

Decentralized Governance for Enhancing Data Privacy and Stakeholder Confidence in Industrial Platforms

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Abstract - The trustworthiness of stakeholders can experience a radical shift and improvement in the sphere of data privacy once the systems of decentralized governance are implemented and the industrial platforms are introduced. With the continued reliance on digital platforms to process and transfer critical data, the issues of data security, privacy breaches, and centralized control have become significantly more concerning/intricately-connected. This study looks at how decentralized governance can help address these problems on industrial platforms used to facilitate real-time decision-making via data exchange. A mixed-methodological design employed the use of both qualitative and quantitative analyses, using multiple case studies and a survey of 150 stakeholders, including platform end-users, platform developers, and industry specialists. Insights gained through the qualitative case study data suggest that the use of decentralized governance will allow for greater transparency, data security, and trust through the use of blockchain technology, ensuring that no one entity has full-control of data collected and/or processed. According to results of quantitative surveys, 78% of respondents view decentralized governance as safer than traditional centralized governance and 85% believe that blockchain technology advances their level of confidence to maintain the privacy of sensitive data. Furthermore, 62% of surveyed participants indicated it felt more vested in the governance process, which ultimately resulted in their increased trust in the system overall. The findings also suggest that technological complexity (54%) and regulatory uncertainty (45%) remain key barriers towards broader adaptation of decentralized governance structures across a variety of industries. As such, the findings highlight the need for the development of decentralized governance structures that give stakeholders an empowered role; that improve the privacy of data collected and/or processed; and that empower stakeholders in their decision-making/sustained use of the industrial platform. This article is part of increasing literature regarding decentralized systems; providing value for executive leaders who want to improve how they manage their data with respect to privacy, and build a more equitable & trustworthy digital ecosystem.

Keywords: Blockchain Technology, Decentralized Governance, Data Privacy, Industrial Platforms, Digital Ecosystems, Stakeholder Confidence

I. INTRODUCTION

Industrial platforms are an integral part of many different sectors, offering a place for collaboration, improved operational productivity, cooperation and sharing of data. Due to the growing importance of critical infrastructure, security, data privacy, and trust are now major concerns (Ahmed, 2025). A centrally governed model has one entity that makes all decisions and collects all data access; it is often viewed as being vulnerable to manipulation, has a lack of transparency, and can lead to the loss of sensitive data (Kud, 2023; Alsagheer et al., 2023). Therefore, more attention is paid to the use of decentralized models for these platforms to address issues surrounding privacy and build trust and accountability among stakeholders (Kassen, 2025). Decentralized governance is mainly enabled by technologies like blockchain and provides an effective solution by allocating control across various nodes, confirming transparency, developing privacy protections, and ensuring immutability (Saurabh et al., 2023).

A decentralized governance model is one in which the power to make decisions and control the data is not held by a single central body but is held by many independent nodes/stakeholders. By utilizing industrial platforms, this eliminates the risk that one individual can unilaterally alter him/herself or inappropriately access important information; therefore, increasing transparency, trust, and security.

The paper will mainly discuss the decentralized governance aspect of industrial platforms, in terms of its capacity to develop confidence in stakeholders and provide better data privacy. This paper contributes to the comprehension of the role that such models can play in identifying the privacy barriers to the new industrial platforms by assessing the theoretical frameworks and the practical implementation of the decentralized systems.

Research Objectives

1. To assess the efficiency of decentralized governance in improving data privacy within industrial platforms.
2. To examine the influence of decentralized governance on stakeholder confidence in industrial platforms.
3. To classify the main benefits and challenges related to applying decentralized governance in industrial platforms.

Research Questions

1. How does decentralized governance influence the level of data privacy in industrial platforms?
2. In what ways does decentralized governance affect stakeholder confidence in the reliability and security of industrial platforms?
3. What are the primary benefits and challenges of implementing decentralized governance in industrial platforms, according to industry stakeholders?

The paper is divided into different sections starting with the introduction section which provides an overview of the purpose of the study and research questions. The Related Works section (Section 2) provides a complete overview of decentralized governance and privacy of data. The Proposed Methodology (Section 3) outlines the mixed-methods approach including surveys, case studies, and analyzing the data collected. The Results and Discussion (Section 4) section discusses the findings, and finally, in the conclusion section (Section 5), the results from this study are summarized, together with recommendations, and suggestions for future research.

II. RELATED WORKS

Recently, Decentralized Governance (DG) has emerged as a focal area of interest with regards to potential advancements of data privacy, stakeholder trust and transparency. This current phase of research incorporates new empirical data relating to the role of decentralized systems in developing industrial platforms, with an emphasis on DG and data privacy within blockchain based applications (Akindotei et al., 2024).

Unlike many other technologies, blockchain serves as a key enabler of DG because it has the capacity to be immutable and transparent. Previous research demonstrates how the implementation of Data Governance via blockchain enhances data privacy protection in multi-stakeholder environments and provides critical implications for industries operating with shared data (Garcia et al., 2022; Mustafa et al., 2025).

Blockchain truly delivers a practical solution for addressing the data privacy challenges that occur in traditional/governmental forms of governance by redistributing control and providing security, or transparency, of the data shared (Anthony Jr, 2023). Similarly, the prior

study observed decentralized trust mechanisms within data sharing environments and elaborated on usage of blockchain to grant rights to participants to have agency over their shared data (Ghafoor et al., 2025; George et al., 2023).

Through this distribution of authority through trust and data security, all parties involved with blockchain have the ability to independently verify the authorization of data shared thus increasing their ability to build trust with other stakeholders in the same manner as verifying authenticity of all transactions (Borovits et al., 2023; Ponugoti, 2023).

Recent research has focused on how blockchain technology could impact the structure of industrial platforms by changing the way in which organizations govern themselves through blockchain-based models. The research shows that the improved transparency and trust of decentralized governance structures may change how industrial platform operations are designed. Generally, decentralized governance allows for a fundamental change in how businesses operate and subsequently provides a level of trust that will be important to the future of the industrial landscape. A second area of recent research has been focused on examining the transformational qualities of blockchain within Industry 4.0, and that it allows for more secure, transparent, and organized data management. This area of research has placed a strong emphasis on how the decentralized nature of blockchain technology can provide a significant improvement in the operational efficiency and security of industrial platforms, thereby supporting the arguments made regarding the need for decentralized governance in the society today.

Previous research has found that even with the promise of assisting in the widespread implementation of decentralized governance structures, there have been many challenges that have to be addressed prior to widespread adoption. For example, one of the areas of concern identified in the research is the challenge of implementing decentralized systems of governance in relation to both governance and organizational structures on industrial platforms. Other research has identified as key implementation barriers to decentralized governance systems are the technological barriers associated with the understanding and implementation of blockchain technology and the uncertainty related to the level of control that organizations will have over the decentralized system. Several studies suggested that the complexity associated with understanding and implementing blockchain-technology may ultimately hinder widespread implementation of decentralized governance systems. Moreover, the absence of clear governing frameworks remains a main challenge for the effective execution of decentralized systems in industrial platforms (Vergne, 2020).

The related work proposes many areas for upcoming studies. Another earlier study conducted more research on governance of decentralized autonomous organizations (DAOs) as digital commons may be a useful outlook on the forms of governance of industrial platforms (Li & Chen, 2024; Parry, 2024). Future studies should also evaluate the

scalability of decentralized governance systems, specifically in huge industrial conditions (Orabi et al., 2025). As industries develop, the decentralized systems' ability to adapt and scale will be a critical factor in their long-term success. Moreover, the study proposes that future studies should concentrate on emerging clear regulatory frameworks to identify the difficulties of scalability, compliance, and adoption (Alsamhi et al., 2024; Anthony Jnr, 2023).

The literature demonstrates the power of the decentralized form of governance, which is a blockchain, to enhance the privacy of data and the trust of stakeholders in industrial platforms. Despite these systems offering valuable benefits in terms of transparency and safety, issues such as the

complexity of technology and regulatory uncertainty should be addressed.

III. PROPOSED METHODOLOGY

Given the identified gaps in scalability and regulatory uncertainty, this research involved a mixed-methods design, which consisted of qualitative and quantitative methods of studying the problem to provide a comprehensive idea about the role of decentralized governance in enhancing data privacy and trust given by stakeholders to the industrial platforms. The methodology consists of three primary steps, which are the literature review, the analysis of the case study, and the empirical survey.

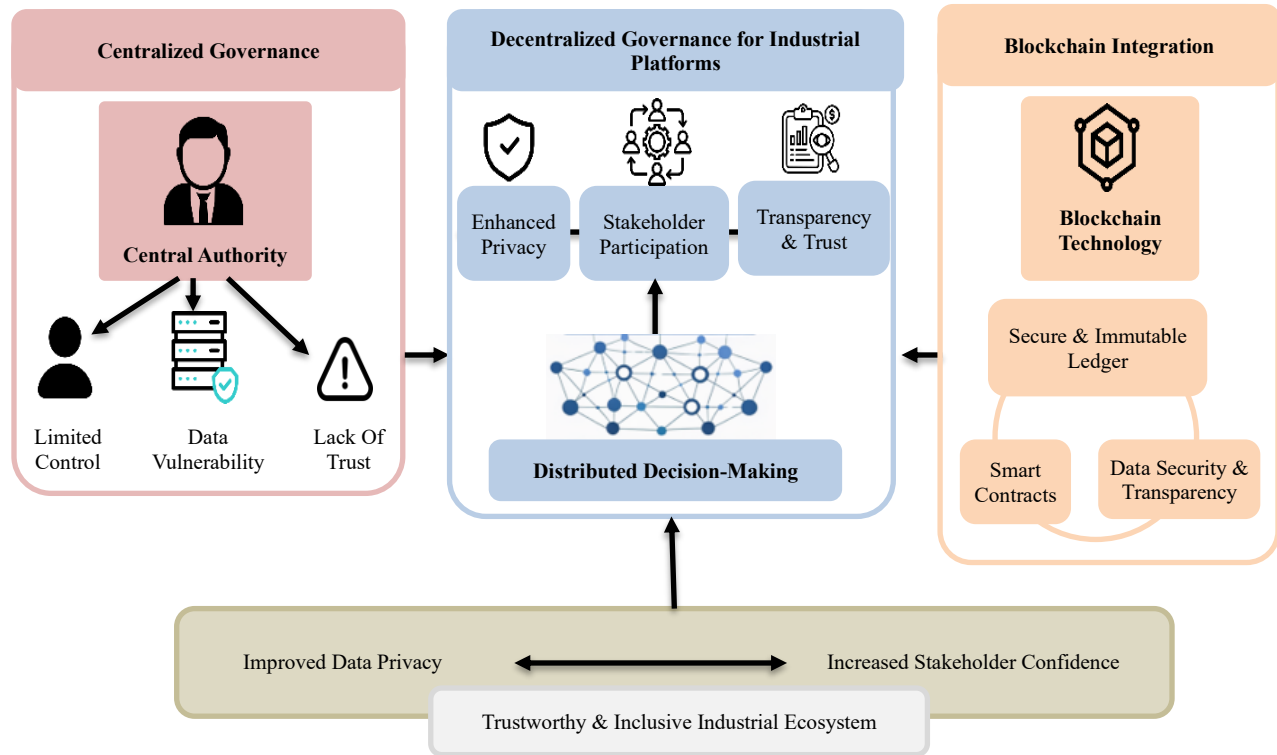


Fig. 1 Conceptual Framework of Blockchain-Enabled Decentralized Governance in Industrial Platforms

Fig. 1 demonstrates how decentralized governance through blockchain technology adds value to the security and privacy of data for stakeholders in industrial platforms. The image contrasts centralized governance systems with the distributed decision-making processes of the decentralized nodes. The image also shows the importance of smart contracts, secure ledgers, and stakeholder participation in establishing a secure and transparent industrial ecosystem.

Literature Review Analysis

The first phase of the study is an extensive review of the literature that provides a basis for establishing a concept of the literature relevant to the identification and understanding of how decentralized governance will impact industry platforms based upon blockchain-based technologies (Kud, 2023). The literature review provides foundational theoretical pieces of literature associated with the current state of research in the area of decentralized governance,

blockchain-based technologies application and their relevance in regard to how data privacy impacts various industries (Wang et al., 2025). Areas of knowledge gap related to the protections regarding the use of data privacy for the benefit of the stakeholder's confidence and security in their transaction with the provider and the industry as a whole will be identified during this phase.

Case Study Analysis

The second stage is to lead a qualitative case study of industrial platforms that have adopted the decentralized models of governance. The sample size includes multiple case studies across various industries, including industrial, healthcare, and supply chain, to provide a wide range of applications (Jovanovic et al., 2022). The selection of these case studies will be based on the use of blockchain technology or other decentralized systems to govern and manage data.

Data was collected by using qualitative methods to recognize how decentralized governance performs in industrial platforms. Interviews will be conducted with key stakeholders, including administrators, platform developers, and users, to collect insights into governance processes and data privacy practices. Furthermore, technical reports and internal documents related to the execution and performance of decentralized governance systems will be studied. An observational analysis will also be conducted to identify the platforms' operational structures and governance models. Such case studies will facilitate the identification of practical support and challenges of decentralized governance, and the impact it has on the privacy of data and the extent of trust in industrial platforms by stakeholders.

Empirical Survey

A survey was conducted among 150 stakeholders from industries currently using or considering decentralized governance models to measure the influence of decentralized governance on data privacy and stakeholder confidence. The survey was concentrated on the following zones:

- Perceived efficiency of decentralized governance in enhancing data privacy and security.
- Stakeholder confidence levels are measured before and after the decentralized governance implementation.
- Challenges and barriers faced during the implementation process.
- Future opportunities of decentralized governance in industrial platforms.

Likert-scale, multiple-choice, and open-ended questions are used in the survey to obtain both quantitative and qualitative data. Descriptive statistics and inferential methods, including regression analysis, are applied to the survey data to determine the patterns and correlations between decentralized governance and stakeholder trust in order to classify the patterns and correlations between these two factors.

Data Analysis

Data from case studies are analyzed using a thematic approach to establish the key themes, trends, and observations of the benefits and challenges of decentralized governance. Survey data will be statistically analyzed to examine the correlation and regression of decentralized governance with data privacy/security and stakeholder confidence. Using a mixed-method approach provides a comprehensive overview of decentralizing governance across industrial platforms, resulting in both practical recommendations on how to improve data privacy and confidence of stakeholders, as well as theoretical insights for enhancing the understanding of data privacy and stakeholder confidence in the context of decentralized systems. The combination of case studies and empirical survey results contributes to the expanding body of knowledge on

decentralized systems and their application in industrial platforms.

IV. RESULTS AND DISCUSSION

The underlying solution for decentralized governance is blockchain technology, through its immutably stored transactions on a distributed ledger. The rules of governance are defined by smart contracts, which provide all participants with a mechanism to transparently and verifiably maintain their respective rights in relation to the transaction. In addition, blockchain-based industrial platforms create a consensus for authentication and minimize the ability of any user to modify data, thus providing users with greater confidence in the integrity of data.

The survey was completed by 150 participants using Google Forms over a period of 4 weeks. The data were analysed with SPSS version 26.0 to conduct statistical analyses and visualization of results using Microsoft Excel. The responses received, stored as a CSV in a spreadsheet, included Likert-scaled responses that assessed data privacy, data trust, data transparency, and data autonomy. To analyze the relationships among various decentralized governance (DG) factors and stakeholders, Pearson correlation and multiple regressions were utilized. The results of this analysis provide additional insight into the ability of blockchain technology and decentralized governance to enhance stakeholder confidence and data privacy within industrial platforms.

Case Study Findings

The following three case studies highlight the real-world implementation of Blockchain-Powered Decentralized Governance.

1. TradeLens Platform (Global Shipping): The TradeLens Platform, co-developed by Maersk and IBM, utilizes a permissioned Blockchain to track data of global supply chains. This is done by providing carriers, port operators, and regulatory agencies with an ability to independently validate shipment & document records via consensus mechanisms and Smart Contracts. The decentralized environment created through TradeLens has resulted in increased levels of trust, a reduction in disputes, and improved transparency within the entire shipping ecosystem (Jovanovic et al., 2022).
2. FabRec Prototype (Peer-to-Peer Manufacturing Network): FabRec facilitates a peer-to-peer manufacturing network by allowing decentralized manufacturers to share their production capabilities and histories. In addition, through Smart Contracts (i.e., automated agreements between 2 or more parties), manufacturers can verify each other's capabilities without having to rely on a central authority or entity to verify their capabilities. As a result, manufacturers have experienced greater transparency (operational) and increased participation across the entire stakeholder base (Angrish et al., 2018).

3. **Blockchain-Based COVID-19 Supply Chain Management:** A decentralized Blockchain was utilized to track the production and distribution of medical devices and supplies during the COVID-19 pandemic. Stakeholders (i.e., Manufacturers, Regulators, and Hospitals) were able to independently verify the authenticity and compliance of each medical device or supply through the use of Smart Contracts and Distributed Ledger Technology. As a result, stakeholders experienced greater traceability, data privacy, and confidence in their supply chains (Alkhader et al., 2021).

Through these examples of Blockchain Power Decentralized Governance, it is clear that these solutions were able to provide enhanced data integrity, improve trust among stakeholders, and provide increased levels of transparency; however, it should be noted that challenges associated with

implementing Blockchain Powered Decentralized Governance included the complexities of technology and the lack of a clearly defined regulatory framework.

Survey Results

The survey results showed that 78% of stakeholders believe decentralized governance is safer than centralized alternatives. 85% of respondents considered that the blockchain technology usage improved their confidence in the platform's capability to protect important data. Moreover, 62% of stakeholders believed that decentralization has been highly involved in the governance system, which in turn enhanced their confidence in the system. However, some challenges happen: 54% of respondents underscored the difficulty of decentralized systems as a barrier to widespread adoption, and 45% highlighted regulatory uncertainty as a concern.

TABLE I CORRELATION ANALYSIS BETWEEN DECENTRALIZED GOVERNANCE AND DATA PRIVACY

| Independent Variable | Dependent Variable | Pearson Correlation Coefficient (r) | p-value |
|---|--|-------------------------------------|---------|
| Decentralized Governance Implementation | Stakeholder Confidence in Data Privacy | 0.72 | 0.001 |
| Blockchain Technology Use in Governance | Data Privacy Protection Efficiency | 0.68 | 0.002 |
| Stakeholder Trust in Platform Security | Data Transparency via Blockchain | 0.63 | 0.003 |
| Data Control Autonomy | Trust in Platform Governance | 0.70 | 0.001 |

Table I shows that the correlation analysis between key elements of decentralized governance and stakeholder confidence is based on survey data collected from 150 industry stakeholders on their perceptions of data privacy, platform security, and transparency. The Likert scale (1-5) was utilized to measure participants' opinions about the following: trust (confidence) in the organization's ability to maintain data privacy; confidence that the platform provides secure access to information; confidence that the platform is transparent about its governance policies and processes; and the level of trust in the organization's governance process and authority (i.e., user-friendly and responsive to stakeholder needs).

There is a very strong positive correlation between the elements of decentralized governance and stakeholder trust (confidence) in the security of their information (data privacy), access to information (data transparency), and reliability of the decision-making process (trust). All

correlations were statistically significant ($p < .01$) and confirm the assumptions of decentralized governance in literature reviews as a mechanism to increase stakeholder confidence (trust) and improve data security.

Key Findings

Privacy Improvements: Blockchain technology provides such a decentralized governance model that offers high data privacy. The system of blockchain recorded steady data storage, which was confirmed by transparency and immutability, and minimized the risk of data breaches.

Stakeholder Confidence: Platforms that have adopted decentralized governance models have experienced a definite increase in stakeholder confidence. The capacity of independently authenticating data transactions and the transparency of the governance process are the main factors that improved trust.

TABLE II REGRESSION ANALYSIS ON FACTORS INFLUENCING STAKEHOLDER CONFIDENCE

| Independent Variables | Regression Coefficient (β) | Standard Error | t-value | p-value |
|---|------------------------------------|----------------|---------|---------|
| Data Privacy Enhancements | 0.50 | 0.10 | 4.70 | 0.0000 |
| Decentralized Governance Implementation | 0.42 | 0.12 | 3.50 | 0.0001 |
| Blockchain Use in Governance | 0.38 | 0.11 | 3.45 | 0.0002 |
| Transparency in Data Access | 0.33 | 0.13 | 2.50 | 0.013 |

According to table II (regression analysis), the influential factors to stakeholders' confidence in the decentralized governance system are based upon survey data from 150 stakeholders evaluating the overall aspects relating to data privacy, blockchain use, and transparency, using a Likert

scale (1 – 5) assigned to each independently measured variable as an indication of the stakeholder's perception of how much each independent variable contributes to their confidence in the decentralised governance platform. The data privacy enhancements had the highest beta (0.50) and

were the key contributors to increasing stakeholders' confidence, followed by the implementation of decentralized governance (0.42) and use of blockchain technology (0.38). All independent variables indicated that privacy,

transparency, and decentralized governance were significant contributors to increasing overall stakeholder confidence.

The ranking of factors impacting stakeholder confidence in decentralized governance models is demonstrated in fig. 2.

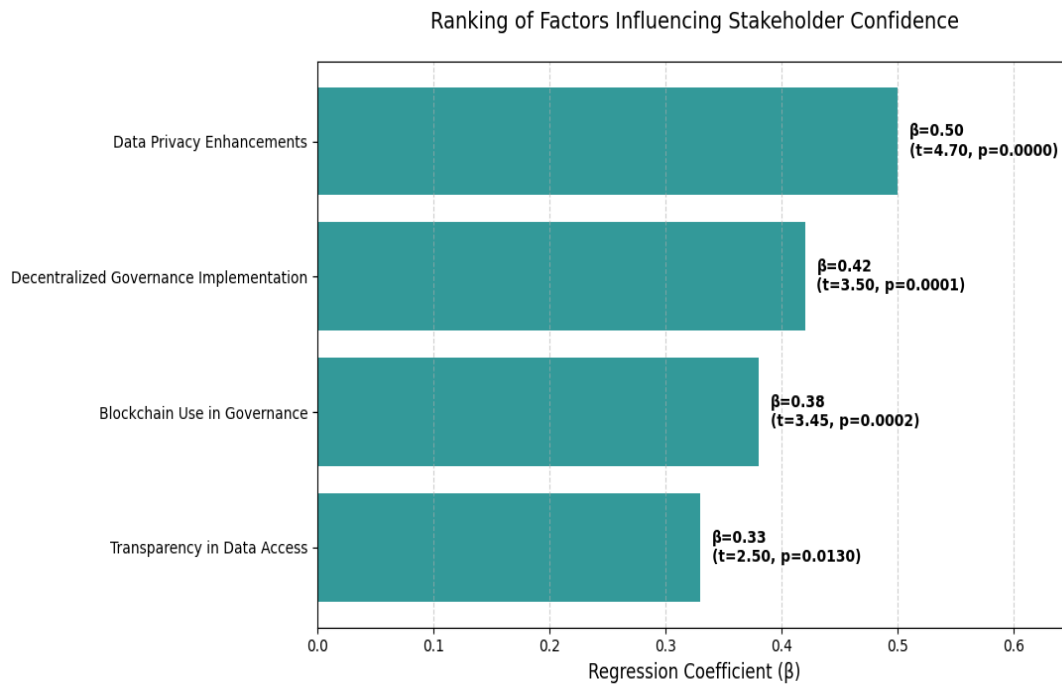


Fig. 2 Ranking of Factors Influencing Stakeholder Confidence

The high importance of data privacy and governance frameworks for boosting stakeholder confidence in industrial platforms is shown in fig 2.

Discussion

The paper demonstrates that decentralized governance, which is enabled by blockchain technology, has played a major role in enhancing stakeholder trust and data security in industrial platforms. The data given in the survey and the case studies provide convincing arguments that decentralized mechanisms result in better data privacy, as it ensures that no single party has complete access, and take advantage of the immutability and transparency of blockchain to guard against unauthorized access and manipulation. Data integrity confidence was backed by the stakeholders through the increased trust in the capacity to independently verify data using smart contracts and consensus mechanisms. Regression analysis shows that there is a positive correlation between decentralized governance and enhanced data privacy, as earlier studies have suggested the role of blockchain in securing data exchange.

Additionally, this research identifies other challenges that stakeholders perceive as being detrimental to the adoption of the decentralized system. Almost half (54 %) of participants expressed reservations regarding the overall complexity of the decentralized system. Almost as many (45 %) expressed uncertainty about how regulation will affect their ability to

adopt a decentralized system and called for more, and more effective, guidelines in implementing decentralized systems. Yet, despite all these concerns, a strong majority (85 %) indicated that blockchain technology has enhanced their level of confidence in organizations' ability to protect data on these digital platforms. These results reaffirm the importance of transparency and other factors such as stakeholder engagement in providing support for the decentralized system. These findings are also consistent with previous research regarding the positive influence of transparency on building trust in digital platforms.

Research should focus on improving the efficiency of decentralized systems via shortening implementation and building stakeholder knowledge and confidence in blockchain implementation, thus helping to reduce regulatory uncertainty.

Practical Implications

The results expressed that decentralized governance can be an effective method to address the issue of data privacy and enhance stakeholder confidence, although it has many challenges to consider. The challenge of the decentralized processes and the lack of regulatory clarity can impede the widespread adoption of these processes. These are some of the concerns that must be taken into account when developing decentralized platforms that will focus on simplifying user

interfaces and creating guidelines that will produce clear regulatory measures.

Limitations and Future Scope

This study has a number of limitations in interpreting the findings. First, the 150 stakeholders are not enough to represent all the industrial sectors that have adopted decentralized governance. Second, the sample size is narrowed to some chosen industries that can impact the generalization of the findings. Third, the research primarily concentrates on blockchain-based governance and ignores other technologies of decentralization. Lastly, cross-regional regulatory and technological differences were not studied in-depth, which can affect practice in the world.

The use of more diverse industries and different geographic regions for sampling could be one of the future areas of research to increase the generalizability of results. In addition, future research could look at other forms of decentralized technology (not limited to blockchain) and evaluate regulations and scalability issues to clarify their potential future use on industrial platforms.

Recommendation

Many suggestions are provided to enhance the efficiency and implementation of decentralized governance in industrial platforms. Firstly, shortening the technology is essential to overcoming issues of complexity. Obviously, more users and developers are exposed to adopting the interfaces, since both the user interface and training should be made user-friendly. Second, decentralized governance should be widespread, with regulatory clarity. To reduce the effects of uncertainty, policymakers need to aim at finding clarity and allowing regulations that would guide organizations to adopt the systems without fear. As well, there should be more stakeholder involvement in the governance process. With more power given to the stakeholders as regards data access and the maintenance of transparency, trust will be established, and a collaborative environment will be achieved. Lastly, it would be good to examine in the future the scalability of the models of decentralized governance in the larger industrial environment. Their ability to perform as industries expand will be critical to their success and penetration into different industries in the long run.

V. CONCLUSION

This research examined the effectiveness of decentralized governance in enhancing data privacy and increasing stakeholder confidence in industrial platforms, specifically through the use of blockchain technology. Many case studies showed that both data security (improvements) and stakeholder trust (improvements) through a comprehensive analysis of case study data along with a survey (150 participants included) of stakeholder perceptions regarding Decentralized Governance significantly enhance Data Privacy through the use of Blockchain (many elements). The case studies identified improvements in the immutability,

transparency, and overall reliability/validity of “data” stored using Blockchain; thus, the use of Blockchain’s “deterministic property” (verifying one) has provided stronger (than centralizations) assurance that NO/single actor would have the ability or opportunity to tamper (obfuscate) or manipulate any portion of data in any manner (in any one location). Survey data corroborates these findings as 78 % of respondents claimed that decentralized governance provides a higher level of security than their central governance counterpart. Also, 85% of the stakeholders said that it was more confident in platforms that implemented blockchain technology to secure sensitive information. The Pearson correlation indicated that the stakeholder confidence in the privacy of their data was positively correlated ($r = 0.72$, $p < 0.001$) with the decentralized form of governance, showing the utility of such types of governance. Moreover, 62% of the stakeholders also felt more engaged in the governance processes, and this assisted in enhancing a sense of trust and engagement. However, issues such as the complexity of decentralized systems technology and regulatory uncertainties were also noted, and half of those surveyed mentioned complexity as a factor hindering the general adoption. The study has shown that decentralized systems provide an excellent degree of confidentiality and trust for all parties involved; however, with these benefits, there are also drawbacks associated with them such as additional complexities as well as uncertainty with regards to regulations. Future researchers may wish to consider how to increase the ability of decentralized systems to operate effectively in larger and/or more complex settings, such as industrial facilities. Research that investigates how to maintain long-term sustainability; develop appropriate regulation; and identify practical applications of decentralized systems across a wide range of sectors will be critical in furthering the implementation of these systems and overall success associated with their use during this chapter of innovation towards achieving the vision of a more user-oriented approach to governance and participation in society.

REFERENCES

- [1] Ahmed, S. (2025). Enhancing data security and transparency: The role of blockchain in decentralized systems. *International Journal of Advanced Engineering, Management and Science*, 11(1), 593258. <https://dx.doi.org/10.22161/ijaems.111.12>
- [2] Akindotei, O., Igba, E., Awotiwon, B. O., & Otakwu, A. (2024). Blockchain integration in critical systems enhancing transparency, efficiency, and real-time data security in agile project management, decentralized finance (defi), and cold chain management. *International Journal of Scientific Research and Modern Technology (IJSRMT)*, 3(11), 19-35. <https://doi.org/10.38124/ijrmt.v3i11.107>
- [3] Alkhader, W., Salah, K., Sleptchenko, A., Jayaraman, R., Yaqoob, I., & Omar, M. (2021). Blockchain-based decentralized digital manufacturing and supply for COVID-19 medical devices and supplies. *IEEE Access*, 9, 137923-137940. <https://doi.org/10.1109/ACCESS.2021.3118085>
- [4] Alsagheer, D., Xu, L., & Shi, W. (2023). Decentralized machine learning governance: Overview, opportunities, and challenges. *IEEE Access*, 11, 96718-96732. <https://doi.org/10.1109/ACCESS.2023.3311713>

- [5] Alsamhi, S. H., Hawbani, A., Kumar, S., Timilsina, M., Al-Qatf, M., Haque, R., ... & Curry, E. (2024). Empowering dataspace 4.0: unveiling promise of decentralized data-sharing. *IEEE Access*, 12, 112637-112658. <https://doi.org/10.1109/ACCESS.2024.3442968>
- [6] Angrish, A., Craver, B., Hasan, M., & Starly, B. (2018). A case study for Blockchain in manufacturing: "FabRec": A prototype for peer-to-peer network of manufacturing nodes. *Procedia Manufacturing*, 26, 1180-1192. <https://doi.org/10.1016/j.promfg.2018.07.154>
- [7] Anthony Jnr, B. (2023). Investigating the decentralized governance of distributed ledger infrastructure implementation in extended enterprises. *Journal of the Knowledge Economy*, 14(4), 5003-5032. <https://doi.org/10.1007/s13132-022-01079-7>
- [8] Anthony Jr, B. (2023). Deployment of distributed ledger and decentralized technology for transition to smart industries. *Environment Systems and Decisions*, 43(2), 298-319. <https://doi.org/10.1007/s10669-023-09902-5>
- [9] Borovits, N., Kumara, I., Tamburri, D. A., & Van Den Heuvel, W. J. (2023, November). Privacy Engineering in the Data Mesh: Towards a Decentralized Data Privacy Governance Framework. In *International Conference on Service-Oriented Computing* (pp. 265-276). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-97-0989-2_21
- [10] Garcia, R. D., Ramachandran, G. S., Jurdak, R., & Ueyama, J. (2022). Blockchain-aided and privacy-preserving data governance in multi-stakeholder applications. *IEEE Transactions on Network and Service Management*, 19(4), 3781-3793. <https://doi.org/10.1109/TNSM.2022.3225254>
- [11] George, A. S., Sagayarajan, S., AlMatroudi, Y., & George, A. H. (2023). If/then democracy: Exploring the world of decentralized autonomous organizations (daos). *Partners Universal International Research Journal*, 2(2), 241-274. <https://doi.org/10.5281/zenodo.8051072>
- [12] Ghafoor, A., Symeonidis, I., Rydberg, A., Lindahl, C., & Abbasi, A. Q. (2025). Towards Empowering Stakeholders Through Decentralized Trust and Secure Livestock Data Sharing. *Cryptography*, 9(3), 52. <https://doi.org/10.3390/cryptography9030052>
- [13] Jovanovic, M., Kostić, N., Sebastian, I. M., & Sedej, T. (2022). Managing a blockchain-based platform ecosystem for industry-wide adoption: The case of TradeLens. *Technological Forecasting and Social Change*, 184, 121981. <https://doi.org/10.1016/j.techfore.2022.121981>
- [14] Kassen, M. (2025). Blockchain and digital governance: Decentralization of decision-making policy. *Review of Policy Research*, 42(1), 95-121. <https://doi.org/10.1111/ropr.12585>
- [15] Kud, A. (2023). Decentralized information platforms in public governance: Reconstruction of the modern democracy or comfort blinding?. *International journal of public administration*, 46(3), 195-221. <https://doi.org/10.1080/01900692.2021.1993905>
- [16] Li, S., & Chen, Y. (2024). Governing decentralized autonomous organizations as digital commons. *Journal of Business Venturing Insights*, 21, e00450. <https://doi.org/10.1016/j.jbv.2024.e00450>
- [17] Mustafa, G., Rafiq, W., Jhamat, N., Arshad, Z., & Rana, F. A. (2025). Blockchain-based governance models in e-government: a comprehensive framework for legal, technical, ethical and security considerations. *International Journal of Law and Management*, 67(1), 37-55. <https://doi.org/10.1108/IJLMA-08-2023-0172>
- [18] Orabi, M. M., Emam, O., & Fahmy, H. (2025). Adapting security and decentralized knowledge enhancement in federated learning using blockchain technology: literature review. *Journal of Big Data*, 12(1), 55. <https://doi.org/10.1186/s40537-025-01099-5>
- [19] Parry, G. M. (2024). Blockchain technology: Enabling decentralized and secure industrial processes in industry 5.0. In *Industry 5.0 and Emerging Technologies: Transformation Through Technology and Innovations* (pp. 259-296). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-70996-8_14
- [20] Ponugoti, M. (2023). Frameworks for ensuring compliance in digital platform governance. *International Journal of Engineering & Extended Technologies Research (IJEETR)*, 5(6), 7575-7586. <https://doi.org/10.15662/IJEETR.2023.0506015>
- [21] Saurabh, K., Upadhyay, P., & Rani, N. (2023). A study on blockchain-based marketplace governance platform adoption: a multi-industry perspective. *Digital policy, regulation and governance*, 25(6), 653-692. <https://doi.org/10.1108/DPRG-04-2023-0053>
- [22] Vergne, J. P. (2020). Decentralized vs. distributed organization: Blockchain, machine learning and the future of the digital platform. *Organization Theory*, 1(4), 2631787720977052. <https://doi.org/10.1177/2631787720977052>
- [23] Wang, Z., Yu, L., & Zhou, L. (2025). Navigating the blockchain-driven transformation in industry 4.0: opportunities and challenges for economic and management innovations. *Journal of the Knowledge Economy*, 16(1), 3507-3549. <https://doi.org/10.1007/s13132-024-02007-7>