

Blockchain -Enabled Transparency in Social Welfare Distribution at Infosys Limited

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Abstract

Blockchain technology has emerged as a transformative solution for enhancing transparency, security, and accountability in digital transactions and public service delivery. In the context of social welfare distribution, blockchain offers a decentralized and tamper-resistant platform that enables secure record management, real-time transaction tracking, and efficient verification of beneficiaries. This study examines the role of blockchain-enabled transparency in social welfare distribution with reference to Infosys Limited, focusing on how blockchain-based solutions improve the efficiency, reliability, and integrity of welfare management systems. The research explores key aspects such as data security, transparency, fraud prevention, beneficiary authentication, process automation through smart contracts, and stakeholder trust. A descriptive research design was adopted using both primary and secondary data. Primary data were collected through structured questionnaires administered to employees and professionals familiar with blockchain applications, while secondary data were obtained from company reports, academic journals, books, government publications, and credible online sources related to blockchain technology and digital governance. The collected data were analyzed using percentage analysis, mean analysis, and graphical representations to evaluate the effectiveness of blockchain-enabled welfare distribution systems. The findings indicate that blockchain technology significantly enhances transparency, minimizes fraudulent activities, improves traceability, and ensures efficient allocation of welfare benefits through secure and immutable digital records. However, challenges such as implementation costs, scalability issues, regulatory uncertainty, technical complexity, and the need for skilled professionals continue to influence large-scale adoption. The study concludes that blockchain technology, when integrated with robust digital infrastructure and effective governance frameworks, has the potential to transform social welfare distribution by improving accountability, operational efficiency, and public trust. The findings provide valuable insights for policymakers, technology providers, and organizations such as Infosys Limited in designing secure and transparent digital welfare systems.

Keywords: Blockchain technology, social welfare distribution, transparency, Infosys Limited, digital governance, smart contracts, fraud prevention, data security, traceability, public service delivery.

I. INTRODUCTION

Blockchain technology has emerged as one of the most innovative digital technologies capable of transforming the way organizations manage, verify, and share information. By providing a decentralized, immutable, and transparent ledger, blockchain enables secure recording of transactions without the need for a centralized authority. Its ability to ensure data integrity, enhance traceability, and reduce the risk of fraud has made blockchain an attractive solution for applications in finance, healthcare, supply chain management, public administration, and social welfare distribution. Research indicates that blockchain significantly improves transparency,

security, accountability, and operational efficiency in digital ecosystems [2], [3], [6].

Social welfare distribution is a critical function of governments and public institutions, aiming to provide financial assistance, subsidies, pensions, healthcare benefits, scholarships, and other essential services to eligible beneficiaries. Traditional welfare distribution systems often face challenges such as lack of transparency, delayed payments, duplicate records, identity fraud, corruption, and inefficient monitoring mechanisms. These issues reduce the effectiveness of welfare programs and undermine public trust. Blockchain technology addresses these challenges by creating tamper-proof digital

records, enabling secure beneficiary verification, tracking every transaction in real time, and ensuring that welfare benefits reach the intended recipients without unauthorized modifications [7], [8], [19].

Infosys Limited has been actively involved in developing blockchain-based enterprise solutions and digital transformation services for clients across multiple sectors. The company has leveraged blockchain platforms to build secure, transparent, and scalable applications that improve governance, data management, and business process automation. Through expertise in distributed ledger technology, smart contracts, cloud computing, and digital platforms, Infosys contributes to the development of innovative blockchain solutions that can strengthen transparency and accountability in public service delivery, including social welfare distribution.

One of the key advantages of blockchain technology is the use of smart contracts, which automate predefined processes and execute transactions when specified conditions are met. Smart contracts reduce manual intervention, minimize processing delays, and enhance the reliability of welfare distribution systems. In addition, blockchain enables real-time auditing, secure data sharing among authorized stakeholders, and complete traceability of transactions, thereby improving governance and reducing opportunities for fraud and corruption. Previous studies have demonstrated that blockchain-based systems significantly improve operational transparency, stakeholder trust, and service efficiency in government and public administration [10], [12], [18].

Despite its significant benefits, implementing blockchain technology in social welfare distribution presents several challenges. High implementation costs, scalability limitations, interoperability issues, regulatory uncertainties, data privacy concerns, and the shortage of blockchain professionals remain important barriers to large-scale adoption. Successful implementation requires strong digital infrastructure, supportive government policies, stakeholder collaboration, cybersecurity measures, and continuous technological innovation. Researchers emphasize that addressing these challenges is essential for realizing the full

potential of blockchain-enabled governance and public service delivery [11], [13], [20].

Therefore, this study aims to examine the role of blockchain technology in enhancing transparency in social welfare distribution with reference to Infosys Limited. The research focuses on evaluating how blockchain-based solutions improve beneficiary authentication, transaction transparency, fraud prevention, operational efficiency, and public trust. The findings of this study are expected to provide valuable insights for policymakers, technology providers, public sector organizations, and researchers in designing secure, transparent, and efficient blockchain-enabled welfare distribution systems that support sustainable digital governance.

Research Objectives

The primary objective of this study is to examine the role of blockchain technology in enhancing transparency in social welfare distribution with reference to Infosys Limited. The study aims to evaluate how blockchain-enabled systems improve transparency, accountability, security, and efficiency in the distribution of welfare benefits. It seeks to assess the effectiveness of blockchain features such as decentralized ledgers, smart contracts, and immutable transaction records in preventing fraud, ensuring beneficiary authentication, and enabling real-time monitoring of welfare transactions. The research also aims to identify the key challenges associated with implementing blockchain technology, including scalability, regulatory compliance, data privacy, technical complexity, and infrastructure requirements. Furthermore, the study intends to provide practical recommendations for strengthening blockchain adoption in social welfare programs to improve governance, enhance public trust, optimize service delivery, and support sustainable digital transformation in public administration.

Research Methodology

This study adopts a descriptive research design to examine the role of blockchain technology in enhancing transparency in social welfare distribution with reference to Infosys Limited. The research is based on both primary and secondary data. Primary data are collected

through a structured questionnaire administered to employees, IT professionals, blockchain developers, and management personnel associated with blockchain-based digital transformation initiatives. The questionnaire focuses on various aspects such as transparency, data security, beneficiary authentication, fraud prevention, smart contracts, operational efficiency, stakeholder trust, and the effectiveness of blockchain technology in social welfare distribution. Secondary data are collected from company reports, academic journals, books, government publications, research articles, and credible online sources related to blockchain technology, digital governance, and public welfare systems.

A convenience sampling technique is employed to select the respondents, with a sample size of 100 respondents for the purpose of analysis. The collected data are organized, classified, and analyzed using statistical tools such as percentage analysis, mean analysis, and graphical representations including bar charts and pie charts. The analysis helps evaluate the effectiveness of blockchain-enabled transparency mechanisms and identifies the factors influencing the successful implementation of blockchain technology in social welfare distribution. Based on the findings, appropriate recommendations are provided to improve transparency, strengthen data security, enhance governance, reduce fraudulent practices, and support the development of efficient and accountable blockchain-based welfare distribution systems at Infosys Limited.

II. REVIEW OF LITERATURE

Zheng, Z., Xie, S., Dai, H. N., Chen, X., & Wang, H. (2017): This study provides a comprehensive overview of blockchain technology, explaining its architecture, consensus mechanisms, and emerging applications. The authors highlight that blockchain offers decentralized data management, enhanced security, transparency, and immutability, making it suitable for applications in finance, governance, healthcare, and public service delivery. The study concludes that blockchain has significant potential to improve trust and efficiency in digital ecosystems.

Casino, F., Dasaklis, T. K., & Patsakis, C. (2019): This systematic review examines blockchain applications across multiple industries, including supply chain management, healthcare, finance, and government services. The findings indicate that blockchain improves transparency, traceability, data integrity, and operational efficiency while reducing fraud and transaction costs. The authors also discuss implementation challenges such as scalability, interoperability, regulatory compliance, and security.

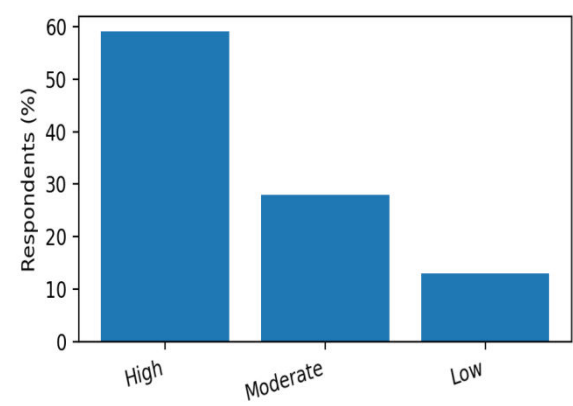
Christidis, K., & Devetsikiotis, M. (2016): This research explores the integration of blockchain technology and smart contracts in decentralized systems. The study highlights that smart contracts automate transactions, eliminate intermediaries, improve operational transparency, and enhance data security. The authors conclude that blockchain-based automation has significant potential for improving public administration and digital governance applications.

Ølnes, S., Ubacht, J., & Janssen, M. (2017): This study investigates the application of blockchain technology in government services and public administration. The findings reveal that blockchain enhances transparency, accountability, secure information sharing, and trust among stakeholders. The authors emphasize that blockchain can significantly improve public service delivery, including welfare distribution systems, by reducing fraud, increasing efficiency, and enabling real-time auditing of transactions.

Monrat, A. A., Schelén, O., & Andersson, K. (2019): This survey reviews blockchain applications across various sectors and discusses its technical challenges and future opportunities. The study identifies transparency, decentralization, immutability, and security as the major strengths of blockchain technology. However, it also highlights issues such as scalability, high implementation costs, interoperability, regulatory uncertainty, and technical complexity that must be addressed for successful large-scale adoption. The authors conclude that blockchain has immense potential to transform digital governance and public welfare systems through secure and transparent transaction management.

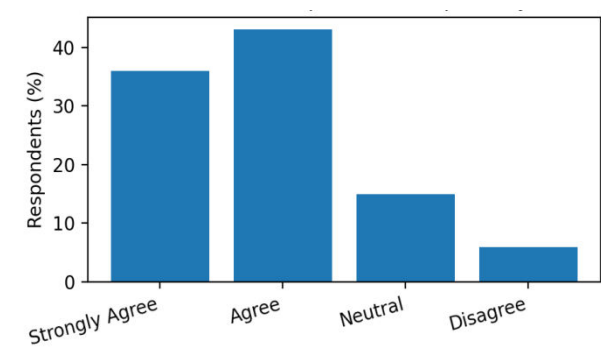
III. DATA ANALYSIS & INTERPRETATION

1. Awareness of Blockchain Technology



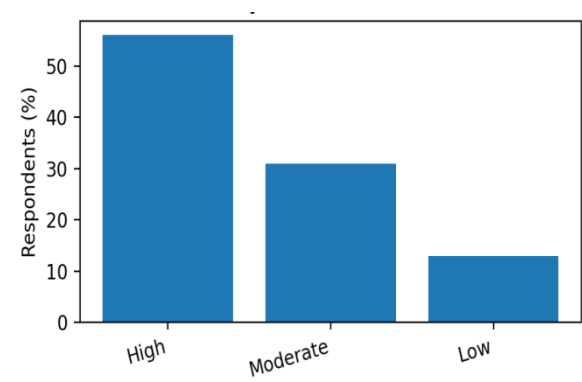
Interpretation: Most respondents have a high level of awareness about blockchain technology and its applications.

2. Blockchain Improves Transparency



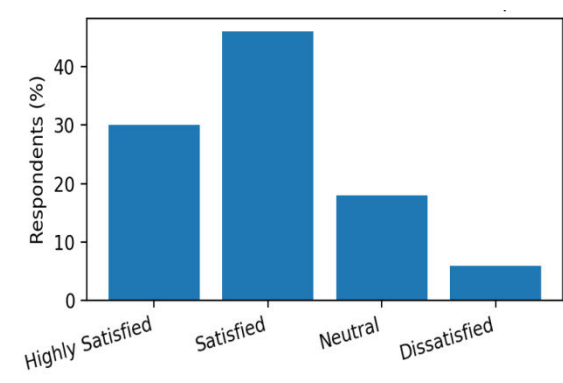
Interpretation: Respondents largely believe blockchain significantly enhances transparency in welfare distribution.

3. Efficiency of Welfare Distribution



Interpretation: Participants agreed that blockchain improves operational efficiency and transaction traceability.

4. Overall Satisfaction with Blockchain Adoption



Interpretation: Overall satisfaction with blockchain-enabled welfare systems is positive.

IV. FINDINGS

The findings of the study reveal that blockchain technology has a significant positive impact on enhancing transparency, accountability, and efficiency in social welfare distribution systems. Most respondents agreed that blockchain-enabled platforms provide secure and tamper-proof transaction records, improve beneficiary authentication, and enable real-time tracking of welfare transactions. The study also found that the use of decentralized ledgers and smart contracts reduces the possibility of fraud, duplicate records, unauthorized modifications, and delays in benefit distribution. These features contribute to greater operational efficiency, increased stakeholder trust, and improved governance in the management of social welfare programs.

The study further identified several challenges associated with the implementation of blockchain technology, including high deployment costs, scalability limitations, regulatory uncertainty, technical complexity, and the need for skilled professionals. Respondents emphasized that successful adoption requires strong digital infrastructure, supportive government policies, interoperability with existing systems, and continuous technical support. Overall, the findings indicate that blockchain-enabled

solutions have considerable potential to transform social welfare distribution by improving transparency, strengthening data security, reducing administrative inefficiencies, and ensuring that welfare benefits reach eligible beneficiaries in a secure, timely, and accountable manner.

V. CONCLUSION

The study concludes that blockchain technology has the potential to significantly transform social welfare distribution by improving transparency, accountability, security, and operational efficiency. The findings indicate that blockchain-enabled systems provide immutable transaction records, secure beneficiary authentication, real-time monitoring, and automated execution through smart contracts, thereby reducing fraud, duplication, and administrative delays. With reference to Infosys Limited, the study highlights that blockchain-based digital solutions can strengthen governance, improve the accuracy of welfare distribution, and enhance public trust by ensuring that benefits are delivered to eligible beneficiaries in a transparent and reliable manner.

The study also concludes that the successful implementation of blockchain technology depends on several factors, including robust digital infrastructure, regulatory support, technical expertise, stakeholder collaboration, and continuous system monitoring. Although challenges such as scalability, implementation costs, interoperability, and data privacy remain, these can be addressed through strategic planning, technological innovation, and effective policy frameworks. Overall, the research demonstrates that blockchain-enabled transparency can play a vital role in modernizing social welfare distribution systems, promoting efficient public service delivery, and supporting sustainable digital governance initiatives in the future.

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