Research Article

Digital Transformation in Motor Vehicle Tax Administration: Evaluation of the e-Samsat System and its Impact on Taxpayer Compliance in Indonesia

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Abstract.

Digitalization in public administration in Indonesia is rapidly advancing, one of which is the implementation of digital systems in motor vehicle tax (PKB) payment. Applications such as e-Samsat, SAKPOLE, and SIGNAL are part of the digital transformation aimed at improving tax administration efficiency and taxpayer compliance. This study examines the implementation of these applications in simplifying the motor vehicle tax payment process, as well as their impact on taxpayer compliance and the effectiveness of digital governance policies. Using a qualitative approach and literature analysis, the study finds that while digital systems like e-Samsat provide easier access for taxpayers, challenges such as limited digital literacy and uneven infrastructure still hinder optimal implementation. The study results indicate that the digitalization of motor vehicle tax services can increase efficiency, transparency, and public participation in tax payments, ultimately strengthening tax compliance. However, to achieve optimal results, there is a need for improved digital infrastructure, more intensive socialization, and training for those unfamiliar with technology. This research offers recommendations to expand the reach of tax digitalization by considering technological readiness in each region and emphasizing digital education for the public.

Keywords: tax administration, e-Samsat, SAKPOLE, SIGNAL, tax compliance, digital governance, technology infrastructure

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1. Introduction

Digitalization in public administration has become one of the main focuses of public sector reform in many countries. With the rapid development of information and communication technology (ICT), many governments have started adopting digital solutions to improve efficiency, transparency, and accountability in public services. In Indonesia, one of the areas that has undergone significant digital transformation is the tax sector, particularly in motor vehicle tax (PKB) payments[1]. With the emergence of applications such as e-Samsat, SAKPOLE, and SIGNAL, the government is trying to simplify the tax payment process for taxpayers and accelerate the collection of regional revenue.

In this context, digital governance plays a crucial role in driving tax administration efficiency, facilitating public service processes, and enhancing taxpayer compliance . For example, the e-Samsat application allows citizens to pay their vehicle taxes online, without the need to visit the service office in person[2]. However, while this application promises increased efficiency and convenience, its implementation also faces several challenges, including technological constraints, socialization, and the culture of technology use in society[1]. Data from Sukabumi City (2018-2022) indicates that despite the presence of E-Samsat, non-compliance rates for motor vehicle tax payments have remained significant, with up to 24% non-compliance in 2022[3]. This highlights the challenges in fully adopting digital solutions due to barriers like limited internet access and lack of awareness, especially in rural areas.

Digital governance refers to the application of information and communication technology (ICT) in government to improve services to the public. Digital governance focuses on managing public services using digital technology to enhance transparency, public participation, and government efficiency . In this context, applications like e-Samsat in Indonesia aim to reduce waiting times and speed up the tax administration process[4]. However, the SIGNAL application has also faced implementation issues, with users in rural areas still having limited adoption due to a lack of socialization and infrastructure.

The purpose of this literature review is to explore various studies on the digitalization of motor vehicle taxes in Indonesia, focusing on the e-Samsat, SAKPOLE, and SIGNAL applications, and to analyze their impact on taxpayer compliance and the effectiveness of digital governance policies in public administration. This literature will also provide an overview of the challenges faced in implementing this system and recommendations for addressing those challenges.

2. Literature Review

2.1. Basic Theories and Concepts in Public Administration and Digitalization

2.1.1. Digital Governance dan E-Government

The concept of digital governance refers to the application of information technology in government to improve efficiency, transparency, and responsiveness to public needs. In the context of public administration, digital governance encompasses the use of digital

systems to serve the public, collect taxes, and manage public data. Digital governance not only involves technology but also cultural changes, policies, and organizational structures in the public sector. This aligns with the concept of e-government, which aims to enhance public engagement and facilitate access to government services through digital platforms[7].

According to the United Nations (UN), e-government involves the use of ICT to support a more transparent, efficient, and responsive government administration to meet public needs. The implementation of e-government has the potential to address traditional issues in public service, such as corruption, bureaucratic complexity, and inefficiency in revenue collection. One of the most relevant applications in Indonesia is e-Samsat, a digital platform that allows taxpayers to pay motor vehicle taxes online.

2.1.2. Motor Vehicle Tax (PKB) and Its Role in Regional Revenue

Motor vehicle tax (PKB) is a tax imposed on the owner or controller of a motor vehicle in Indonesia. PKB is one of the important sources of revenue for regional original income (PAD), which is used to finance regional development. PKB payments are made annually and are typically required to be done at Samsat offices. However, with the implementation of digital systems like e-Samsat, this process can be done more quickly, efficiently, and without the need to visit the service office.

According to Law No. 28 of 2009 on Regional Taxes and Levies, motor vehicle tax is one of the types of taxes that can be managed by local governments. The success of local tax management, including PKB, greatly depends on the level of taxpayer compliance in fulfilling their obligations. Therefore, it is important to understand the factors that influence tax compliance, which are often related to taxpayer awareness, the ease of payment, and transparency in the tax administration process.

2.2. Technological Innovation in Motor Vehicle Tax Payments

2.2.1. e-Samsat dan SAKPOLE

One of the main applications implemented in Indonesia for the digitalization of motor vehicle taxes is e-Samsat. e-Samsat is an online platform that allows taxpayers to pay motor vehicle taxes without having to visit the Samsat office. This application was initially implemented in several major cities and later expanded to other regions to

improve accessibility and efficiency in tax payments. SAKPOLE (Online Vehicle Tax Administration System) is a similar application also used in several areas to facilitate the process of annual PKB payments at SAMSAT Surakarta[2].

Both of these applications feature tools that allow taxpayers to check the amount of tax to be paid, make payments via online banking, and receive valid proof of payment. By reducing manual bureaucracy, these applications have the potential to increase taxpayer compliance and reduce waiting times at Samsat offices.

However, despite being adopted in many regions, some studies indicate that the adoption of this technology faces challenges, such as a lack of understanding of how to use digital applications among some members of society and dependence on digital infrastructure that is not yet evenly distributed[1].

2.2.2. SIGNAL (Sistem Nasional Digital Samsat)

In addition to e-Samsat and SAKPOLE, the Indonesian government has also introduced the SIGNAL application (National Digital Samsat System). SIGNAL is an application that integrates various Samsat services across Indonesia, allowing vehicle owners to make motor vehicle tax payments, update their vehicle registration certificates (STNK)[1], and pay traffic accident funds digitally. This application aims to provide easier access for users who want to pay their vehicle taxes without having to visit the Samsat office in person.

The adoption of the SIGNAL application has shown a significant increase in the ease of tax payments and a reduction in the extortion practices that often occur at Samsat offices. However, like other systems, SIGNAL also faces technical challenges, particularly related to accessibility for users in regions with limited digital infrastructure[5].

2.3. Evaluation of Digital Systems in Tax Administration

2.3.1. Effectiveness of e-Samsat and SAKPOLE

The implementation of the e-Samsat and SAKPOLE systems in Indonesia has had a significant impact on improving the efficiency of motor vehicle tax administration. e-Samsat has brought about a major change in accelerating the motor vehicle tax payment process. By adopting a digital system, the public no longer needs to queue for hours at Samsat offices, which was previously a major complaint. However, this finding also

indicates that although the system's effectiveness has improved, public awareness of the existence and usage of e-Samsat remains low, especially in areas with limited digital literacy[6].

On the other hand, SAKPOLE, which is implemented in Surakarta, has been proven to raise taxpayer awareness of paying their vehicle taxes on time, while also reducing dependence on brokers, which often became an additional burden for taxpayers. SAKPOLE allows taxpayers to expedite the annual tax payment process and increases regional revenue. However, there are still technical challenges to be addressed, such as internet network disruptions that hinder the smoothness of digital transactions in some regions[2].

2.3.2. SIGNAL: Integration of Digital Tax Services

One of the key innovations in motor vehicle tax management is SIGNAL (National Digital Samsat System), which was introduced to integrate various Samsat services across Indonesia. This application allows for the centralized and digital processing of motor vehicle tax payments, STNK renewals, and traffic accident fund payments. The positive impact of SIGNAL in increasing tax revenue in the West Sumatra province has been observed[1]. This application provides convenience for taxpayers to perform all transactions related to motor vehicles without having to visit the Samsat office.

However, the implementation of SIGNAL also faces challenges related to the adoption of technology by Samsat officers who are less skilled in using the application, as well as the varying levels of technological readiness in different regions. Therefore, change management within the organization is crucial to ensure a smooth transition to the digital system.

2.4. The Impact of Digitalization on Taxpayer Compliance

2.4.1. Tax Compliance through e-Samsat

Taxpayer compliance is key to increasing national and regional revenue. In the context of motor vehicle taxes, this compliance heavily depends on how easy and efficient the payment system offered to the public is. The digitalization of services, such as e-Samsat, has a positive impact on taxpayer compliance. e-Samsat makes it easier for taxpayers

to pay their taxes without the time and location barriers that have traditionally limited their access[1].

The use of e-Samsat is directly related to increased public trust in the government. This trust becomes an important factor in improving tax compliance, as the public feels safer and more comfortable with transparent and easily accessible services[2].

However, although the use of e-Samsat can improve compliance, external factors such as socialization, public knowledge, and the availability of supporting facilities remain major challenges. Without adequate guidance and education, many taxpayers are still hesitant to use this platform, especially in areas that are less familiar with technology.

2.4.2. Success Rate in Improving Compliance in Various Cities

The use of e-Samsat has increased public participation in motor vehicle tax payments during the COVID-19 pandemic[7]. Data shows that in 2020-2021, motor vehicle tax revenue in Makassar increased by 3.51% despite the significant impact of the pandemic on the economy and public services[1]. This indicates that digital platforms like e-Samsat can enhance tax compliance, even though there are barriers related to technology access and a lack of socialization.

On the other hand, although e-Samsat facilitates tax payments, the Mobile Samsat application, which is an alternative payment method using mobile services, has not shown a significant impact on taxpayer compliance[2]. Only e-Samsat has proven to have a positive impact on compliance, while Samsat Keliling or Mobile Samsat still faces challenges in public adoption.

2.4.3. Barriers to Tax Compliance Factors

Although digitalization of services offers many benefits, the existing barriers cannot be ignored. The culture of technology use in areas with limited exposure to digital technology is one of the main obstacles in the implementation of e-Samsat. In addition, low tax awareness also affects taxpayer compliance levels, highlighting the importance of intensive socialization to the public to introduce the e-Samsat system and its benefits[6].

2.5. Barriers to Effective Implementation

2.5.1. Infrastructure and Technology Barriers

The implementation of e-Samsat and other digital systems is not without challenges related to infrastructure and technology accessibility. One of the main obstacles in the development of digital systems such as SIGNAL is the limited internet access in certain areas that lack adequate networks. This causes online transactions to be hindered, especially in areas with limited internet access[6]. The use of digital applications also requires compatible devices, which becomes an issue for people with low incomes who do not have adequate devices.

2.5.2. Socialization and Use of Technology

In many areas, although the e-Samsat application is available, the level of usage and understanding of the application among the public is still low. The inadequate socialization is one of the major barriers in the implementation of this system. The lack of information on how to use e-Samsat and the lack of digital education among the community lead to distrust and limited participation in this system[7].

2.6. Policy Recommendations to Improve the Digital System

2.6.1. Infrastructure Improvement and Socialization

To improve the effectiveness of e-Samsat and other platforms, improvements in digital infrastructure are required, including expanding internet access in remote areas. The government must also conduct intensive socialization to the public regarding the benefits and how to use this application. Technical training and assistance for taxpayers in areas with technological difficulties should also be considered[8].

2.7. Critical Analysis of Policy Design and Institutional Ownership in Digital Motor Vehicle Tax Platforms: A Case Study of e-Samsat, SAKPOLE, and SIGNAL

2.7.1. Differences in Policy Design

While all three platforms aim to facilitate motor vehicle tax payments digitally, the implementation and success of these systems depend largely on the level of regional readiness and the involvement of various government institutions.

- e-Samsat is more centralized under the Korlantas Polri, while SAKPOLE is decentralized and managed by each Bapenda at the regional level, leading to potential inconsistencies in service delivery and accessibility[1].
- SIGNAL attempts to centralize the process through Korlantas Polri but also integrates various institutions, creating potential coordination challenges that could delay the effectiveness of implementation[2][3].

2.7.2. Institutional Ownership

- e-Samsat's centralized ownership under Korlantas Polri means that the system is governed by a single institution, but the integration with other government bodies, such as Dukcapil and Bapenda, may cause coordination issues[1].
- SAKPOLE, with decentralized ownership across different Bapenda regions, creates variability in quality and accessibility depending on the region's capacity and technological infrastructure[2].
- SIGNAL, being centrally managed by Korlantas Polri, aims for uniformity but faces difficulties in its implementation due to regional disparities in technological infrastructure and public awareness[1][3].

3. Research Methods

3.1. Research Approach

This study employs a qualitative research approach with a literature review design. The objective is to critically examine and synthesize previous studies, scientific articles, reports, and relevant documents concerning the digitalization of motor vehicle tax administration in Indonesia. The focus is on the implementation of digital systems such

as e-Samsat, SAKPOLE, and SIGNAL, and their role in improving taxpayer compliance. By analyzing existing literature, this study aims to identify key findings, theoretical frameworks, and methodological approaches applied in digital governance, technological innovation in tax administration, and taxpayer behavior.

3.2. Data Sources and Selection Criteria

The literature for this study was selected based on the following inclusion criteria: publications dated between 2015 and 2024, written in English or Indonesian, and directly relevant to motor vehicle tax digitalization or related digital governance themes. Sources that do not address the research focus or lack academic or institutional credibility were excluded.

Data sources include:

- Scientific Journal Articles: Peer-reviewed articles and studies related to e-Samsat, SAKPOLE, SIGNAL, and digital tax administration were systematically collected and analyzed to understand technology implementation and its impact on tax compliance.
- Textbooks and Theoretical Literature: Books on digital governance, public administration theory, e-government, and digital transformation were reviewed to establish a strong theoretical foundation.
- Government and International Organization Reports: Official reports from institutions such as the World Bank, United Nations, and Indonesia's Ministry of Finance were examined to provide insight into policy frameworks and evaluation of digital service implementation.
- Official Documents and Case Studies: Regional case studies on e-Samsat and SAKPOLE implementations, alongside monitoring and evaluation reports from relevant agencies, were analyzed to identify best practices and challenges.

3.3. Data Collection and Analysis

Literature was retrieved through academic databases including Google Scholar, Scopus, and official government portals using keywords such as "e-Samsat," "digital tax administration," "taxpayer compliance," and "digital governance." Screening was performed at title, abstract, and full-text levels to ensure relevance and quality.

Data analysis was conducted qualitatively using thematic coding to identify recurring themes and patterns related to digital system implementation, technological innovation, and compliance outcomes. This approach enabled a systematic synthesis of findings across diverse sources.

3.4. Limitations

This study relies on secondary data sources, which may limit the comprehensiveness of insights due to potential gaps in existing literature or regional biases in case studies. Nevertheless, triangulation of multiple data types and sources aims to enhance the validity of conclusions.

4. Results and Discussion

The implementation of motor vehicle tax digitalization systems through applications such as e-Samsat, SAKPOLE, and SIGNAL in Indonesia has brought significant improvements in simplifying the tax payment process and enhancing the efficiency of tax administration. Initially, e-Samsat was implemented in major cities such as Jakarta and Surabaya, allowing taxpayers to conduct vehicle tax payments online, thereby reducing long queues at Samsat offices and minimizing operational costs. The adoption of e-Samsat has effectively increased tax compliance by providing taxpayers with convenient access to payments without the need for physical visits to Samsat offices[8].

Similarly, the SAKPOLE application in Surakarta has demonstrated positive outcomes by elevating taxpayer awareness through streamlined payment procedures. This system accelerates the payment process while reducing reliance on intermediary service bureaus, which often impose additional transaction fees[1], [2]. Furthermore, the SIGNAL system, a nationwide integrated digital platform for Samsat services, has shown promising results in increasing local government revenue and decreasing manual transactions at Samsat offices. SIGNAL facilitates faster vehicle tax payments; however, limited internet connectivity in certain regions remains a significant barrier to its widespread adoption[9].

From the perspective of taxpayer compliance, these digital systems have contributed to a notable increase in adherence to tax obligations. Studies conducted in cities such as Bandung reveal that ease of transaction through digital platforms fosters greater public trust in government institutions and the taxation system.

Despite these advantages, challenges persist, notably related to inadequate infrastructure and low levels of digital literacy, particularly in remote and rural areas. Consequently, many taxpayers continue to prefer traditional manual payment methods due to unfamiliarity or discomfort with digital technologies[8].

To overcome these obstacles, several strategic measures are recommended: enhancement of internet infrastructure, comprehensive and sustained socialization campaigns to educate the public on digital tax payment applications, and the provision of incentives for taxpayers who utilize digital platforms. Additionally, the promotion of digital literacy and education is essential to better prepare the population for adaptation to these innovative systems. The development of more user-friendly applications combined with expanded internet access will substantially support the success and inclusivity of motor vehicle tax digitalization initiatives in Indonesia's future [2], [3].

In conclusion, while motor vehicle tax digitalization systems like e-Samsat, SAKPOLE, and SIGNAL offer clear benefits in improving administrative efficiency and tax compliance, addressing infrastructural and educational challenges is crucial to ensure equitable access and maximize the impact of these digital innovations across all segments of society.

5. Conclusion

In the rapidly evolving digital era, the digitalization of public services, especially in the management of motor vehicle taxes, has become an important step taken by the government to improve efficiency, transparency, and taxpayer compliance. Applications such as e-Samsat, SAKPOLE, and SIGNAL have provided significant convenience in the tax payment process, allowing taxpayers to conduct transactions online without having to visit service offices. This, in turn, has helped reduce bureaucratic complexities and long waiting times at Samsat offices.

However, despite the great potential of digitalization in improving tax compliance, the implementation of this system is not without challenges. Existing studies show that several factors hinder effective implementation, including uneven digital infrastructure, low digital literacy, and the lack of socialization regarding the existence and benefits of these applications. In many areas, there is still a significant gap between the available technology and the community's ability to access and utilize it optimally.

Studies in several major cities in Indonesia, such as Makassar and Sukabumi, show an increase in tax compliance due to the adoption of this technology, although challenges remain. e-Samsat has been proven to increase public trust in the tax system, which in turn strengthens compliance with tax obligations. However, in some areas with limited access to technology, inadequate internet infrastructure, and limited knowledge, the use of these digital applications has not yet reached its full potential.

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