchain supply chain financing.
- **Interoperability Risks** – Deliberate on the interoperability risk as a result of merging blockchain with existing supply chain management systems and the financial system.

REVIEW OF LITERATURE

1. **Tsan-Ming Choi (2024),** This paper seeks to explore the critical aspects of supply chain finance with specific attention to supply chains that deal in trendy products. In traditional times, they have heavily depended on banking institutions for financing services. Nonetheless, due to introduction of block chain technology, there is a growing interest by companies from various industries in using it for supply chain finance. The study uses the normative newsvendor framework with a single manufacturer and retailer while incorporating revenue sharing contract. We provide analytical models for both conventional supply chains and blockchain supported ones. This will help us identify the potential benefits and challenges associated with using blockchain technology in fashion product development and marketing.
2. **Zitang Gao (2022**), In order to convert the uncontrollable risks of a unmarried business enterprise's credit commercial enterprise right into a controllable normal risk, and better alleviate the financing problems of small and micro firms. This article first research the idea and function of deliver chain finance and the

which means and traits of deliver chain finance, and then analyzes the working mechanism of the 3 financing techniques and numerous risks in the financing procedure. This article combines the particular operation and enterprise technique of the Logistic version of the Internet of Things era to design a new model to similarly reduce credit score hazard and market hazard. The empirical analysis consequences display that: going through the financing problems of small and medium-sized organizations, the modern financing version based totally on supply chain finance is the most perfect choice. By the usage of blockchain decentralization era to remedy the risks of deliver chain monetary projects, and using the traits of blockchain to improve the efficiency of supply chain financing in clearing and settlement.

3. Lingxiu Dong , Yunzhe Qiu , Fasheng Xu (2022) For many supply chains, deep-tier providers, because of their small length and absence of access to capital, are most at risk of disruptions. We study the usage of advance charge (AP) as a financing device in a multitier deliver chain to mitigate the deliver disruption chance in a traditional machine (with restrained visibility) and a blockchain-enabled device (with best visibility). The important intention of this paper is to shed light on how blockchain adoption impacts marketers' operational and economic decisions as well as income stages in a multitier supply chain. Academic/realistic relevance: Traditionally, because of the restrained visibility within the deep degrees, powerful downstream producers' financing schemes provided to their on-the-spot upstream suppliers are not powerful in instilling capital into the deep levels. Advancements in blockchain technology improve the supply chain visibility and permit the producer to higher devise deep-tier financing to improve deliver chain resilience.
4. Jingjing Chen, Tiefeng Cai, Wenxiu He, Lei Chen, Gang Zhao, Weiwen Zou and Lingling Guo, (2020) Blockchain-driven platform for deliver chain finance, BCautoSCF (Zhi-lian-che-rong in Chinese), is introduced. It is correctly hooked up as a dependable and green financing platform for the car retail enterprise. Due to the Blockchain built-in consider mechanism, participants inside the supply chain (SC) networks work significantly and transparently to run a dependable, handy, and traceable enterprise. Likewise, the traditional supply chain finance (SCF), partial automation of SCF workflows with fewer human mistakes and disruptions was completed thru clever agreement in BCautoSCF. Such open and steady capabilities propose the feasibility of BCautoSCF in SCF. As the first Blockchain-driven SCF software for the automobile retail enterprise in China, our contribution lies in reading these pain points current in conventional SCF and presenting a novel Blockchain-pushed design to reshape the enterprise logic of SCF to broaden an green and reliable financing platform for small and medium firms (SMEs) in the auto retail enterprise to decrease the value of financing and speed up the cash flows. Currently, there are over 600 energetic business enterprise users that undertake BCautoSCF to run their financing business. Up to October 2019, the BCautoSCF provides services to 449 on line/offline automobile retailors, three B2B asset alternate systems, 9 fund providers, and 78 logistic services throughout 21 provinces in China.

OBJECTIVES OF THE RESEARCH

1. Identify Vulnerabilities: Assess the capacity weaknesses and vulnerabilities within the blockchain-powered deliver chain financing system that would result in protection breaches, fraud, or operational disruptions.
2. Evaluate Impact of Failures: Determine the capacity outcomes and economic impact of any screw ups or breakdowns inside the blockchain infrastructure, along with transaction delays, statistics tampering, or smart settlement malfunctions, on the overall supply chain financing procedure.
3. To determine whether adaptions of blockchain in supply chain financing

SCOPE OF THE STUDY

Risk evaluation of blockchain-powered deliver chain financing includes assessing ability risks associated with utilizing blockchain technology for financing sports inside supply chains. The scope of the take a look at could commonly encompass:

Technology Risks:

- Evaluation of the blockchain era itself, which include its safety, scalability, and reliability.
- Potential vulnerabilities inclusive of clever settlement insects, consensus set of rules flaws, or network assaults.
- Analysis of the specific blockchain platform getting used and its song record in similar programs.

Operational Risks:

- Challenges in integrating blockchain technology with present deliver chain and financing structures.
- Operational disruptions throughout the transition phase.
- Regulatory compliance issues associated with blockchain generation and financial transactions.

Financial Risks:

- Assessment of the economic viability of blockchain-powered supply chain financing.
- Impact on liquidity, profitability, and financial stability of taking part entities.
- Evaluation of transaction fees, which include charges related to blockchain transactions.

Counterparty Risks:

- Risks associated with counterparties worried in the supply chain financing manner.
- Credit risks of providers, customers, and financing vendors.
- Legal dangers related to contractual agreements and responsibilities.

Data Security and Privacy Risks:

- Potential breaches of sensitive statistics stored on the blockchain.

- Compliance with information safety rules along with GDPR or CCPA.
- Risks associated with identity management and authentication on the blockchain network.

RESEARCH METHODOLOGY

Research Design: Highlight the research method and technique applied in for risk assessment, for example; qualitative approach, case analysis or empirical research.

Data Collection: Describe the procedure of gathering risks related with the use of Blockchain in the area of supply chain finance, namely, through interviews, surveys, and literature study.

Risk Assessment Criteria: Express the assessment criteria employed in identification of risks accounting for factors like security of the system, scalability, regulatory compliance, and operational resilience.

Digital Disruption: Blockchain Technology introduces potential gap between tech-savvy and laggard industries in terms of integrating blockchain technology in finance.

TYPES OF DATA COLLECTION

Primary Data: primary data are those which were collected a fresh & for the first time and thus happen to be original in character.

- Questionnaire

Secondary Data: Secondary data is collected from previous research and literature to fill in the respective project. The secondary data was collected through:

- Articles
- Websites
- Books

Sample Size: (75 customers)

Analysis Technique: Random Sampling and Questionnaire technique selected by researcher to collect the data from the respondent.

MITIGATION STRATEGIES AND BEST PRACTICES

Risk Mitigation Strategies: Suggest mitigating approaches and guidelines for mitigating the risks related to blockchain – powered supply chain financing, such as encryption methods, multi – factor authentication, and frequent security checks. propose strategies and best practices in mitigating the hazard associated with

blockchain supply chain financing. It can include encryption, multi-factor authentication, and regular security checks on the blockchain.

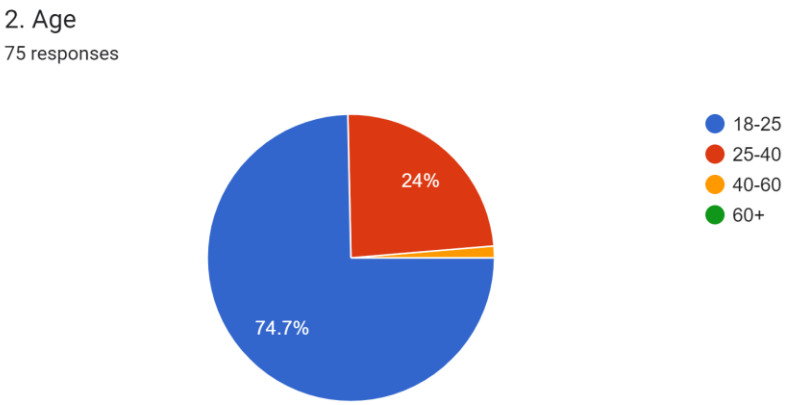
Regulatory Compliance Measures: Mention the compliance policies and law-enforcement regulations that need to be followed to comply with the established legal provisions in blockchain – based finance operations.

Technology Solutions: Offer existing and potential technological solutions and developments that would boost the security, scalability, and comparability of blockchain systems in supply chain finance. Compliance Recommendations: Based on the conducted risk evaluation, outline the compliance measures and regulatory frameworks that should be introduced to secure that the blockchain-based financial transactions comply with legal and regulatory demands.

In addition, suggest the technology or innovations that could support the goal of developing a secure, scalable, and interoperable network of blockchain in supply chain finance.

DATA ANALYSIS & INTERPRETATION

➢ Age



Response	Frequency	Percentage
18-25	56	74.7
25-40	18	24
40-60	1	0.03
60	0	0
Total	75	100

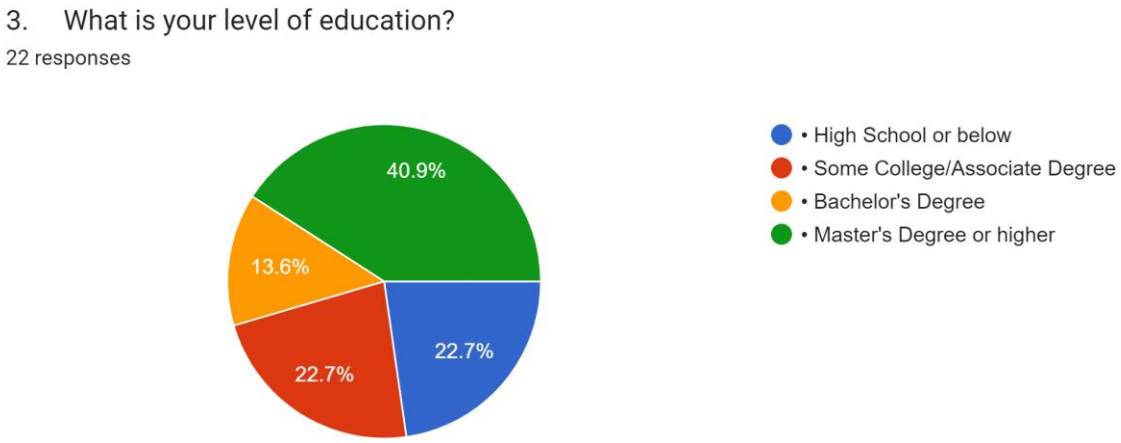
Data analysis:

From the above graph and table, it is observed that out of 75 responses, 56 respondent is from 18-25 age group with 74.7%, 18 respondents are from 25-40 age group with 24%, 1 respondent are from 40-60 age group with 0.03%, 0 respondent is from 60 age group with 0%,

Interpretation:

It is observed the most of the respondents are in the age group of **18-25 YEAR** and the last number of respondents belong to the age group of **60 YEARS.**

- Education level



Response	Frequency	Percentage
High school	5	22.7
Some college	5	22.7
Graduation	3	13.6
Post graduation	9	40.9
Total	22	100

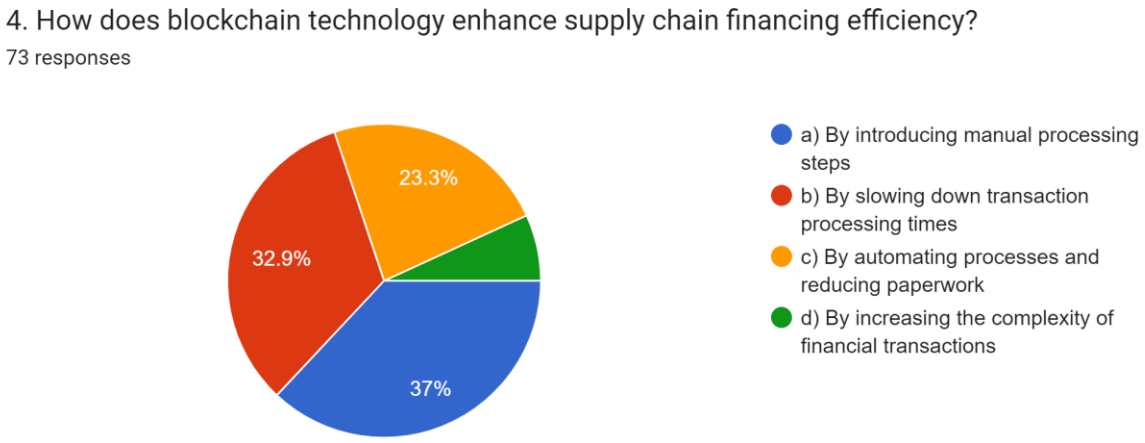
Data analysis:

From the above graph and table, it is overserved that out of 22 responses,9 respondents are post-graduation with 40.9%, 3 respondents are graduation with 13.6%, and I respondents has an associate degree.

Interpretation:

It is observed that most of the respondents are post graduated and the least number of respondents are those who has associate degree.

- Blockchain technology enhance supply chain financing efficiency



Response	Frequency	Percentage
Introducing manual processing	27	37
Slowing down	24	32.9
Automating processes	17	23.3
Increasing the complexity of ft	5	6.8
Total	73	100

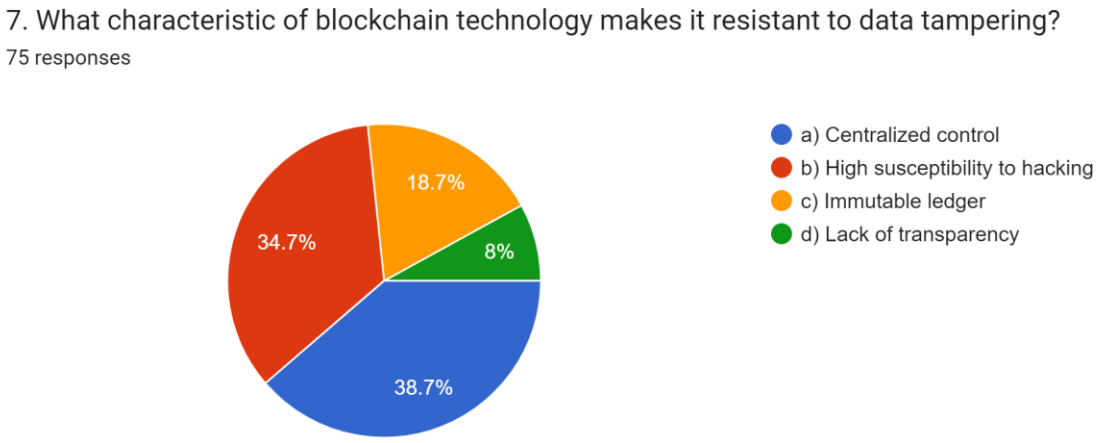
Data analysis:

From the above graph and table, it is overserved that out of 73 responses, 27 respondents by introducing manual processing with 37%, 24 respondents are slowing down with 32.9%, 17 respondents are automating processes with 23.3%, 5 respondents are increasing the complexity of finance transaction with 6.8%,

Interpretation:

It is observed that most of the respondents are introducing manual processing and the least number respondents are those who has Increasing the complexity of financial transaction.

➢ Characteristic of blockchain technology makes it resistant to data tampering



Response	Frequency	Percentage
Centralized control	29	38.7
High susceptibility to hacking	26	34.7
Immutable ledger	14	18.7
Lack of transparency	6	8
Total	75	100

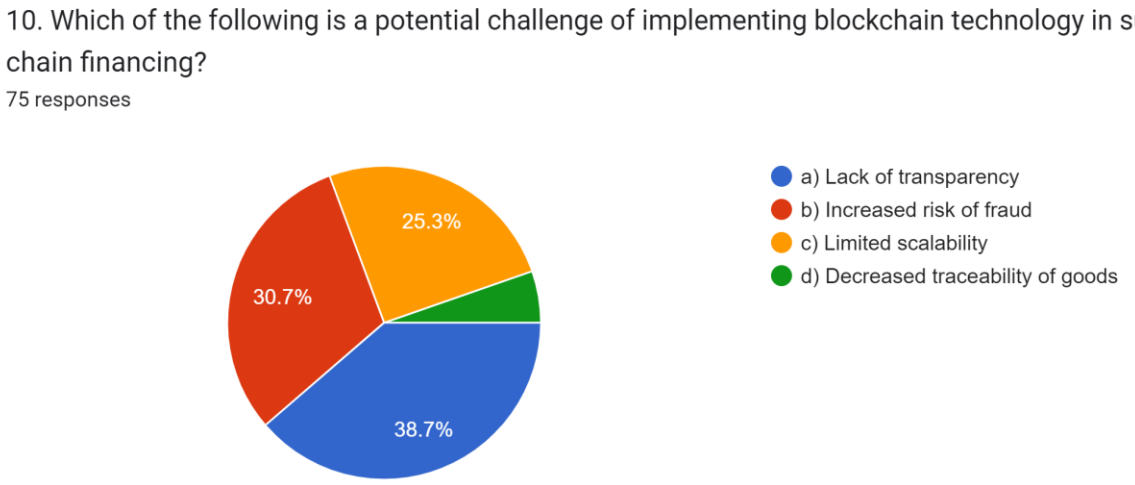
Data analysis:

From the above graph and table, it is overserved that out of 75 responses, 29 respondents are centralized control with 38.7%, 26 respondents are high susceptibility to hacking with 34.7%, 14 respondents are immutable ledger with 18.7%, 6 respondents are lack of transparency with 8%,

Interpretation:

It is observed that most of the respondents are centralized control and the least number respondents are those who has lack of transparency.

➢ Which of the following is a potential challenge of implementing blockchain technology in supply chain financing



Response	Frequency	Percentage
Lack of transparency	29	38.7
Increased risk of fraud	23	30.7
Limited scalability	19	25.3
Decreased traceability of good	4	5.3
Total	75	100

Data analysis:

From the above graph and table, it is overserved that out of 75 responses, 29 respondents are Lack of transparency with 38.7%, 23 respondents are increased risk of fraud with 30.7%, 19 respondents are limited scalability with 25.3%, 4 respondents are decreased traceability of goods with 5.3%,

Interpretation:

It is observed that most of the respondents are Lack of transparency and the least number respondents are those who has decreased traceability of goods

LIMITATION OF RESEARCH

The study was carried out within the stated parameters. The research was limited.

- The focus only on risk evaluation of blockchain in supply chain fianancing.
- This study is based on the information provided by the respondents.

CONCLUSION

What key findings from the risk evaluation can be summarized about risks and challenges addressed to improve the blockchain-powered supply chain financing? Implications. What are the implications of the study for practitioners, policymakers, and researchers? Future directions. What can be proposed for extra specific research? Closing. Closing remarks on the role of evaluation for sustaining blockchain use in supply chain finance.

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