

BLOCKCHAIN ADOPTION IN PUBLIC FINANCIAL MANAGEMENT: IMPLICATIONS FOR AUDITABILITY AND TRUST IN GOVERNMENT INSTITUTIONS

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Abstract

The development of digital technology has driven the transformation of public financial management towards a more transparent, accountable, and efficient system. One innovation that has received significant attention is blockchain, which offers the characteristics of decentralization, transparency, data security, and immutable transaction recording. This study aims to analyze the adoption of blockchain in public financial management and its implications for auditability and increasing public trust in government institutions. The method used is a literature review, examining various scientific articles, research reports, and relevant academic publications regarding blockchain implementation in the public sector. The results of the study indicate that blockchain implementation has the potential to improve audit quality by providing a documented, real-time, accurate, and verifiable transaction trail. Furthermore, this technology can reduce the risk of data manipulation, increase transparency in budget use, and strengthen public oversight mechanisms. Other findings indicate that the increased transparency and accountability resulting from blockchain use contribute positively to building public trust in government institutions. However, blockchain adoption still faces various challenges, such as regulatory limitations, digital infrastructure readiness, human resource competency, and system interoperability issues. This research confirms that blockchain has strategic potential in supporting more accountable and trustworthy public financial governance reforms, but its success requires policy support, strengthening institutional capacity, and the development of an adequate digital ecosystem.

Keywords: Blockchain, Public Financial Management, Auditability, Public Trust, Government Transparency

INTRODUCTION

Digital transformation has become a key agenda for public sector governance reform in various countries. The rapid development of information and communication technology has encouraged governments to adopt various digital innovations to improve the quality of public services, administrative efficiency, and transparency in the management of state resources. In the context of public financial management, digitalization serves not only as a tool to expedite administrative processes but also as a strategic instrument for strengthening the accountability and integrity of government institutions. Public demands for transparent and corruption-free governance are increasing along with growing access to information and public awareness of the right to accountable state financial management (Muhdiarta, 2025a). Therefore, governments are required to develop financial management systems that guarantee data accuracy, transaction traceability, and ease of ongoing auditing.

Although various financial information systems have been implemented within government, a number of challenges remain frequently encountered in public financial management practices. Issues such as data inconsistencies, limited transparency, lengthy verification processes, and the potential for information manipulation remain issues that attract attention from various stakeholders. Furthermore, bureaucratic complexity and the large number of parties involved in the budget management process often make it difficult to conduct effective oversight. This situation not only impacts the quality of financial

management but also impacts public trust in government institutions. Low public trust can hamper the effectiveness of government policies and reduce public participation in supporting development programs.

To address these challenges, blockchain technology is gaining attention as an innovation with the potential to support the modernization of public financial management. Blockchain is a distributed ledger technology that enables secure, transparent, and difficult-to-manipulate transaction recording. Every transaction recorded in a blockchain network is stored in interconnected blocks of data protected by cryptographic mechanisms, making it extremely difficult to change stored data without network approval. These characteristics make blockchain a technology with significant potential to improve data integrity and reduce the risk of fraud in financial management (Celestin et al., 2025).

The application of blockchain in the public sector has begun to be explored in various countries for various needs, including budget management, distribution of social assistance, government procurement of goods and services, and financial reporting. This technology allows all transactions to be recorded in real time and accessible to authorized parties according to their authorization level (Celestin & Gidisu, n.d.-a). With a transparent and unilaterally unchangeable recording mechanism, the monitoring and auditing process can be carried out more effectively than with conventional systems. Auditors not only gain access to more accurate data but can also more easily trace the entire transaction history, thereby improving the quality of the audit process and reducing the risk of reporting errors.

Auditability is a crucial aspect of public financial management because it is directly related to a system's ability to provide verifiable and accountable information (Balogun et al., 2023). In traditional financial management systems, the audit process often faces obstacles such as limited data access, discrepancies in information between units, and the possibility of inadequately documented data changes. Blockchain offers a solution to these problems by providing a complete and permanent audit trail. Every transaction can be systematically traced, facilitating audits and verification (Mohaiyadin et al., 2022a). Thus, blockchain adoption has the potential to increase the effectiveness of financial oversight and support the creation of better governance.

Beyond auditability, blockchain implementation also has important implications for building public trust in government institutions. Public trust is crucial social capital in governance because it influences the legitimacy of policies and the effectiveness of development program implementation. The transparency generated through blockchain use allows the public to have confidence that public funds are managed responsibly and in accordance with applicable regulations. When the public can see that financial management processes are conducted openly and can be monitored, trust in government institutions tends to increase (Nnenna et al., 2026). Therefore, blockchain is seen not only as a technological innovation but also as an instrument capable of strengthening the relationship between the government and the public.

Despite its potential benefits, blockchain implementation in public financial management still faces several challenges. The uneven availability of digital infrastructure, limited human resources competent in blockchain technology, and the absence of comprehensive regulations are factors that can hinder the adoption process. Furthermore, integrating blockchain with existing financial systems requires careful planning to avoid disruptions to organizational operations. These challenges demonstrate that the success of blockchain implementation depends not only on technological aspects but is also influenced by organizational factors, policies, and institutional readiness (Mohammed, n.d.).

Based on this description, the study of blockchain adoption in public financial management is becoming increasingly relevant. This research aims to comprehensively examine various literature findings

related to blockchain implementation in the public financial sector, particularly in relation to increasing auditability and trust in government institutions. Through a literature review approach, this research is expected to provide a deeper understanding of the opportunities, benefits, and challenges of blockchain implementation in public financial governance. Furthermore, the results of this study are expected to serve as a reference for academics, practitioners, and policymakers in formulating digital transformation strategies that support the creation of a more transparent, accountable, and trustworthy public financial management system.

LITERATURE REVIEW

Blockchain in Public Financial Management

The application of blockchain in public financial management is a digital innovation with the potential to increase transparency, accountability, and efficiency in government financial governance. Blockchain operates through a distributed ledger system that allows all financial transactions to be permanently recorded, encrypted, and verifiable by all authorized parties within the network. These characteristics make blockchain a technology capable of reducing the risk of data manipulation, recording errors, and corrupt practices, which often pose challenges in public sector financial management (Arshadi & Dombrowski, 2026). With the availability of an immutable digital audit trail, the process of monitoring state budget use can be carried out more effectively and sustainably.

In the context of public financial management, blockchain can be applied at various stages of the financial cycle, from budget planning and expenditure implementation, procurement of goods and services, to financial reporting and audits. Every transaction can be recorded in real time, enabling stakeholders to obtain more accurate and up-to-date information. This supports the creation of a financial management system that is more responsive to decision-making needs. Furthermore, the integration of blockchain with smart contract technology enables the automation of various administrative processes that previously required manual verification. This mechanism not only speeds up bureaucratic processes but also reduces the potential for human error and improves compliance with established regulations (Liu et al., 2023a).

From a public accountability perspective, blockchain offers the opportunity to strengthen public trust in government financial management. The public can gain access to specific information regarding the use of public funds more openly without compromising the security of confidential data. Greater transparency has the potential to increase public participation in budget oversight and encourage more democratic governance. Permanently stored data also facilitates auditors in tracing transactions and identifying potential financial irregularities (Chen et al., 2024). Thus, blockchain can serve as a supporting instrument to improve the quality of public sector audits.

However, the implementation of blockchain in public financial management still faces various challenges. One of the main challenges is the uneven readiness of technological infrastructure and human resources across various government agencies. Adopting new technology requires significant investment, both in hardware and software, and in improving employee competency. Furthermore, regulatory and data governance aspects are also important concerns, as blockchain use must align with applicable data protection policies, cybersecurity, and government accounting standards. The complexity of integrating blockchain with existing financial information systems can also be a barrier to implementation.

Overall, blockchain offers significant potential to transform public financial management toward a more transparent, accountable, and efficient system. This technology's ability to provide secure, verifiable,

and tamper-proof transaction records makes it relevant for addressing various government financial governance issues in the digital era. However, successful implementation depends heavily on technological readiness, regulatory support, and the government's commitment to building a digital ecosystem capable of supporting optimal blockchain utilization. Therefore, a planned and collaborative approach is necessary to maximize blockchain's benefits in efforts to achieve better public financial governance.

Blockchain Implications for the Auditability of Government Institutions

The implementation of blockchain technology in government institutions has significant implications for improving the auditability of financial management and public administration. Auditability is the ability of an organization to account for every activity, decision, and use of resources to the authorities and the public (Muhdiarta, 2025b). In the context of government, auditability is a crucial element in ensuring transparency, accountability, and the effectiveness of public governance. Blockchain offers key characteristics such as decentralization, transparency, immutability (the inability to unilaterally alter data), and real-time transaction tracking capabilities, which can strengthen audit systems that currently face various limitations.

One of the main implications of blockchain for auditability is the increased reliability of transaction data stored in government systems. Each verified and recorded transaction in the blockchain forms a series of interconnected blocks protected by cryptographic mechanisms (Celestin & Gidisu, n.d.-b). These characteristics make data difficult to manipulate without leaving a detectable digital footprint. During the audit process, auditors not only gain access to complete historical data but can also verify information integrity more quickly and accurately. This has the potential to reduce the risk of fraud, misuse of funds, and corrupt practices that often arise from weak transaction controls and documentation.

In addition to improving data integrity, blockchain also supports continuous auditing (Mohaiyadin et al., 2022b). Conventional audit systems are generally conducted periodically after transactions are completed, creating a lag time that can be exploited to manipulate or conceal irregularities. With blockchain, auditors can monitor financial activity in real time because all transactions are recorded directly on the network, accessible according to their level of authority. This capability enables early detection of transaction anomalies, procedural inconsistencies, and potential risks that could disrupt the achievement of organizational goals. As a result, the oversight process becomes more proactive rather than merely reactive after a violation occurs.

Furthermore, blockchain implementation also implies a change in the role of public sector auditors. Auditors are no longer solely focused on manually examining documents and verifying transaction evidence, but are also required to possess competency in understanding information systems, blockchain technology, and smart contract mechanisms. Smart contracts enable the automatic execution of certain procedures and rules when predetermined conditions are met. In government settings, this feature can be used to automate procurement processes for goods and services, distribution of social assistance, and budget management (Gokoglan et al., 2022). Therefore, auditors need to develop a technology-based audit approach to ensure that the algorithms and rules embedded in the system comply with regulations and public policy objectives.

However, improving auditability through blockchain is not without challenges. Integrating this technology requires a ready digital infrastructure, adequate regulations, and competent human resources. Furthermore, issues related to data privacy, inter-agency system interoperability, and implementation costs remain significant concerns during the adoption process (Yang & Son, 2025). However, if these challenges

can be addressed through appropriate policies and a well-planned implementation strategy, blockchain has the potential to become a new foundation for a more transparent, accountable, and trustworthy government audit system. Thus, the use of blockchain not only improves the quality of the audit process but also strengthens public trust in government institutions in managing state resources responsibly.

Blockchain and Increasing Trust in Government Institutions

Public trust in government institutions is a fundamental factor determining the effectiveness of public governance. A high level of trust encourages public participation, increases compliance with policies, and strengthens the government's legitimacy in carrying out public service functions. However, various cases of corruption, misuse of funds, data manipulation, and low transparency in the management of public resources have become challenges that have led to a decline in public trust in government institutions in various countries (Kshetri, 2021). In this context, blockchain technology offers a new approach that has the potential to increase public trust through its transparent, secure, decentralized, and difficult-to-manipulate characteristics.

Blockchain allows every transaction or activity recorded in the system to be permanently stored in a digital ledger that can be verified by various parties (Rijal & Saranani, 2023a). The immutability of blockchain means that recorded data cannot be unilaterally changed without the network's approval. This reduces the opportunity for information manipulation, document forgery, and abuse of authority in government administration processes. With the assurance of higher data integrity, the public can be assured that the information provided by the government is trustworthy and accountable.

In addition to improving data integrity, blockchain also strengthens transparency in financial management and public services. All recorded transactions can be traced in real time, making it easier for the public, auditors, and supervisory agencies to monitor the use of the state budget. Greater transparency will reduce information asymmetry between the government and the public, making the public decision-making process more open and accountable. When the public can access valid information regarding the allocation and use of public funds, trust in government institutions tends to increase due to tangible evidence that resource management is being carried out responsibly.

Blockchain implementation also has the potential to improve the quality of public services through the efficiency and security of administrative processes. Various services, such as state asset registration, population registration, social assistance management, and goods and services procurement systems, can be carried out with faster procedures and minimize intervention by unauthorized parties. The use of smart contracts allows certain transactions and services to be executed automatically based on pre-established rules. This mechanism can reduce cumbersome bureaucratic practices while minimizing the opportunity for corruption or abuse of authority. When the public experiences improvements in the quality of faster, more accurate, and fairer services, positive perceptions of government institutions will grow stronger (Balatska et al., 2024).

However, increasing public trust through blockchain does not depend solely on the application of the technology. Its successful implementation also requires adequate regulatory support, human resource readiness, and government commitment to building a culture of transparency and accountability. Without good governance, blockchain technology risks becoming merely a digital tool incapable of producing significant change (Verma & Sheel, 2022). Therefore, blockchain integration must be positioned as part of a broader bureaucratic reform strategy to strengthen clean and responsive governance.

Overall, blockchain has significant potential to increase public trust in government institutions by strengthening transparency, accountability, data integrity, and the efficiency of public services. By providing a more open and verifiable system, blockchain can reduce public skepticism about government processes and create a more constructive relationship between the government and citizens. In the long term, the use of this technology can become a crucial foundation for realizing a digital government that is trustworthy, effective, and oriented towards the public interest.

METHOD

This research uses a qualitative approach with a literature review method to analyze the relationship between human resource analytics and decision-making effectiveness in modern organizations. This literature review approach was chosen because it provides a comprehensive conceptual understanding of the development of theories, models, and previous research findings related to the use of human resource analytics to support strategic organizational decisions. Research data was obtained from various secondary scientific sources, including national and international journal articles, proceedings, academic books, and other scientific publications relevant to the research topic. The literature used focused on publications within the last ten years to obtain an overview of the latest conceptual developments and implementations in the field of human resource analytics.

The data analysis process was carried out through several stages: literature identification, source selection based on relevance and credibility, grouping themes, and conceptual synthesis of previous research findings. The analytical technique used was content analysis to interpret various scientific findings related to the role of human resource analytics in improving the quality, speed, and accuracy of organizational decision-making. Next, the researcher compared various theoretical and empirical perspectives to identify patterns of relationships, implementation challenges, and opportunities for developing human resource analytics in modern human resource management practices. Through this approach, this research is expected to be able to produce a systematic and in-depth conceptual understanding of the contribution of human resource analytics to the effectiveness of decision-making, while also providing an academic basis for further research and the development of data-based organizational practices.

RESULTS AND DISCUSSION

Blockchain Implementation and Benefits in Public Financial Management

The development of digital technology has driven transformation in various aspects of government governance, including public financial management. One innovation that has garnered widespread attention is blockchain technology, a distributed digital record-keeping system that allows data to be stored securely, transparently, and difficult to manipulate. In the public sector context, blockchain offers a new approach to budget management, financial transaction execution, monitoring the use of public funds, and preparing government financial reports. Blockchain's key characteristics, which prioritize transparency, data integrity, and decentralization, make it relevant to address various challenges currently faced in public financial management, such as low transparency, limited oversight, administrative inefficiency, and the risk of budget misuse (Lopes et al., 2024).

Blockchain implementation in public financial management can be achieved through the integration of this technology into various stages of the government financial cycle. At the planning and budgeting stages, blockchain enables real-time recording of budget allocations, allowing for easy tracking of any

budget changes or revisions. Every transaction recorded in the blockchain system forms an interconnected data chain that cannot be altered without the consent of the entire network. With this mechanism, the government can increase accountability in the budgeting process and minimize the possibility of budget data manipulation (Uña et al., 2023).

At the budget implementation stage, blockchain can be used to automatically record all government expenditure and revenue transactions. Every transaction conducted by government agencies is stored in a digital ledger that can be verified by authorized parties. This implementation allows for faster and more accurate financial recording compared to conventional systems that still rely on various manual administrative procedures. Furthermore, the use of smart contracts allows for automated transaction execution based on predetermined conditions. For example, payments to goods and services providers can be made automatically when all contract requirements have been met. This mechanism not only increases efficiency but also reduces the potential for late payments and irregularities in the procurement process (Sobolewski & Allesie, 2021).

In public fund management, blockchain can also be utilized to improve traceability of budget use. Every flow of funds can be monitored from the disbursement stage to the final use by beneficiaries. This capability is particularly important in the management of social assistance funds, regional development funds, and government programs involving multiple stakeholders. With a transparent and traceable system, the potential for budget leakage can be minimized because all transactions leave a permanent digital footprint. Furthermore, the public and oversight institutions can gain access to specific relevant information, making the oversight process more open and participatory (Mohanty et al., 2023).

One of the main benefits of implementing blockchain in public financial management is increased transparency. Transparency is a crucial element of good governance because it relates to the public's disclosure of information regarding how public funds are managed and used (Cagigas et al., 2021). Through blockchain, transaction information can be more openly available and verifiable by various parties. This has the potential to increase public trust in government institutions because financial management processes become easier to monitor and account for. When the public has access to accurate and reliable information, the government's legitimacy in managing public resources is strengthened.

Another benefit is increased accountability in state financial management. The blockchain system creates a permanent recording mechanism so that every transaction can be traced in detail. This enables auditors and supervisory agencies to conduct audits more effectively because the entire transaction history is available in a single, integrated system. Blockchain's audit trail capabilities help reduce the risk of financial statement manipulation and facilitate the identification of suspicious transactions. This makes the audit process not only more efficient but also more accurate in detecting potential irregularities.

From an administrative efficiency perspective, blockchain can reduce bureaucratic complexity, which often hinders public financial management. Conventional systems generally involve numerous stages of data verification and reconciliation, requiring significant time and resources. Through the use of blockchain, transaction validation processes can be automated through a predetermined consensus mechanism. As a result, the need for repetitive administrative processes can be reduced, resulting in lower operational costs. This efficiency provides the government with the opportunity to allocate resources more optimally to support public services (Liu et al., 2023b).

In addition to increasing efficiency and transparency, blockchain also offers benefits in terms of data security. Public financial management involves sensitive information of strategic value to the state.

Therefore, data protection is crucial. Blockchain uses cryptographic techniques to protect data from unauthorized access and illegal alteration. The distributed data structure also makes the system more resilient to cyberattacks than centralized systems. With a higher level of security, the risk of data loss or disruption to the government's financial system can be minimized.

Despite offering numerous benefits, implementing blockchain in public financial management still requires regulatory support, technological infrastructure, and adequate human resource capacity. The government needs to ensure a clear legal framework to regulate the use of this technology, including aspects of data security, privacy protection, and digital system governance. Furthermore, improving the competence of government officials is crucial for the effective and sustainable implementation of blockchain technology. With appropriate policy support, blockchain has the potential to become a strategic instrument for realizing more transparent, accountable, efficient, and reliable public financial management, thereby strengthening the quality of governance in the digital era.

Blockchain Implications and Opportunities for Public Trust

Public trust is a key foundation for governance, state financial management, and the provision of public services. The level of public trust in public institutions is greatly influenced by the government's ability to ensure transparency, accountability, integrity, and effectiveness of services (Rijal & Saranani, 2023b). In the digital era, marked by increasing public demand for information transparency, various technological innovations are beginning to be utilized to strengthen good governance. One technology that has garnered significant attention is blockchain. This technology offers a decentralized, transparent, and difficult-to-manipulate data recording mechanism, potentially increasing the credibility of information presented by public institutions. The presence of blockchain is seen not only as a technological innovation but also as a strategic instrument for rebuilding public trust in the government and public institutions.

The primary implication of blockchain implementation for public trust lies in its ability to increase transparency in administrative processes and the management of public resources (Goossens, 2021). In a blockchain system, every verified transaction is permanently stored in the network and can be traced by authorized parties. These characteristics allow the public broader access to information regarding budget utilization, distribution of social assistance, procurement of goods and services, and various other government activities. When information is openly accessible and recording processes are automated without intervention by any third party, the opportunity for data manipulation is reduced. This creates the perception that the government is carrying out its duties honestly and responsibly, which ultimately contributes to increased public trust.

In addition to increasing transparency, blockchain also has significant implications for strengthening the accountability of public institutions. In conventional systems, audit processes often face various obstacles such as limited data access, inconsistent documents, and the risk of information being altered after a transaction has occurred. Blockchain allows all activities to be recorded chronologically and cannot be changed without network approval (Rodriguez Müller et al., 2024). Thus, every action taken by officials or institutions can be clearly traced. The ease of data verification and audits creates a more effective oversight mechanism. The public will have more trust in institutions that can provide objective evidence of transactions and activities, because every decision can be accounted for based on the data stored in the system.

Another implication relates to efforts to prevent corruption and abuse of authority. Corruption often occurs due to weak oversight systems and a lack of transparency in the management of public resources.

Blockchain provides a digital environment that reduces the opportunity for data manipulation, document forgery, and the erasure of transaction traces. Every change in the system is automatically recorded, allowing for prompt detection of improper procedures. By reducing the risk of corrupt practices, the public will have greater confidence that public funds are being used for their intended purposes (Kassen, 2024). Therefore, implementing blockchain can be a strategy to strengthen government integrity while increasing the legitimacy of public institutions in the eyes of the public.

In addition to these implications, blockchain also opens up vast opportunities to strengthen public trust through the transformation of government services. The digitization of public services supported by blockchain technology enables faster, more efficient, and more secure administrative processes. For example, the management of digital identities, educational certificates, population documents, and asset registration can be carried out in a more integrated manner and protected from the risk of forgery. Easy access to accurate and reliable services will increase public satisfaction with government performance. When the public experiences the direct benefits of more effective services, trust in public service institutions tends to increase.

Another highly promising opportunity is the use of blockchain in public financial management and the distribution of social assistance. In many cases, low public trust is often caused by the unclear flow of government budget use and funds. Blockchain allows every financial transaction to be recorded in real time, allowing for more transparent monitoring of the flow of funds. This technology can also ensure that social assistance reaches the right parties without any manipulation of recipient data. With a more open and verifiable system, the public will gain confidence that government policies are implemented fairly and on target. Increased public trust can ultimately strengthen public support for various development programs (Curry, 2024).

Furthermore, blockchain offers opportunities to increase public participation in public decision-making processes. Through blockchain-based systems, the government can develop more secure and transparent e-voting mechanisms, digital public consultations, and participatory oversight. Every vote or input from the public can be permanently recorded and verified without revealing personal identities. This allows for a more accountable democratic process and reduces doubts about the validity of voting or public consultation results. When the public feels that their participation is valued and processed fairly, trust in the government system will be strengthened.

However, blockchain's potential to increase public trust will not be optimally realized without regulatory support, digital infrastructure, and adequate human resource readiness. Implementing this technology requires a clear legal framework to regulate data governance, information security, and protect public privacy. Furthermore, increasing digital literacy is crucial for ensuring the public understands the benefits and working mechanisms of blockchain. Successful implementation is determined not only by technological sophistication but also by the institution's ability to integrate the technology into transparent and public-interest-oriented administrative processes.

Challenges of Blockchain Adoption in Government Institutions

The adoption of blockchain technology in government institutions is gaining increasing attention as part of the digital transformation of the public sector. Blockchain offers various advantages, such as transparency, data security, efficiency of administrative processes, and increased accountability in financial management and public services. Blockchain's key characteristics, which enable distributed and immutable

transaction recording, make it a potential technology to support better governance. However, blockchain implementation in government environments is not without complex challenges, including technical, organizational, regulatory, and social ones. These obstacles often slow down the adoption process and reduce the effectiveness of blockchain technology in the public sector (Dwivedi & Vig, 2024).

One of the main challenges to blockchain adoption in government institutions is limited information technology infrastructure. Blockchain implementation requires stable digital network support, adequate data storage capacity, and robust cybersecurity systems (Sharma et al., 2024). In many developing countries, including Indonesia, the readiness of digital infrastructure across regions still shows significant disparities. This condition can hinder the comprehensive integration of blockchain into government systems. Furthermore, blockchain requires interoperability with existing information systems. Many government institutions still rely on legacy systems built with different technologies, making the integration process more complex and costly.

The next challenge relates to regulatory and policy aspects. Blockchain is a technology that is evolving faster than the development of regulations governing it. As a result, many government institutions face legal uncertainty in implementing this technology. Several key issues that frequently arise include the legality of digital data, the recognition of blockchain-based documents, personal data protection, and accountability mechanisms in the event of errors or system disruptions. The absence of a clear legal framework can raise doubts among policymakers about implementing blockchain broadly (Rana et al., 2021). Therefore, the government needs to develop adaptive regulations that accommodate technological developments without neglecting security, privacy, and the public interest.

From an organizational perspective, resistance to change is also a significant obstacle. Blockchain adoption is not only related to the use of new technology but also requires changes in business processes, work culture, and decision-making patterns. Government employees accustomed to conventional procedures often exhibit caution or even resistance to change due to concerns about increased workloads, the loss of specific roles, or uncertainty regarding the use of new systems. This situation suggests that the success of blockchain implementation is determined not only by technological sophistication, but also by the readiness of human resources to accept and manage organizational change (Momoh et al., 2021).

Limited digital competence and literacy are also challenges that require serious attention. Blockchain is a relatively complex technology and requires a deep understanding of the concepts of decentralization, cryptography, consensus mechanisms, and digital data governance. Many government employees lack adequate competence in these areas, so the implementation process often relies on external consultants or third parties. Excessive reliance on external parties has the potential to create system sustainability issues if knowledge transfer is not carried out effectively. Therefore, investment in human resource capacity development is crucial to ensuring that government institutions are able to manage and develop blockchain systems independently.

In addition, data security and privacy issues are still a major concern in the application of blockchain in the public sector (Ghode et al., 2020). Although blockchain is known to have a high level of security because it uses cryptography and recording mechanisms that are difficult to manipulate, this technology is not completely free of risks. The threat of cyber attacks, system configuration errors, private key leaks, and potential exploitation of applications built on blockchain can still occur. On the other hand, the principle of transparency which is the strength of blockchain must be balanced with the need to protect people's personal

data. The government needs to ensure that sensitive information remains protected and can only be accessed by authorized parties in accordance with good data governance principles.

Another challenge relates to the cost and sustainability aspects of implementation (Khatib et al., 2022). Developing a blockchain system requires a fairly large initial investment, including infrastructure development, application development, human resource training, and system maintenance. For government institutions that have budget constraints, funding allocations for blockchain projects must compete with other development needs that are considered more urgent. In addition, the benefits of blockchain can often only be felt in the medium or long term, so strong political commitment and institutional support are needed to maintain sustainable implementation. Without careful planning, blockchain projects risk stopping at the trial stage without producing a significant impact on improving the quality of public services (Prux et al., 2021).

Apart from these various challenges, coordination between government agencies is also a factor that determines the success of blockchain adoption. Many public services involve data exchange and collaboration across agencies. Blockchain will provide optimal benefits if used in an integrated manner by various agencies that have uniform data standards and operational procedures. However, differences in interests, organizational structure, and level of technological readiness between agencies often hinder the collaboration process. Therefore, strong leadership and effective coordination mechanisms are needed to build a blockchain ecosystem that is connected and oriented towards public services.

CONCLUSION

The adoption of blockchain technology in public financial management shows significant potential in supporting the transformation of governance towards greater transparency, accountability, and efficiency. Blockchain's characteristics, which enable permanent, verifiable, and difficult-to-manipulate data recording, can improve the quality of government financial transaction management while strengthening auditability. Implementing this technology also provides opportunities for government institutions to optimize the use of digital technology in budget oversight, financial reporting, and controlling the use of public funds, thereby supporting the creation of more reliable and responsive financial governance to public needs.

However, the success of blockchain adoption is determined not only by its technological superiority but also by the readiness of a supportive institutional environment. Various challenges such as regulatory limitations, the need for digital infrastructure investment, cybersecurity, system interoperability, and human resource competency remain factors that require attention. Therefore, synergy is needed between the government, regulators, and other stakeholders in developing adaptive policies and targeted implementation strategies. With adequate governance support, blockchain has the potential to become a strategic instrument in improving the auditability of public financial management and strengthening public trust in government institutions.

REFERENCES

- Arshadi, N., & Dombrowski, T. (2026). Applications and Management of Blockchain Technologies in Financial Services. *Journal of Risk and Financial Management*, 19(3), 224. <https://doi.org/10.3390/jrfm19030224>
- Balatska, V., Opirskyy, I. R., & Slobodian, N. (2024). *Blockchain for enhancing transparency and trust in government registries*. <https://sci.ldubgd.edu.ua/jspui/handle/123456789/14632>
- Balogun, E. D., Ogunsola, K. O., & Ogunmokun, A. S. (2023). *Blockchain-Enabled Auditing: A Conceptual Model for Financial Transparency, Regulatory Compliance, and Security*. 6(10).

- Cagigas, D., Clifton, J., Diaz-Fuentes, D., & Fernández-Gutiérrez, M. (2021). Blockchain for Public Services: A Systematic Literature Review. *IEEE Access*, 9, 13904–13921. <https://doi.org/10.1109/ACCESS.2021.3052019>
- Celestin, M., & Gidisu, J. A. (n.d.-a). *BLOCKCHAIN-ENABLED AUDITS AND THE FUTURE OF FINANCIAL ACCOUNTABILITY IN GHANA'S PUBLIC COMPANIES*.
- Celestin, M., & Gidisu, J. A. (n.d.-b). *BLOCKCHAIN-ENABLED AUDITS AND THE FUTURE OF FINANCIAL ACCOUNTABILITY IN GHANA'S PUBLIC COMPANIES*.
- Celestin, M., Mishra, S., & Mishra, A. K. (2025). *The Future of Public Financial Management in the Digital Era: How AI and Blockchain Are Reshaping Government Accountability and Transparency*. 2(2).
- Chen, H., Wei, N., Wang, L., Fawzy Mohamed Mobarak, W., Ali Albahar, M., & Shaikh, Z. A. (2024). The Role of Blockchain in Finance Beyond Cryptocurrency: Trust, Data Management, and Automation. *IEEE Access*, 12, 64861–64885. <https://doi.org/10.1109/ACCESS.2024.3395918>
- Curry, D. (2024). Limitations of trust and legitimacy in blockchain: Exploring the effectiveness of decentralisation, immutability and consensus mechanisms in blockchain governance. *International Journal of Public Sector Management*, 38(1), 98–117. <https://doi.org/10.1108/IJPSM-12-2023-0368>
- Dwivedi, S., & Vig, S. (2024). Blockchain adoption in higher-education institutions in India: Identifying the main challenges. *Cogent Education*, 11(1), 2292887. <https://doi.org/10.1080/2331186X.2023.2292887>
- Ghode, D. J., Yadav, V., Jain, R., & Soni, G. (2020). Blockchain adoption in the supply chain: An appraisal on challenges. *Journal of Manufacturing Technology Management*, 32(1), 42–62. <https://doi.org/10.1108/JMTM-11-2019-0395>
- Gokoglan, K., Cetin, S., & Bilen, A. (2022). BLOCKCHAIN TECHNOLOGY AND ITS IMPACT ON AUDIT ACTIVITIES. *Journal of Economics Finance and Accounting*, 9(2), 72–81. <https://doi.org/10.17261/Pressacademia.2022.1567>
- Goossens, J. (2021). *Chapter 5: Blockchain and democracy: Challenges and opportunities of blockchain and smart contracts for democracy in the distributed, algorithmic state*. <https://www.elgaronline.com/edcollchap/edcoll/9781839100789/9781839100789.00010.xml>
- Kassen, M. (2024). Prospects of blockchain governance: Understanding key public values, principles, challenges, and opportunities. *Policy & Internet*, 16(1), 33–64. <https://doi.org/10.1002/poi3.365>
- Khatib, M. E., Mulla, A. A., & Ketbi, W. A. (2022). The Role of Blockchain in E-Governance and Decision-Making in Project and Program Management. *Advances in Internet of Things*, 12(03), 88–109. <https://doi.org/10.4236/ait.2022.123006>
- Kshetri, N. (2021). Blockchain Technology for Improving Transparency and Citizen's Trust. In K. Arai (Ed.), *Advances in Information and Communication* (pp. 716–735). Springer International Publishing. https://doi.org/10.1007/978-3-030-73100-7_52
- Liu, H., Yang, B., Xiong, X., Zhu, S., Chen, B., Tolba, A., & Zhang, X. (2023a). A Financial Management Platform Based on the Integration of Blockchain and Supply Chain. *Sensors*, 23(3), 1497. <https://doi.org/10.3390/s23031497>
- Liu, H., Yang, B., Xiong, X., Zhu, S., Chen, B., Tolba, A., & Zhang, X. (2023b). A Financial Management Platform Based on the Integration of Blockchain and Supply Chain. *Sensors*, 23(3), 1497. <https://doi.org/10.3390/s23031497>
- Lopes, D. C. F., Castro, A. L. de, & Russo, L. X. (2024). Blockchain technology: Challenges and opportunities in public finance. *RAM. Revista de Administração Mackenzie*, 25, eRAMR240208. <https://doi.org/https://doi.org/10.1590/1678-6971/eRAMR240208>
- Mohaiyadin, N. M. H., Aman, A., Palil, M. R., & Said, S. M. (2022a). Addressing Accountability and Transparency Challenges in Waqf Management Using Blockchain Technology. *Journal of Islamic Monetary Economics and Finance*, 8, 53–80. (Blockchain in waqf management system, Malaysian public universities). <https://doi.org/10.21098/jimf.v8i0.1413>

- Mohaiyadin, N. M. H., Aman, A., Palil, M. R., & Said, S. M. (2022b). Addressing Accountability and Transparency Challenges in Waqf Management Using Blockchain Technology. *Journal of Islamic Monetary Economics and Finance*, 8, 53–80. (Blockchain in waqf management system, Malaysian public universities). <https://doi.org/10.21098/jimf.v8i0.1413>
- Mohammed, A. (n.d.). Blockchain-Driven Cybersecurity Audits: Securing Financial Systems with Trust and Transparency. *Authorea*, 2025(0203). <https://doi.org/10.22541/au.173862082.22380043/v1>
- Mohanty, D., Kumar, V. N., Patel, C., Manglani, D. T., Sunil, D., & Sahu, D. N. (2023). *Implementing Blockchain Technology for Fraud Detection in Financial Management*. 12(02).
- Momoh, M. O., Chinedu, P. U., Nwankwo, W., Aliu, D., & Shaba, M. S. (2021). BLOCKCHAIN ADOPTION: APPLICATIONS AND CHALLENGES. *International Journal of Software Engineering and Computer Systems*, 7(2), 19–25. <https://doi.org/10.15282/ijsecs.7.2.2021.3.0086>
- Muhdiarta, U. (2025a). Blockchain Technology for Public Administration: Enhancing Accountability and Good Governance. *International Journal of Innovation and Thinking*, 2(1), 39–50. <https://doi.org/10.71364/ijit.v2i1.9>
- Muhdiarta, U. (2025b). Blockchain Technology for Public Administration: Enhancing Accountability and Good Governance. *International Journal of Innovation and Thinking*, 2(1), 39–50. <https://doi.org/10.71364/ijit.v2i1.9>
- Nnenna, A. S., Ijeoma, O. P., Ndubuisi, A. F., Ikechukwu, S. N., Benedicta, N. N., Malachy, O. C., & Ogayi, O. N. (2026). ADOPTION OF BLOCK-CHAIN-BASED ACCOUNTING SYSTEMS AND THEIR IMPACT ON PUBLIC EXPENDITURE TRANSPARENCY IN NIGERIA. *JOURNAL OF BEHAVIOURAL ACCOUNTING*, 1(1), 1–9. <https://aefunaijba.com/index.php/aefunaijba/article/view/4>
- Prux, P. R., Momo, F. da S., & Melati, C. (2021). Opportunities and Challenges of Using Blockchain Technology in Government Accounting in Brazil. *BAR - Brazilian Administration Review*, 18, e200109. <https://doi.org/https://doi.org/10.1590/1807-7692bar2021200109>
- Rana, N. P., Dwivedi, Y. K., & Hughes, D. L. (2021). Analysis of challenges for blockchain adoption within the Indian public sector: An interpretive structural modelling approach. *Information Technology & People*, 35(2), 548–576. <https://doi.org/10.1108/ITP-07-2020-0460>
- Rijal, S., & Saranani, F. (2023a). The Role of Blockchain Technology in Increasing Economic Transparency and Public Trust. *Technology and Society Perspectives (TACIT)*, 1(2), 56–67. <https://doi.org/10.61100/tacit.v1i2.51>
- Rijal, S., & Saranani, F. (2023b). The Role of Blockchain Technology in Increasing Economic Transparency and Public Trust. *Technology and Society Perspectives (TACIT)*, 1(2), 56–67. <https://doi.org/10.61100/tacit.v1i2.51>
- Rodriguez Müller, A. P., Martin Bosch, J., & Tangi, L. (2024). An overview of the expected public values arising from blockchain adoption in the European public sector. *International Journal of Public Sector Management*, 38(1), 53–76. <https://doi.org/10.1108/IJPSM-12-2023-0363>
- Sharma, S. K., Dwivedi, Y. K., Misra, S. K., & Rana, N. P. (2024). Conjoint Analysis of Blockchain Adoption Challenges in Government. *Journal of Computer Information Systems*, 64(2), 173–186. <https://doi.org/10.1080/08874417.2023.2185552>
- Sobolewski, M., & Allessie, D. (2021). Blockchain Applications in the Public Sector: Investigating Seven Real-Life Blockchain Deployments and Their Benefits. In C. G. Reddick, M. P. Rodríguez-Bolívar, & H. J. Scholl (Eds.), *Blockchain and the Public Sector: Theories, Reforms, and Case Studies* (pp. 97–126). Springer International Publishing. https://doi.org/10.1007/978-3-030-55746-1_5
- Uña, G., Verma, A., Bazarbash, M., & Griffin, M. N. N. (2023). *Fintech Payments in Public Financial Management: Benefits and Risks*. International Monetary Fund.

- Verma, S., & Sheel, A. (2022). Blockchain for government organizations: Past, present and future. *Journal of Global Operations and Strategic Sourcing*, 15(3), 406–430. <https://doi.org/10.1108/JGOSS-08-2021-0063>
- Yang, Y., & Son, H. (2025). Blockchain technology, audit quality and operational risks: Evidence from listed companies. *Management Decision*, 1–24. <https://doi.org/10.1108/MD-02-2025-0449>