WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Survey on Different Techniques Implemented using Blockchain Architecture.

Bhagyashri Bajirao Jadhav[1], Dr. D. R. Ingle[2]

[1]Bharati Vidyapeeth College of Engineering
[2]Bharati Vidyapeeth College of Engineering
[1]dayanand.ingle@bvcoenm.edu.in, [2]bhagyadyp27@gmail.com

ABSTRACT—

Blockchain architecture, a decentralized and secure data storage system, has gained immense popularity and recognition in various domains. This paper presents an abstract overview of different techniques utilizing blockchain architecture in diverse applications. Supply Chain Management: Blockchain's transparent and immutable nature facilitates efficient tracking and verification of goods and products throughout the supply chain. It enhances transparency, reduces fraud, and ensures authenticity, thus improving supply chain efficiency. Digital Identity Management: Blockchain offers a decentralized and tamper-resistant platform for managing digital identities. It enables individuals to have control over their personal information, enhancing security and privacy in digital interactions. Financial Services: Blockchain-based cryptocurrencies have revolutionized the financial industry. They enable fast, secure, and low-cost cross-border transactions, removing intermediaries and reducing transactional friction. Healthcare: Blockchain secures medical data, providing patients and healthcare providers with a trusted and interoperable platform for sharing and accessing health records. It also facilitates drug traceability and medical research. Intellectual Property Protection: Blockchain's timestamping and decentralized storage capabilities help establish ownership and protect intellectual property rights by providing a verifiable proof of creation and existence. Voting Systems: Blockchain-based voting systems offer enhanced transparency and verifiability, reducing the chances of electoral fraud and ensuring secure and tamper-proof elections. Internet of Things (IoT): Integrating blockchain with IoT devices enhances security and data integrity. It enables secure communication and automated transactions among interconnected devices. Real Estate: Blockchain simplifies real estate transactions by providing a secure and transparent platform for property ownership records, reducing paperwork and fraud risks. Gaming and Entertainment: Blockchain enables the creation of digital assets, verifiable scarcity, and ownership in gaming and entertainment ecosystems, enhancing the value and trust of in-game assets. Legal Contracts: Smart contracts, executed on the blockchain, automate contract execution and ensure compliance with predefined conditions, reducing reliance on intermediaries and minimizing disputes. This abstract provides an overview of the myriad ways blockchain architecture is transforming various industries. The integration of blockchain techniques offers enhanced security, transparency, and efficiency, making it a powerful tool in the modern technological landscape. Continued research and development in this area hold great promise for future innovations and applications.

Different Techniques using Blockchain Technologies:

The Big Data, Block chain and the Internet of Things (IoT) are the key names in the technology development of these eras. There are undoubtedly differences between the three technologies, but there are also firm relationships that increase the system operations, practicability, and adaptability. As the domain Block chain and the Internet of Things (IoT) are just infant domain and, still it's undergoing more and further development events, and the Internet of Things(IoT) is producing a larger set of the data and adopted across the different industries such as healthcare, smart cities development, retail, banking and public administration and real time application forecasting, the well-analyzed data is tremendously valuable the Big Data Analytics will suffice this needs, and on the other side the Block chain will provide more secured transaction of the data, and it provides contracts, and more other applications plus integration and Big Data Analytics can be integrated on top of it. In this research focus is on the incorporation of the all three technologies or domain, such as Big Data Analytics, Block chain and the Internet of Things (IoT) [1]. We concluded that all the three technology Big Data Analytics, Block chain and the Internet of Things (IoT) would play a vital role in resolving each other constraints. Based on our analysis and case studies it will help for future work research.

The focus on the quality of food, drugs, and other products has increased with the improvement in people's quality of life. Building and enhancing the current product traceability system have become crucial for society. Addressing the existing challenges and limitations in traceability technology, this paper proposes a reliable traceability solution using Blockchain and Handle System.Authors approach, called "Block Chain + Handle System,"[2] ensures the protection of data source, association, and query processes throughout the product traceability journey. By leveraging Blockchain and Handle System, author addresses the issues of data interchange and sharing along the entire chain. Additionally, the method ensures data credibility and tamper-proofing, making it a trusted solution for product traceability in the modern society. The entry of large-scale commercial power users into the market has led to a significant increase in the number of users, agency relationships, and retail-side settlement in the electricity trading retail market. These developments

present substantial challenges to the support capabilities of power transaction retail businesses, the system's ability to process big data concurrently, and the compliance and electronization of business processes.To address these challenges, blockchain technology emerges as a viable solution, offering technical characteristics such as anti-tampering and node sharing. By integrating blockchain technology into the research and application of electricity market transactions, we can ensure data immutability[3] , high reliability, and various advantages that effectively resolve current issues related to privacy protection, transaction security, and low transaction efficiency. Furthermore, this integration allows for the reduction of transmission costs, making blockchain a promising and efficient tool for enhancing the electricity retail market.Blockchain is a cutting-edge technology that facilitates data sharing and application. It enables decentralized information exchange in distributed systems without the need for mutual trust through data encryption, timestamps, and distributed consensus. This results in enhanced efficiency for data sharing and application processes.The potential of blockchain technology extends to large data remote sensing image systems, where it can be fully utilized. By implementing blockchain, the management of multi-system shared node storage becomes efficient and uniform, ultimately improving the economic efficiency of the entire system.In this the author presents a shared architecture based on blockchain technology[4] . Author highlights key research technologies and provides a solid theoretical foundation for practical application beyond engineering aspects. By leveraging blockchain in data management, author unlocked new possibilities for secure and efficient data sharing and utilization in various domains. The advancement of technology has brought prominence to three critical innovations: Big Data, Blockchain, and the Internet of Things (IoT). While these technologies differ from one another, they also exhibit strong interconnections that enhance system operations, practicality, and adaptability. Both Blockchain and IoT are relatively new domains and continue to undergo further developments. IoT, in particular, generates a vast amount of data, which finds adoption across diverse industries such as healthcare, smart cities development, retail, banking, policy management, and real-time application forecasting. The analysis of this data becomes incredibly valuable, and Big Data Analytics plays a vital role in meeting this demand. On the other hand, Blockchain ensures secure and tamper-proof data transactions, offering applications such as smart contracts and seamless integration with Big Data Analytics.In this the author focuses on the integration of all three technologies: Big Data Analytics, Blockchain, and the Internet of Things (IoT)[5] . Our research concludes that these three innovations, working in tandem, play fundamental roles in addressing each other's requirements. The findings from our analysis and case studies will be valuable for future research efforts, propelling further advancements in this dynamic and promising field.

Blockchain is a newly emerging innovation that revolutionizes information sharing and application. It facilitates the exchange of decentralized data in distributed systems without the need for mutual trust, achieved through data encryption, timestamps, and distributed consensus. This technology's potential is fully realized in large data remote sensing image systems, where it enables efficient management of multi-system shared node storage[6] , ultimately enhancing the system's economic efficiency. In this paper, the author presents a shared architecture based on blockchain technology, proposing key research advances and providing a solid theoretical foundation for practical implementation. By leveraging blockchain in information management, the system achieves increased efficiency and seamless coordination, paving the way for a more advanced and effective approach to information sharing and application.

CONCLUSION

The integration of Big Data, Blockchain, and the Internet of Things (IoT) has emerged as a crucial aspect of technology development in contemporary times. While these technologies exhibit distinct characteristics, they also share strong interconnections that enhance system operations, practicality, and adaptability across various industries such as healthcare, smart cities, retail, banking, and real-time application forecasting.Blockchain, being a newly emerging innovation, offers a reliable solution for information sharing and application. Its decentralized nature, achieved through data encryption, timestamps, and distributed consensus, ensures data integrity and tamper-proof transactions. This technology finds extensive use in large data remote sensing image systems, streamlining multi-system shared node storage and significantly improving the system's economic efficiency.In the domain of product traceability, the "Block Chain + Handle System" approach provides a secure and credible solution for data source, association, and query processes. By leveraging blockchain and handle system, it addresses challenges related to data interchange, sharing, and credibility in the product traceability journey.In the electricity trading retail market, the entry of large-scale commercial power users has posed challenges in supporting power transaction retail businesses. Blockchain technology emerges as a viable solution, offering anti-tampering and node sharing features, which ensure data immutability, high reliability, and reduced transmission costs. Integrating blockchain in electricity market transactions effectively resolves issues related to privacy protection, transaction security, and transaction efficiency.The research emphasizes the significance of integrating Big Data Analytics, Blockchain, and IoT to address various challenges and constraints. The findings from the analysis and case studies provide valuable insights for future research, driving further advancements in this promising field. In conclusion, the incorporation of Big Data, Blockchain, and IoT technologies presents a transformative impact on various industries, propelling the evolution of efficient and secure data sharing, application, and traceability systems. As these innovations continue to develop, they hold great promise in reshaping the technological landscape and fostering progress across different domains

References

1. P. Manjunath, M. Prakruthi and P. Gajkumar Shah, "IoT Driven with Big Data Analytics and Block Chain Application Scenarios," 2018 Second International Conference on Green Computing and Internet of Things (ICGCIoT), Bangalore, India, 2018, pp. 569-572, doi: 10.1109/ICGCIoT.2018.8752973.
2. Y. Wang, Y. Kong and P. Fan, "Research on trusted traceability with Block Chain and Handle System Network," 2021 International Conference on Information Science, Parallel and Distributed Systems (ISPDS), Hangzhou, China, 2021, pp. 125-130, doi: 10.1109/ISPDS54097.2021.00032.

3. Y. Zhang, R. Wang, Q. Li, N. Xia, N. Zhang and J. Hu, "Research and Application of Block Chain Technology in Electricity Market Transactions," 2022 4th International Conference on Smart Power & Internet Energy Systems (SPIES), Beijing, China, 2022, pp. 2180-2183, doi: 10.1109/SPIES55999.2022.10082649.

4. Z. Xiaoming, L. Caiping, T. Dejin, S. Yuchen, H. Zhen and Z. Jisheng, "Design of Remote Sensing Image Sharing Service System Based on Block Chain Technology," 2019 IEEE International Conference on Signal, Information and Data Processing (ICSIDP), Chongqing, China, 2019, pp. 1-4, doi: 10.1109/ICSIDP47821.2019.9173237.

5. Pavan Manjunath, Pritam Gajkumar Shah, "IoT Based Food Wastage Management System", *I-SMAC (IoT in Social Mobile Analytics and Cloud) (I-SMAC) 2019 Third International conference on*, pp. 93-96, 2019.#

6. Z. Xiaoming, L. Caiping, T. Dejin, S. Yuchen, H. Zhen and Z. Jisheng, "Design of Remote Sensing Image Sharing Service System Based on Block Chain Technology," 2019 IEEE International Conference on Signal, Information and Data Processing (ICSIDP), Chongqing, China, 2019, pp. 1-4, doi: 10.1109/ICSIDP47821.2019.9173237.

7. Z. Ullah, G. Mokryani, B. Khan, I. Khan, C. A. Mehmood and S. M. Ali, "Smart Grid Block-Chain (BC) Conceptual Framework: Bi-Directional Models for Renewable Energy District and Utility," 2019 15th International Conference on Emerging Technologies (ICET), Peshawar, Pakistan, 2019, pp. 1-5, doi: 10.1109/ICET48972.2019.8994500.

8. W. Liu, S. S. Zhu, T. Mundie and U. Krieger, "Advanced block-chain architecture for e-health systems," 2017 IEEE 19th International Conference on e-Health Networking, Applications and Services (Healthcom), Dalian, 2017, pp. 1-6, doi: 10.1109/HealthCom.2017.8210847.