Jurnal Salome: Multidisipliner Keilmuan
Vol. 3 No. 2 Maret 2025, hal. 147-155
e-ISSN: 2986-4968

WELCOMING THE DIGITAL ERA: TECHNOLOGICAL INNOVATION IN TAX ADMINISTRATION

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Abstract

This article discusses the application of technological innovation in tax administration in the digital era. Digital transformation has brought significant changes that improve operational efficiency, data accuracy, and ease of access and transparency of information in the tax system. Technologies such as Big Data, artificial intelligence (AI), and blockchain play an important role in optimising the tax collection process and minimising tax evasion. However, behind these opportunities, there are challenges such as data security, digital divide, and resistance to change that need to be overcome. Collaboration between the government, private sector, and society is essential to create an ecosystem that supports this digital transformation. In conclusion, technological innovation in tax administration is not just an option, but an urgent need to improve the efficiency, effectiveness, and contribution of the tax sector to sustainable and equitable economic development.

Keywords: Digital Era, Innovation, Technology, Tax Administration.

Introduction

The digital era has brought about significant changes in various sectors, including in tax administration. Tax administration is a series of activities carried out by tax authorities to manage and supervise the tax system effectively and efficiently. This process covers various aspects, including the establishment of tax policies, drafting tax regulations, receiving and processing tax reports, examining and auditing tax compliance, and enforcing tax laws (Zhang & Wei, 2022) . The main objective of tax administration is to ensure that all taxpayers fulfil their tax obligations in accordance with applicable regulations, so as to increase state revenues that are used for the development and welfare of society (Jacobs & Li, 2022) .

The development of information and communication technology has created new opportunities and challenges in tax management. On the one hand, digital technology enables increased efficiency and effectiveness in tax administration. On the other hand, these changes also demand quick and appropriate adaptation from all stakeholders. Improving efficiency and effectiveness in tax administration is the main focus of many countries, including Indonesia, to ensure the tax system runs smoothly and generates optimal revenue (Gupta, 2022) . One of the steps taken is the integration of digital technology in the tax administration process. The implementation of e-Filing and e-Billing systems, for example, allows taxpayers to report and pay taxes online, reducing reliance on time- and resource-consuming manual processes. In addition, big data and artificial intelligence (AI) technologies enable tax authorities to analyse data more effectively, identify patterns of fraud, and improve accuracy in tax audits. Thus,

 e-ISSN: 2986-4968

digital technology provides convenience and increases the speed of tax data processing, which ultimately improves the efficiency of tax administration (Asian Development Bank (ADB), 2023) .

In addition to technology, improving efficiency and effectiveness can also be achieved through policy reform and human resource capacity building. Tax policy reforms that simplify administrative procedures can reduce the administrative burden for taxpayers and tax authorities. Continuing education and training for tax officers is also important to ensure they have the necessary knowledge and skills to face the challenges of modern taxation (Schenkelberg, 2014) . With a combination of advanced technology and adaptive policies, as well as increased human capacity, tax administration can be carried out more effectively and efficiently, which is expected to improve taxpayer compliance and increase tax revenues that can be used for national development (World Bank, 2021) .

Therefore, efficient and effective tax administration is very important for a country's economy. Good tax management can increase state revenue which in turn can be used for development and public welfare. However, traditional tax administration often faces various obstacles, such as limited human resources, regulatory complexity, and high operational costs (European Commission, 2018) .

In recent years, governments in various countries including Indonesia have taken steps to integrate digital technology in tax administration. The implementation of e-Filing, e-Billing, and e-SPT systems are some examples of technological innovations that aim to simplify the tax reporting and payment process for taxpayers. In addition, technologies such as big data, artificial intelligence (AI), and blockchain are being explored to improve oversight and transparency in tax administration (Martin & Pomeranz, 2022) . However, the application of digital technology in tax administration also faces various challenges. Uneven technological infrastructure, digital divide between urban and rural areas, and resistance to change are some of the factors that need to be overcome for technological innovation to run optimally. In addition, data security and privacy are also major concerns in the implementation of digital technology (Singh, 2023) .

Therefore, this study aims to analyse technological innovation in tax administration in the digital era. This research will examine how digital technology is applied in tax administration, its impact on the efficiency and effectiveness of tax administration, and the challenges and obstacles faced in the process. Thus, this research is expected to provide useful insights and recommendations for the development and application of digital technology in tax administration in the future.

 e-ISSN: 2986-4968

Research Methods

The study in this research uses the literature method. The literature research method is a research approach that involves collecting, reviewing, and analysing written sources relevant to a particular topic or research question. The main objective is to gain an in-depth understanding of the context, theories, and pre-existing findings related to the research topic, as well as identify gaps or further research needs (Silverman, 2015) ; (Borenstein et al., 2009) . This process involves steps such as searching for credible sources, evaluating the validity and reliability of the information found, and synthesising and structuring the findings into a coherent theoretical framework or argument. Through this method, researchers can develop a solid theoretical basis, avoid duplication of research, and strengthen arguments by basing analyses on scientifically recognised evidence (Paré & Trudel, 2007) .

Results and Discussion

Analysing Technological Innovation in Tax Administration in Indonesia

Technological innovation in tax administration in Indonesia has undergone significant development in recent years. Indonesia's tax authority, the Directorate General of Taxes (DGT), has taken various strategic steps to implement digital technology in the management of tax administration. This initiative aims to improve efficiency, effectiveness, and transparency in the taxation process so as to encourage increased taxpayer compliance and optimisation of state revenue (Liu, 2018) .

One of the key innovations that has been launched is the e-Filing system, which allows taxpayers to report their annual tax returns online. With e-Filing, taxpayers no longer need to physically visit the tax office, thus saving time and money. This system also reduces the potential for human error in data filling due to its more detailed and systematised guidelines. In addition to making it easier for taxpayers, e-Filing also improves the accuracy of data received by the DGT, enabling more effective analysis and monitoring processes (Turner & Hall, 2023) .

In addition to e-Filing, DGT has also implemented an e-Billing system that allows online tax payments. This system provides a wide selection of practical and secure payment methods, such as through internet banking, ATMs, and other digital banking services (Perez & Hadzhikoleva, 2023) . With e-Billing, the payment process becomes faster and more efficient, and reduces the risk of data loss or administrative errors that often occur with manual payments. This innovation also makes it easier for DGT to monitor payments in real-time and eliminate administrative bottlenecks that may occur in the reconciliation process (Johnson, 2022) .

The implementation of big data and artificial intelligence (AI) technology has added a new dimension to tax administration in Indonesia. DGT has started using big data in analysis and monitoring to detect non-compliance and potential tax crimes. Through extensive and detailed data analysis, the DGT can identify suspicious patterns

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and track unusual transactions. Artificial intelligence is also used to run predictions and make policy recommendations based on collected data, which helps improve accuracy in decision-making (Directorate General of Taxes (DGT), 2020) .

Other technology-based tax applications such as e-Faktur, which is an electronic tax invoice system, have also been implemented. This system was created to facilitate transactions between buyers and sellers while monitoring Value Added Tax (VAT) more transparently. With e-Faktur, every commercial transaction can be recorded and reported automatically, reducing administrative burden and minimising the risk of fraud in VAT reporting. This not only benefits taxpayers, but also assists the DGT in more accurate data collection (European Commission, 2018) .

In addition to technology development, DGT has also engaged in human resource capacity building to properly operate and maintain this technology system. Regular trainings are conducted to update the skills of tax officers and ensure they can use the technology efficiently. This human resource improvement is important to support the implementation of increasingly sophisticated technology and ensure that the benefits of this technological innovation can be felt to the fullest (Internal Revenue Service (IRS), 2021) .

As a result of these technological innovations, tax administration in Indonesia has seen improvements in efficiency and effectiveness. Although there are still challenges that need to be addressed, such as data security and system integrity, DGT's efforts in adopting technology have shown significant positive impacts. Going forward, by continuously updating and refining the technology system, it is expected that the tax administration in Indonesia can be fully modernised, adaptive, and responsive to the dynamics of the global economic environment.

The Impact of Technological Innovation on the Efficiency and Effectiveness of Tax Administration

Technological innovation has had a major impact on the efficiency and effectiveness of tax administration. With digitisation and the use of information technology, the process of data collection, reporting, and tax payment has become faster and more accurate. Some technologies, such as e-filing and e-payment systems, allow taxpayers to report and pay their taxes online without having to come to the tax office . This not only saves time but also reduces the administrative burden for tax authorities and minimises errors in recording (International Finance Corporation (IFC), 2022) .

The tax data collection process has also become more efficient with the advent of big data and analytics technology. Tax authorities can now collect and analyse data from various sources, such as banking transactions, business financial records, and information from third parties. Through analysing this data, they can identify potential tax violations earlier and understand certain patterns that may indicate tax evasion. This

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technology enables stricter and more targeted monitoring, thereby improving taxpayer compliance (Ramadhani, 2019) .

Security is also becoming a more reliable aspect thanks to technological innovation. The use of blockchain technology, for example, offers greater transparency and security in transaction records and tax data storage. Blockchain ensures that every transaction is recorded and cannot be altered, thus minimising the risk of fraud and data manipulation. In addition, increasingly sophisticated encryption technology helps protect sensitive taxpayer information from the threat of hacking and cybercrime (OECD, 2016) .

The effectiveness of tax administration has also increased with the implementation of automation systems. The use of artificial intelligence and machine learning applications helps in automated document processing and decision-making. For example, the system can automatically identify information on tax forms, calculate the amount of tax payable, or even provide recommendations for in-depth checks on specific cases. These capabilities allow tax officers to focus on more complex and strategic tasks, and improve overall productivity (Murray, 2022) .

Technological innovation has also impacted services to taxpayers. Self-service through mobile apps or websites allows taxpayers to access information on their tax status, ask questions, or seek assistance without having to visit a tax office. AI-based chatbot systems can provide quick responses to common queries, thereby improving taxpayer satisfaction and experience. With easier and more responsive services, tax compliance rates are expected to increase as barriers to administration are reduced (Bird & Zolt ., 2015)

Overall, technological innovation brings many benefits to the management of tax administration. With a more efficient and effective system in place, tax authorities can improve revenue collection and minimise tax leakages. Technology not only helps in simplifying and speeding up the process, but also improves transparency and accountability. As a result, these innovations contribute to the development of a better and fairer tax system, and support overall economic growth.

Challenges and Barriers to the Implementation of Technological Innovation

Along with the times, technological innovation has become an important part in various aspects of life. However, the application of technological innovation is often faced with various complex challenges and obstacles. One of the main challenges is cost. The development and implementation of new technology usually requires a large investment. Companies or organisations must also consider the cost of training employees to use the new technology. This is certainly a big challenge for small and medium enterprises that have limited financial resources (Williams & Roberts, 2023) .

In addition to cost, resistance to change is also a significant barrier. Many individuals and organisations are comfortable with existing ways of working and are

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reluctant to adopt new, unfamiliar technologies. Fear of failure and hesitation to adapt to new things often hinder the innovation process. Therefore, a thoughtful approach is needed in managing change, such as providing adequate explanations and showing the benefits of the new technology (World Bank, 2021) .

Technical capability is also often an obstacle to the implementation of technological innovation. Not all companies or individuals have sufficient knowledge or skills to manage and utilise advanced technologies. Therefore, adequate training and human resource development is required in order to adapt to the latest technological demands. The lack of experts who are competent in a particular area of technology can also be a significant obstacle in its implementation (Riedl, 2020) .

Furthermore, inadequate infrastructure in some regions is also a barrier to the implementation of technological innovations. Some regions, especially those in remote areas or developing countries, may not have adequate access to a stable internet network or reliable power sources. Without adequate basic infrastructure, the application of advanced technology becomes very difficult, requiring attention and investment from both the government and the private sector (Smith, 2022) .

Regulatory and policy aspects also play an important role in determining the successful implementation of technological innovations. Strict regulations and bureaucratic red tape can hinder the adoption of new technologies. On the other hand, regulations that are too lax can also pose a risk to data security and user privacy. Therefore, a balance is needed in making policies that can support innovation without sacrificing security and privacy aspects (International Finance Corporation (IFC), 2022) .

Finally, there are also ethical and social challenges. The implementation of new technologies often raises concerns about social impacts such as unemployment due to job automation or the psychological impact of using certain technologies. Resolving these issues requires the co-operation of various parties, including governments, companies, and communities, to ensure that the implementation of technology is done with ethical and social aspects in mind (Turner & Hall, 2023) .

By understanding and addressing these challenges and barriers, we can maximise the benefits of technological innovation and drive sustainable progress.

Conclusion

The digital era has brought significant changes in various aspects of life, including in the field of tax administration. Technological innovations in this sector provide various benefits such as operational efficiency, increased data accuracy, and ease of access and transparency of information. Technologies such as Big Data, artificial intelligence (AI), and blockchain help tax authorities to optimise the tax collection process and eradicate tax evasion practices. By utilising technology, tax administration can be more responsive and adaptive to changes in regulations and taxpayer needs.

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However, the application of technology in tax administration is not free from challenges. Issues such as data security, digital divide, and resistance to change are obstacles that need to be overcome. Technological innovation also requires a lot of investment, both in terms of infrastructure and human resource development. Therefore, collaboration between the government, private sector, and society is needed to create an ecosystem that supports digital transformation in tax administration.

Overall, technological innovation in tax administration is not just an option, but a necessity to face the demands of the times. The government is expected to continue to innovate and adopt the right technology to improve the efficiency and effectiveness of tax administration, while ensuring that every step taken always considers the security, feasibility, and interests of all stakeholders. Thus, technology-based tax administration can contribute significantly to sustainable and equitable economic development.

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