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TECHNOLOGICAL INNOVATION IN PUBLIC FINANCIAL GOVERNANCE: A PUBLIC ECONOMIC PERSPECTIVE ON FISCAL EFFICIENCY AND TRANSPARENCY

Fadillah Harmi[1*], Revi Haryanti[2], Rayhan Agustin[3] , Boni Saputra[4]
[1234] Program Studi Ilmu Administrasi Negara, Fakultas Ilmu Sosial, Universitas Negeri Padang, Padang, Indonesia
*Correspondence Email : fadhilla.harmi01@gmail.com

ABSTRACT

Digital innovation in public financial management is one of the key drivers to achieve transparent, efficient, and fair fiscal governance. The purpose of this study is to analyze the application of digitalization in public financial management by studying best practices that have been implemented in Indonesia and around the world. The research method used is a literature study through the analysis of journals, books, and policy documents related to the subject. The results of the study show that the distribution of digital technologies, such as e-budgeting, e-audit, blockchain, and digital payment, reduce potential deviations in the field of moral guidelines, accelerate the public service process, and strengthen fiscal justice through budget equity. This article concludes that digital innovation must be supported by strengthening regulations, increasing the capacity of the apparatus, and public participation so that the goals of good governance can be achieved.

Keywords: Digital Innovation; E-Budgeting; E-Audit; Blockchain; Digital Payment.

INTRODUCTION

The rapid advancement of digital technology has brought significant transformations in various sectors, including the management of public financial information. In the modern era, information technology plays an important role in supporting transparency, accountability, and efficiency in financial governance within public institutions. Digitalization has enabled governments and other public entities to present financial information more quickly, accurately, and in a way that is easily accessible to the public (Kusumawati, 2024)

As digital technology evolves, the demand for accurate and transparent public financial reporting has become increasingly critical. Public sector organizations are now expected to provide financial reports that comply with standards in real time to meet the ever-increasing needs of stakeholders (Pontoh et al., 2024). Technologies such as cloud-based systems, big data analytics, and artificial intelligence applications present significant opportunities to improve the effectiveness and efficiency of public financial management (Rizka Khoirotun Nisaa et al., 2024). However, the application of this technology is not without challenges. As shown by Kristiyani Hamidah (2020), the misuse of digital tools by certain actors can hinder efforts to achieve transparency.

From a public economic point of view, state financial management is not just an administrative activity, but also a tangible manifestation of how the state carries out its functions in allocating resources, distributing income, and maintaining economic stability. The government as the main actor in the public economy has the responsibility to ensure that every rupiah of public funds is used efficiently, on target, and provides the greatest benefit to the community (Dr. Salomi Jacomina Hehanussa, 2024). Therefore, the implementation of digital innovation in public financial management is a strategic step to strengthen fiscal transparency while increasing the efficiency of the use of the state budget.

Furthermore, digital innovation can also create a financial system that is more inclusive and responsive to people's needs. Through digital systems, the process of budgeting, realization, and financial reporting can be carried out in an open and integrated manner, allowing the public to participate in supervising the use of the public budget. This is in line with the principles of *good governance* which places accountability and openness as the main basis in the administration of government (Bolang, 2014). Thus, in the midst of the challenges of bureaucratic modernization and public demands for more transparent governance, technological innovation is no longer just a tool, but an important foundation for the creation of efficient, adaptive, and equitable public financial management.

RESEARCH METHODS

This research applies a qualitative approach through a literature study method to explore the function of digital technology innovation in public financial management, especially in terms of *e-budgeting, e-audit, blockchain, and digital payments.* This method was chosen because the purpose of the research is to understand the ideas, policies, and implementation of digital technology practices in the public sector based on the theoretical and empirical analysis that has been available.

The data used in this study is secondary information taken from various written sources, including articles from both national and international scientific journals, reference books, reports from government agencies, regulations, and official publications from related institutions such as the Ministry of Finance, the Financial Audit Agency, and the Ministry of Communication and Informatics. The source selection process is carried out by paying attention to the relevance to the topic, the reliability of the source, and the suitability of the context of the discussion on public financial management in Indonesia.

The information collection technique is carried out by exploring the literature in a planned manner by utilizing relevant keywords, such as e-budgeting, e-audit, blockchain, digital payments, budget transparency, and public finance. The selection process is carried out in stages, starting from checking the title and summary to reading the text as a whole to ensure that the literature used really supports the objectives of the research.

Information analysis is carried out with a qualitative approach through the study of content from each source to find core ideas, significant findings, and policy impacts related to effectiveness, openness, and responsibility in the management of public finances. The results of this analysis are then presented in a descriptive-narrative way to develop a comprehensive understanding of the role of digital technology in supporting changes in public financial management in Indonesia.

RESULTS AND DISCUSSION

In the management of public finances, innovation provides considerable benefits. Innovation is not only beneficial in improving the efficiency of the use of state funds but also strengthens transparency and accountability in each management. With technological innovation, the government can organize the financial system to be more responsive to the needs of the community.

The application of this innovation has a significant impact on the lives of the wider community. For example, with the existence of digital platforms that prioritize transparency in public financial budgeting, so that the public can find out how public finances are allocated. This step will not only improve the performance of government institutions, but also build public trust in the state. So that innovation is the main factor to ensure that public financial management remains efficient, relevant, and oriented towards improving the welfare of the community as a whole.

According to Hood (2015), the application of technology and updates in financial management practices can help the government recognize and reduce waste, as well as increase productivity in the use of public funds. For example, the use of a digital-based financial information system allows the administrative process to be carried out more quickly, scalably, and efficiently, thereby reducing unnecessary operational costs. These innovations also help speed up the process of financial reporting, planning, and evaluation.

The importance of innovation in the field of public finance is increasingly felt as the demand for efficiency and transparency increases over time. In the midst of budget limitations, the government is required to ensure that every rupiah spent really provides maximum benefits for the community. Through the use of digital technology and modern financial practices, the government can create a system that is more adaptive, efficient, and able to respond to public needs quickly and appropriately.

According to Osborne and Brown (2011), public innovation is not just about creating something completely new, but rather about updating the way the bureaucracy works in order to provide more effective and relevant services for the community. In the context of public finance, this means that the government must be smart in utilizing digital technology so that every state expenditure can provide real value benefits. Technology is not only an administrative tool, but also a foundation for good governance, where all financial activities can be monitored openly so that the space for corruption and budget abuse is smaller.

The importance of innovation in the public finance sector is increasingly felt as the pressure on efficiency and transparency continues to increase. In the midst of budget limitations, the government is required to use every rupiah as best as possible. By leveraging digital financial systems**,** big data, and even artificial intelligence (AI), governments can create financial governance that is more adaptive, agile, and results-oriented. According to the *Organisation for Economic Co-operation and Development (OECD, 2022),* digital transformation in the public sector not only strengthens fiscal capacity, but is also able to improve government efficiency through the application of technology that supports transparency and accountability in public financial management.

So, in the end, digital innovation is not only a matter of technology itself, but also a tangible manifestation of the government's commitment to more open, efficient, and equitable management of public finances. The success of the implementation of this innovation depends heavily on the synergy between public policy, technological infrastructure, and a bureaucratic culture that is open to change.

E-Budgeting as an Instrument of Transparency, Efficiency, and Accountability in Public Financial Management

E-Budgeting is an information system used in the process of preparing a web-based budget or software application designed to increase efficiency and effectiveness in budgeting. This system plays an important role because it is able to speed up the process of preparing a budget through an online mechanism that can be accessed anytime and anywhere. In addition to speeding up work time, *E-Budgeting* also serves as a monitoring tool that allows authorities to monitor every stage of the budgeting process directly. With an interconnected system, the potential for mark-up can be minimized because any data changes will be automatically monitored by various related parties.

The main purpose of the implementation *of E-Budgeting* is to realize the transparency of public financial reports, so that the public and authorities can access and monitor the flow of funds used by the government. This openness can reduce the chance of corruption or budget manipulation because the public can see firsthand changes or irregularities in the allocation of funds. This kind of

transparency also helps to increase public trust in the government, in line with the principle of public accountability that demands openness in every use of state funds.

Furthermore, *E-Budgeting* is an important part of the implementation *of e-Government*, as mandated in government regulations to strengthen the supervision and efficiency of public financial management. This system supports the process of preparing the Regional Apparatus Work Unit Work Plan and Budget (RKA-SKPD) so that it can be well documented and in accordance with applicable legal standards. Philosophically, the implementation *of e-budgeting* helps strengthen understanding of regional budget productivity and efficiency. However, its implementation is highly dependent on the readiness of technological tools and the work culture of government apparatus in managing the financial system.

The success of *e-budgeting* in the future is also greatly influenced by leadership support and policies that favor transparency and accountability. As stated by Rahman, Irianto, and Rosidi (2019), the implementation of *e-budgeting* not only requires technical readiness, but also a change in the mindset and commitment of all stakeholders so that this system truly becomes an effective monitoring tool, not just an administrative formality. Therefore, the sustainability of the e-budgeting system must be balanced with improving human resource competence and improving policies so that they can continue to adapt to technological developments and public needs.

In Indonesia, which has implemented the e-Budgeting system, among others, is DKI Jakarta Province. Phenomena related to regional budget funds in the Jakarta Provincial Government include the case of the procurement of garbage trucks at the Sanitation Service. The Jakarta Provincial Government has been a pioneer in the implementation of *E-Budgeting* in Indonesia since 2013 as part of efforts to realize transparency and efficiency in the management of the APBD. Through this web-based system, the entire process of preparing a budget from planning to ratification is carried out digitally and can be monitored by the public. This step has proven to be effective in reducing *mark-up* practices and speeding up the previously time-consuming budgeting process.

According to Rahman, Irianto, and Rosidi (2019), the implementation of *E-Budgeting* in Jakarta helps to improve the accountability and quality of local government budgets. In fact, the Antara News report (2014) noted that this system managed to save a budget of up to Rp1 trillion thanks to efficiency and the elimination of irrational budgets. Even so, challenges still exist, especially related to manual input errors and the readiness of apparatus in operating the system. Cases like the "Lem aibon" are proof that digital systems still need strong human supervision.

In addition to DKI Jakarta, East Java Province is also one of the pioneers in the implementation *of the E-Budgeting* system, especially through initiatives carried out by the Surabaya City Government. This system was first developed in Surabaya before finally being adopted by the DKI Jakarta Provincial Government in 2015. Surabaya is known as a pilot city in East Java in the implementation of *E-Budgeting* which is considered successful in increasing transparency and efficiency in public financial management. The Surabaya City Government under the leadership of Tri Rismaharini has succeeded in building an integrated technology-based government ecosystem. Through various digital innovations, the public can access public information in an open, transparent, and accountable manner. This system also cuts the previously long bureaucratic process, while improving the quality of public services (Kominfo.go.id).

For this success, Surabaya received various national and international awards. In 2013, Surabaya won the *Future Government Award* at the Asia-Pacific level for its innovation in the application of technology for governance. In addition, Surabaya was also awarded as a Pioneer in the Utilization of Information and Communication Technology in the PPID (Information and Documentation Management Official) Award.

E-Audit in State Financial Supervision

Based on BPK Regulation No. 01 of 2007 concerning State Financial Audit Standards (SPKN), e-Audit is a system designed by BPK. Wahono et al., (2023) concluded that e-Audit is an audit that is carried out using a computer that relies on electronic records, audits can be completed both thoroughly and partially. e-Audit is carried out using special software designed to build a database to store various information related to financial performance in the government.

In addition to improving efficiency, the implementation of e-Audit also has a major impact on fiscal transparency. Natali et al. (2025) emphasized that the integration of e-Audit with *Artificial Intelligence* (AI) and *Big Data Analytics technology* is able to strengthen auditors' ability to detect potential irregularities and corruption in the government environment. With interconnected digital

systems, the audit process becomes more objective, transparent, and with minimal human intervention.

From a public economic perspective, e-Audit can be considered as a form of institutional efficiency where the cost and time of audits can be reduced without compromising the quality of audit results. In addition, this system contributes to increased fiscal accountability, as all government financial data is recorded in a digital system that is difficult to manipulate. To maintain the sustainability of this innovation, strong regulatory support and improved competence of apparatus in the field of information technology are needed so that e-Audit truly becomes a strategic instrument in realizing transparent and efficient state financial governance.

Block Chains in Digital Governance

Blockchain was initially known as the underlying technology behind cryptocurrencies like Bitcoin, but now its potential has extended far into various fields, including government and public finance. In simple terms, blockchain can be understood as a decentralized digital ledger that records every transaction in interconnected blocks. Each block contains transaction information, *timestamps*, and hashes from previous blocks, forming a chain of data that is very difficult to alter or falsify.

The main advantage of this technology lies in transparency and security. Every transaction record in the blockchain is public and can be verified by related parties, so the possibility of data manipulation is very small. In addition, the decentralized system owned by blockchain also reduces dependence on a single authority or third party (*middleman*), which is often a weak point in traditional data management. However, on the other hand, the application of blockchain is also inseparable from a number of risks, such as high dependence on technological infrastructure, potential cybersecurity disruptions, and limitations in system scalability. If there is a failure in blockchain technology, then all data and transactions stored in it can also be affected.

In the Indonesian context, the use of blockchain is starting to show great potential in supporting digital transformation, especially to improve data security and efficiency in various sectors (Argani & Taraka, 2020). The government has taken various strategic steps to expand the use of digital technology, including blockchain, in the national system. Some examples can be seen in the application of blockchain for verification and validation of education certificates, medical data storage, and digital payment systems. This initiative is part of the government's commitment to build more transparent, accountable, and efficient digital governance.

Even so, the application of blockchain in Indonesia still faces various challenges. Unclear regulations, limited technological infrastructure, and lack of public and bureaucratic understanding of how blockchain works are the main obstacles (*Centre for Innovation Policy and Governance, 2018).* This shows that digital transformation requires not only advanced technology, but also the readiness of human resources and policies that support these changes.

One of the real examples of blockchain application in Indonesia can be seen in the education certificate verification and validation program (Argani & Taraka, 2020). In this program, the government is working with a number of blockchain technology providers to build a system capable of verifying diplomas automatically, quickly, and securely. This system provides great benefits for educational institutions and companies that conduct recruitment, because the process of checking the authenticity of documents becomes more transparent and efficient. In addition, the application of blockchain in this sector also helps reduce the risk of diploma forgery, while strengthening public trust in the digital administration process in Indonesia.

Digital Payment in Public Financial Management

In an effort to improve the efficiency, transparency, and security of public financial transactions both at the national and regional levels, the Indonesian government through the Ministry of Finance has launched a number of strategic initiatives, such as *the Government Payment Platform (PPP)* and *Digital Payment (Digipay)* (Ministry of Finance, 2023). Digital payments themselves are technology-based transaction systems, where money is stored, processed, and received in the form of digital information. The process of transferring funds is done electronically through an application, payment card, or electronic money. Unlike traditional systems that use cash, checks, or credit cards, digital payments allow transactions to be carried out faster, safer, and more efficiently using digital devices.

The transformation towards payment digitalization in public financial management has experienced rapid development in recent years. This growth is driven by advances in financial technology and government policies that encourage the digitalization of the public sector. Many

countries, including Indonesia, have begun to adopt electronic payment systems to improve the efficiency of public financial administration as well as reduce the potential for misuse of funds (Sari & Muslim, 2023). In Indonesia, concrete steps have been taken, including the implementation of QRIS in public financial transactions and the integration of electronic payment systems in various government agencies. This policy not only strengthens fiscal transparency, but also speeds up the payment process and reduces administrative costs (Nguyen & Kim, 2023).

One of the main benefits of implementing *Digital Payment* in public financial governance is increased administrative efficiency and government accountability (Jones et al., 2024). With an electronic payment system, every transaction is recorded automatically and accurately, reducing the risk of administrative errors as well as potential misappropriation of funds (Liu & Chen, 2023). In addition, this system also helps the government save costs, accelerate the disbursement and distribution of public funds, and expand access to financial services for people who have not been reached by the conventional banking system. As a result, financial inclusion increases and the government's fiscal capacity becomes stronger (Davis et al., 2023). The process of transferring funds that previously took days can now be completed in just a matter of seconds thanks to electronic payment systems (Andrews et al., 2024).

However, the implementation of *Digital Payment* also faces a number of challenges. One of them is the issue of interoperability between digital financial platforms which still needs to be improved so that various government-owned payment systems can be connected and function in an integrated manner. In addition, strengthening regulations and cybersecurity in digital financial management is crucial to ensure reliability and data protection in the electronic payment system used.

CONCLUSIONS

Technological innovation in public financial governance has become an important factor in creating efficient, transparent, and accountable governance. Through the use of digital systems such as e-budgeting, e-audit, blockchain, and digital payments, governments can accelerate financial administration, reduce the risk of irregularities, improve reporting and supervision, and manage public funds in a more open and real-time manner. From a public economics perspective, financial digitalization is not only about technical efficiency but also about promoting fiscal equity and broader financial inclusion. However, its success requires adaptive regulations, stronger institutional capacity, an open bureaucratic culture, and synergy between public policy, digital infrastructure, and community participation so that technology can truly support modern, clean, and welfare-oriented public financial governance.

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