



Digital Transformation and Sustainable Local Tax System Practices in Emerging Market: A Qualitative Analysis

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Received: 07-12-2024

Accepted: 09-12-2024

Published: 31-12-2024



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Abstract: The Covid-19 pandemic has forced regional governments to adapt in providing services, including in terms of taxation. This study deals with the introduction of the electronic Notification of Tax Due of Land and Building Tax at the Unit X, one of the subnational tax office in Jakarta. In a bid to enhance the efficiency, effectiveness and convenience of the processes, and also promote eco-friendliness through paperless practice, the transition from paper-based processes to computerized ones was undertaken. Emphasizing on the electronic Notification of Tax Due system as per Governor Regulation No. 23 of 2021, the system enabled taxpayers to access tax documents as they were uploaded in the electronic platforms and this enhanced the reliability of the notifications while ease the burden of paperwork. The research employed interviews, observations and document analysis of the electronic Notification of Tax Due implementation and found that the emerging system improved

the convenience of taxpayers through quick service delivery but also enhanced service quality in a green economy line with SDGs 12, 13 and 15. Nonetheless, the findings revealed a digital divide particularly among the seniors and the economically disadvantaged which calls for the integration of digital literacy policies targeting those groups. Nevertheless, the electronic Notification of Tax Due system stands as a testament the opportunities available in embracing technology in the provision of services, enhancement of sustainability and the involvement of the citizens in the management of a city.

Keywords: Digitalization, Property Tax, Notification of Tax Due, Subnational Tax Administration, Sustainable Tax Administration

Introduction

The COVID-19 pandemic has undeniably left a substantial impact on a nation. It leads widespread social, economic, and behavioral shock (Delardas et al., 2022). The economic consequences of this pandemic were severe. To address the crisis, the government implemented a series of new policies, including the large-scale social restrictions. These measures aimed to control the virus's spread but simultaneously hampered economic activities in several regions across Indonesia (Purnama & Susanna, 2020). Additionally, the government experimented with various strategies to mitigate the pandemic's economic effects. These strategies focus on revitalizing the deteriorating economy (Sparrow et al., 2020).

Restrictions such as work-from-home policies and service limitations, especially at the subnational government level, adversely affected public services. Subnational level Tax faced disruptions. The result is suboptimal regional revenue collection. The pandemic, however, also accelerated a societal shift towards digital trends. The social distancing regulation urge public services, business transactions, and financial processes to go virtual (Rachmawati et al., 2021). One of those actor is Jakarta Government. It responded to these changes by adopting tax digitalization initiatives.

Law No. 1 of 2022 on Central and Regional Financial Relations defines as “*regional taxes as mandatory contributions from individuals or entities, paid to the region without direct compensation, and intended for regional prosperity*” (Lewis, 2023). In the unique administrative context of Jakarta Province, the provincial government bears the responsibility for collecting both provincial and municipal taxes. A significant source of Jakarta Province revenue is the Land and Building Tax (L&B Tax). It is imposed on property ownership and regulated by local authorities. L&B Tax that administered by Jakarta Province since 2014 applies to land and buildings, except for areas designated for plantations, forestry, and mining.

The L&B Tax is structured so that tax officials are responsible for determining the payable tax amounts. The taxpayers then passively receive notification for their tax obligations. The collection of these taxes is managed through issuance of Notification of Tax Due for L&B Tax. Taxpayers having no authority to calculate the amounts by themselves, except through tax dispute system.

During the pandemic, the collection of L&B Tax in Jakarta Province faced challenges. The L&B Tax target failed to be achieved. One of the problem is the disruption on manual tax notification distribution for the taxpayers (Fernando et al., 2021). In 2020, the collection achieved only 94% of the target of IDR 9.45 trillion. It then worsened in 2021 when it further declined to 83% of the target of IDR 10.25 trillion (Amal & Wibowo, 2022). To enhance the efficiency of tax collection, the DKI Jakarta Provincial Government initiated a shift to electronic tax documents by introducing the electronic Notification of Tax Due system in 2021.

The Implementation of electronic Notification of Tax Due is regulated by Jakarta Province Governor Regulation No. 23 of 2021. The regulation mandates the digital delivery of tax notifications. This regulation aims to simplify taxpayer access to information and reduce the risks associated with physical document loss or damage. The implementation of tax digitalization also contributes to more environmentally sustainable practices by minimizing excessive paper usage (Feroz et al., 2021). Thus, in turn, it can support SDGs Goals 12 (*Responsible Consumption & Production*), 13 (*Climate Action*), and 15 (*Life on Land*) (ElMassah & Mohieldin, 2020).

Research on tax digitalization and its implications for public services is well-documented. Devano et al. (2023) found that electronic tax administration positively affects service quality, taxpayer satisfaction, and tax compliance. Similarly, Amir et al. (2023) emphasizes that modernization of tax systems aims to achieve "good governance" and "excellent public service." Digital transformation initiatives have also been noted for reducing errors and speeding up service delivery (Uyar et al., 2021). However, past research

also points out the challenges posed by technological disparities, particularly among older or less tech-savvy populations (Harvey & Nascimento, 2020). This study builds on these findings to analyze the specific case of electronic Notification of Tax Due implementation within a key metropolitan area.

In this study, a specific subnational tax office unit (Unit X) in a major metropolitan area was examined. This unit, covering three districts, has implemented the electronic Notification of Tax Due. For instance, while 56,372 electronic Notification of Tax Due were issued by 2022, only 87.5% of these were successfully downloaded by taxpayers. Despite existing studies on tax digitalization, a critical gap remains in understanding how digital systems impact document distribution efficiency and taxpayer engagement at the local level.

Therefore, this study seeks to fill that gap by examining the implementation of electronic Notification of Tax Due of L&B Tax in Unit X, with a focus on the challenges faced in taxpayer adoption, efficiency improvements, and administrative cost reductions. It also assess how this innovation can support SDGs, especially SDGS 12, 13, and 15. The novelty of this study lies in its in-depth analysis of the transition process, identifying specific issues related to taxpayer digital literacy and proposing strategies for enhancing public service delivery through digital platforms. This approach offers practical insights for policymakers aiming to optimize digital tax systems.

Literature Review

A. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) provides a structured framework to analyze technology adoption through key dimensions (Feng et al., 2021). Perceived Usefulness (PU) reflects how beneficial users find the technology for achieving desired outcomes. Perceived Ease of Use (PEOU) assesses how effortless it is to use. These perceptions influence the Attitude Toward Using (ATT), which in turn impacts the Behavioral Intention to Use (BI), a strong predictor of Actual Use (AU). Extended dimensions, such as Social Influence, Facilitating Conditions, Trust, and Perceived Enjoyment, enrich the analysis by incorporating factors like social norms, infrastructure support, security concerns, and the pleasure derived from using the technology (Kamal et al., 2020).

The implementation of the electronic Notification of Tax Due system aligns with theories of digitalization in public services. According to the Technology Acceptance Model (TAM) that developed by Davis, users' perceived usefulness and perceived ease of use significantly influence their adoption of digital systems (Setyowati et al., 2020). In the case of Unit X, the new electronic Notification of Tax Due system implementation has objective to addressed inefficiencies in document distribution by centralizing and streamlining processes through an online portal and mobile apps. In turn, enhancing perceived usefulness by increasing efficiency and reliability.

B. Sustainable Development Goals (SDGs)

Sustainable Development Goals (SDGs) 12, 13, and 15 target critical global challenges by addressing environmental sustainability, climate action, and terrestrial ecosystems. SDG 12 promotes sustainable consumption and production patterns by encourage efficient resource use, reduced waste generation, and decoupling economic growth from environmental degradation (Naidoo et al., 2021). SDG 13 focused on climate action. It aims to mitigate climate change impacts through efforts like greenhouse gas reduction and international cooperation under frameworks like the Paris Agreement(Lui et al., 2021). SDG 15 aims to protect and manage terrestrial ecosystems. The scope include halting biodiversity loss, combating desertification, and sustainably managing forests. Those action ensure the preservation of natural resources for future generations (Wan Mahari et al., 2020).

C. Subnational Tax

Subnational Tax in Indonesia are regulated through Law Number 1 of 2022. The regulation stipulates that Subnational Taxes in Indonesia are divided into two, namely those administered by the Provincial Government and those by City/Municipal Government. One type of Subnational Tax is L&B Tax. Previously, It was administered by the central government through the Directorate General of Taxes. But, since 2009, it has been decided to be handed over to the City/Municipal government (Sandy & Inayati, 2022). The L&B Tax system is implemented through an Official Assessment. The Tax Official calculates the Tax payable that must be paid by the Taxpayer (Kusumastuti & Musa, 2023). Furthermore, a Notification Tax Due is issued and submitted to the Taxpayer as a basis for paying the L&B Tax owed.

Research Method

This research adopts a qualitative approach to explore the implementation of the electronic Notification of Tax Due within a subnational Tax Office. Data collection involved semi-structured interviews, direct observations, and document analysis to gain a comprehensive understanding of the transition process. Interviews were conducted with key stakeholders, including tax officials from Unit X and a sample of taxpayers.

Observations were conducted at Unit X's office to capture real-time interactions between tax officials and taxpayers during the electronic Notification of Tax Due implementation phase. Document analysis involved reviewing internal reports, regional regulations, and tax collection data, such as the rate of successful downloads of electronic Notification of Tax Due notifications. This helped to triangulate findings from interviews and observations, ensuring a well-rounded analysis.

Result and Discussion

A. Result

The introduction of the electronic Notification of Tax Due system within a subnational tax office, referred as 'Unit X,' marked a pivotal shift from manual to digital processes in tax document distribution. The primary objective of this digital transition was to enhance efficiency, accuracy, and accessibility in the distribution of tax notifications (Nurhayati et al., 2023). Prior to the implementation of the electronic system, the manual distribution of Notification of Tax Due of L&B Tax involved several administrative layers and labor-intensive procedures. This often led to delays, inconsistencies, and errors, as each step, ranging from document printing to physical handovers, depended on multiple intermediary bodies within the administrative chain.

Before the electronic Notification of Tax Due system, the distribution of L&B Tax Notification of Tax Due in Unit X was manual. It relying on physical delivery through administrative units and neighborhood heads. This process led to delays, lost documents, and high costs due to printing and logistics. The newly adopted L&B Tax electronic Notification of Tax Due system aimed to address these inefficiencies by centralizing and streamlining the tax notification process. Taxpayers could now directly access their L&B Tax electronic Notification of Tax Due documents via an online portal (pajakonline.jakarta.go.id) or JAKI Apps.

This implementation was guided by Governor Regulation No. 23 of 2021. It formalized the shift to digital platforms for tax documentation in the peak of Pandemic. This regulation not only emphasized efficiency but also aimed to promote environmental sustainability by reducing paper usage and the associated logistical challenges. By embracing a digital framework, the system sought to modernize the outdated manual procedures that were no longer aligned with contemporary service delivery standards (Kim et al., 2022). Thus, in turn, it support SDGs Goals 12 (*Responsible Consumption & Production*), 13 (*Climate Action*), and 15 (*Life on Land*) (ElMassah & Mohieldin, 2020).

Observations at Unit X indicated that the digital transition significantly improved the speed and reliability of tax notification distribution. In an interview with an official at Unit X, it was noted that the manual system required tax payer to rely heavily on intermediary bodies for distributing documents, which often led to delays and errors. With Electronic L&B Tax Notification of Tax Due, taxpayers can now access their documents instantly through the portal. This change reduced dependency on traditional methods of distribution. Those method often included multiple stages involving local administrative units. As a result, the digitalization initiative eliminated unnecessary steps and simplified access for taxpayers.

Furthermore, the uptake of the electronic Notification of Tax Due system among taxpayers was noteworthy. One of the taxpayers stated that before implementation of the system, She had to wait for the physical Notification of Tax Due to be delivered. Sometimes, it was delayed or even lost. Now, the taxpayer can access it online and download it whenever they need it. This shift to a digital platform not only simplified access to tax

documents but also alleviated common frustrations associated with manual distribution.

The combination of improved accessibility, reduced administrative workload, and positive taxpayer response underscores the effectiveness of the electronic Notification of Tax Due implementation in achieving its intended goals of efficiency and modernization. The streamlined digital process was particularly beneficial for taxpayers who could now receive notifications promptly without relying on intermediary administrative bodies. One taxpayer also mentioned that the L&B tax administration is much faster now. They don't have to worry about missing deadlines because the notification did arrive on time. This increased convenience and timeliness enhanced overall taxpayer satisfaction and compliance.

The implementation of the electronic Notification of Tax Due system at Unit X, while generally successful, was not without its challenges. One of the main issues faced by the officials was the digital divide among taxpayers. An official mentioned that they realized that not all taxpayers were familiar with digital platforms or had the necessary tools, like a smartphone or internet access, to easily transition to the online system. This digital gap made it difficult for a segment of the population to adopt the new system, particularly older taxpayers and those in lower-income brackets. Moreover, the transition to a fully digital system required substantial efforts in terms of system maintenance and troubleshooting. As a result, the officials had to implement support measures to ensure that these taxpayers could still access their notifications.

To mitigate these challenges, tax officials introduced several initiatives aimed at increasing digital literacy and providing on-the-ground support. One of the key steps was establishing digital assistance counters at the Unit X office, where taxpayers could receive guidance on using the online portal. The Tax Official stated that they set up help desks at our office to walk people through the electronic Notification of Tax Due download process and to address any issues they faced. Additionally, the unit conducted informational campaigns and workshops, particularly targeting communities with low digital literacy rates. These efforts aimed to bridge the knowledge gap and familiarize taxpayers with using the online system effectively. However, these initiatives also required considerable resources, adding to the administrative burden during the transition phase.

From the taxpayers' perspective, the primary challenge in adopting the electronic Notification of Tax Due system was the lack of digital literacy and familiarity with online platforms. Older taxpayers, in particular, reported difficulties navigating the online portal and understanding the download procedures. One taxpayer shared, the He is not very good with technology, so when the electronic Notification of Tax Due system started, He had to ask his children to help him to download the documents.. For individuals without support or access to digital devices, the transition posed significant barriers to timely access to their tax notifications. Some taxpayers also expressed concerns about the reliability of the internet in their area, which occasionally hindered their ability to download documents promptly.

In response to these challenges, taxpayers who struggled with the digital system often relied on assistance from family members or local community leaders. One taxpayer explained that when She couldn't figure out how to access the electronic Notification of Tax

Due, She asked her neighbor who's good with computers. Her neighbor helped her register and showed what to do. This reliance on informal networks highlighted the need for more targeted support and digital literacy programs tailored to the needs of specific demographic groups. Taxpayers indicated that more face-to-face support sessions and clear, step-by-step guides would be beneficial for easing their transition to digital systems. Additionally, some suggested creating simplified versions of the online portal to cater to less tech-savvy users.

Despite these challenges, both tax officials and taxpayers recognized the long-term benefits of digitalization. Officials emphasized that continuing to invest in digital literacy programs and improving the system's user interface would gradually ease the transition for all taxpayers. Similarly, taxpayers who initially faced difficulties reported that with practice and the right support, their confidence in using the digital platform improved. As one taxpayer noted that at first, He was really struggling, but after getting some help and trying it out a few times, He's starting to get used to it. It's becoming easier now. This demonstrates that while the digital transition presented hurdles, there is potential for adaptation and improvement with consistent efforts from both officials and the community.

B. Discussion

The implementation of the electronic Notification of Tax Due system aligns with theories of digitalization in public services. According to the Technology Acceptance Model (TAM) that developed by Davis, users' perceived usefulness and perceived ease of use significantly influence their adoption of digital systems (Setyowati et al., 2020). In the case of Unit X, the new electronic Notification of Tax Due of L&B Tax system addressed inefficiencies in document distribution by centralizing and streamlining processes through an online portal, thereby enhancing perceived usefulness by increasing efficiency and reliability. This corresponds with broader literature on e-government. Galushi & Malatji (2022) conclude that transitioning from manual to digital systems reduces redundancies, minimizes human error, and enhances service delivery.

Governor Regulation No. 23 of 2021 served as a regulatory framework to formalize this digital transition, emphasizing both efficiency and sustainability by reducing dependency on physical documents and the intermediaries involved in manual delivery. The study's findings indicate that by simplifying tax document distribution and allowing direct taxpayer access via an online portal, the system effectively aligned with these theoretical objectives of e-government implementation.

Moreover, the adoption of the electronic Notification of Tax Due system yielded substantial benefits in line with previous research on digital transformation. The enhanced speed and reliability of notifications led to a reduction in administrative costs and improved taxpayer satisfaction. This corresponds with Amir et al. (2023) findings that digital tax systems contribute to good governance by promoting transparency and service quality. Observations at Unit X and direct taxpayer feedback illustrate that the digital process not only increase the speed of document delivery but also addressed issues of lost or delayed physical documents. This aligns with the literature that suggests digital services reduce errors and inconsistencies while enhancing user convenience (Sroukh Alderei & Sidek,

2023).

The digitalization of local tax systems also has a significant role in promoting sustainability by reducing dependency on physical documentation. This transition directly supports SDG 12 (Responsible Consumption and Production) by minimizing paper usage and the environmental footprint associated with traditional tax administration methods. The shift from manual distribution to a digital platform eliminates the need for printing for about 57.000 of physical tax documents annually in Unit X. Furthermore, this reduction in paper usage aligns with efforts to adopt eco-friendly administrative practices and emphasizes the importance of integrating digital solutions to achieve more sustainable public service operations (Nandru et al., 2023).

Additionally, the digital framework contributes to SDG 13 (Climate Action) and SDG 15 (Life on Land) by reducing the carbon emissions tied to physical transportation and logistical tasks. In the past, manual distribution involved multiple administrative levels and significant reliance on transportation, leading to higher fuel consumption and greenhouse gas emissions. By replacing physical deliveries with digital notifications accessible through online portals and mobile applications, the electronic Notification of Tax Due system reduces the need for paper distribution and minimizes logistical challenges. This sustainable approach not only decreases operational costs but also mitigates environmental risks associated with deforestation and habitat degradation linked to paper production (Delabre et al., 2020).

Despite these positive outcomes, the findings also revealed a technological divide among taxpayers, consistent with the challenges highlighted in previous studies on digital transformation (Harvey & Nascimento, 2020). The digital gap, particularly among older and low-income taxpayers, presented barriers to adoption. This divide underscores a significant challenge in digital service implementation—ensuring equitable access to all users. The reliance on digital platforms can inadvertently marginalize those without adequate digital literacy or access to technology. It can hinder the broader goals of inclusivity and improved service delivery.

To bridge this divide, the tax office employed strategies in line with best practices for digital inclusion (Nazarov et al., 2020). Establishing help desks and conducting informational campaigns targeted at low digital literacy groups helped alleviate some of the challenges faced by these taxpayers. However, these support measures required significant resources and ongoing efforts (Skipin et al., 2020). It highlight administrative burden that accompanies digital transformation in public services. Furthermore, taxpayer feedback suggested that additional face-to-face support sessions and simpler online interfaces could further ease the transition for less tech-savvy users.

Conclusion

The implementation of the electronic Notification of Tax Due system at Unit X significantly enhanced the efficiency, reliability, and accessibility of tax document distribution. The shift from manual processes to a centralized digital platform streamlined operations, reduced errors, and increased taxpayer satisfaction. The study highlighted that taxpayers benefited from faster document access and improved service quality, while administrative costs were lowered due to the reduction in manual tasks and physical documents. Introduction of paperless system also introduce sustainability practices, supporting SDGs 2030, especially SDGs 12, 13, and 15. Despite these positive outcomes, the study also identified challenges such as the digital divide among taxpayers, particularly affecting older and low-income groups. The findings underscore that while digitalization offers clear benefits, ensuring equitable access and addressing disparities in digital literacy remain critical concerns for achieving inclusive public service delivery.

To further enhance the effectiveness of the electronic Notification of Tax Due system, it is recommended that the tax office continue to invest in digital literacy programs and targeted support for less tech-savvy taxpayers. Establishing more face-to-face support sessions and simplifying online interfaces can help bridge the digital divide and facilitate a smoother transition to digital services. Additionally, developing a feedback loop with taxpayers can provide valuable insights for improving the system's user experience and addressing emerging issues promptly. Policymakers should also explore partnerships with local community leaders to increase outreach efforts and digital literacy awareness among older and low-income groups.

This study focused on a specific subnational tax office (Unit X) in Jakarta, which may limit the generalizability of its findings to other regions with different administrative structures and digital capabilities. Additionally, the analysis primarily relied on interviews and observations, which could introduce subjectivity in the interpretation of results. Future research could expand the scope by examining multiple units across different regions and incorporating quantitative measures to validate the observed improvements and challenges in the digital transition.

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