

(Original Article)

Analysis of Digital Governance Implementation in Land and Building Tax Management

Cecep Wahyudin^{1*}, R. Akhmad Munjin², Muhammad Rafi Diaz Zidane³^{1,2,3}Department of Public Administration, Universitas Djuanda, Indonesia*Correspondence: cecep.wahyudin@unida.ac.id

Abstract

Digital transformation in public services has become an urgent necessity to meet demands for efficiency, transparency, and the optimization of regional revenue. This study aims to analyze the implementation of digital governance as a strategy to increase Land and Building Tax (PBB) revenue at the Regional Revenue Agency (Bapenda) of Bogor City. The urgency of this research lies in the need to integrate digital technology into the regional taxation system to address challenges such as digital literacy, public participation, and inefficiencies in conventional systems. This research uses a quantitative approach. The theoretical framework used is the digital governance framework, which includes three dimensions: digital strategy, digital policy, and digital standards. The results show that the implementation of digital governance at Bapenda Bogor is categorized as "good," with an average score of 3.83 from employees and 3.56 from taxpayers. A significant increase in PBB revenue was recorded following the digitalization of E-SPPT, as indicated by tax realization surpassing the targets from 2021 to 2024. The main obstacles lie in public digital literacy, limited human resources, and a lack of outreach. The novelty of this research lies in its integrative approach, linking SPBE regulations, local digital strategies, and the practical application of tax services through the E-SPPT platform. This study provides both theoretical and practical contributions to the development of more inclusive, sustainable, and responsive digital policies at the regional level.

Keywords

digital governance, digital strategy, e-sppt, land and building tax (pbb)

Received: 25 November 2025; Revised: 15 December 2025; Accepted: 29 December 2025

Introduction

The development of information and communication technology has driven transformation in government systems, including the implementation of digital governance. Digital governance is not only an instrument for bureaucratic efficiency but also a strategic approach to improving the quality of public services and optimizing regional revenues, particularly in the land and building tax (PBB) sector. In this context, the collection of Land and Building Tax (PBB) as a source of Regional Original Revenue (PAD) plays a crucial role in sustaining regional development (Putra, & Mahiswara, 2024).

Bogor City, as one of the developing cities in Indonesia, has initiated various digital-based public service innovations, including in the management of PBB (land and building tax) through the launch of the electronic E-SPPT (Tax Payable Notification Letter) by the Regional Revenue Agency (Bapenda). This service digitization is intended to accelerate SPPT distribution, increase transparency of information, and encourage public participation in timely, efficient tax payments (Latupeirissa et al., 2024). This section presents key information about the taxpayers integrated into the E-SPPT system. Understanding the composition of registered taxpayers is essential for analyzing tax data and compliance. The list of taxpayers registered in E-SPPT is shown in Table 1.

Table 1.
Taxpayers Registered in E-SPPT as of March 2025

Subdistrict	E-SPPT Not Registered	Registered E-SPPT	SPPT Issued	Percentage
South Bogor	7.291	47.328	54.619	86,65%
West Bogor	14.526	46.227	60.753	76,09%
North Bogor	12.738	36.542	49.280	74,15%
Sareal Land	14.185	38.089	52.274	72,86%
Central Bogor	9.510	30.765	40.275	76,39%
East Bogor	5.268	21.287	26.555	80,16%
Amount	63.536	220.238	283.756	77,87%

Source: Bogor City Regional Revenue Agency 2025

Based on Table 1. As of March 2025, of the 283,756 Electronic Tax Payable Notification Letters (E-SPPT) issued by the Bogor City Regional Revenue Agency (Bapenda) in 2025, 220,238 taxpayers have registered in the E-SPPT system, or approximately 77.87% of the total. South Bogor District has the highest E-SPPT participation rate at 86.65%, while Tanah Sareal District has the lowest at 72.86%. This indicates that Taxpayers have received the implementation of digitalization in PBB services, but there is still room for improvement, especially in districts with relatively lower participation rates. Thus, PBB revenue is shown in Tables 2 and 3.

Table 2.
PBB Revenue Before Digitalization

PBB-P2	Realization of PBB-P2 Collection	Percentage Target
2018	Rp.141,124,980,980	94,22%
2019	Rp.144,291,450,789	95,26%
2020	Rp.142,439,890,029	91,84%

Source: Bogor City Regional Revenue Agency 2025

Table 3.
PBB Revenue After Digitalization

PBB-P2	NOP	Realization of PBB-P2 Collection	Percentage Target
2021	266.981	Rp.159,245,586,510	97,89%
2022	273.537	Rp.164,132,484,788	104,54%
2023	276.609	Rp.213,608,290,404	105,87%
2024	283.756	Rp.208,569,748,504	104,28%

Source: Bogor City Regional Revenue Agency 2025

Tables 2 and 3 compare PBB-P2 revenue before and after the implementation of digital governance. In the pre-digitalization period (2018-2020), the average percentage of PBB-P2 collection realization ranged from 91% to 95% of the target. However, after the

implementation of digitalization in 2021-2024, there was a significant increase, with the realization percentage consistently exceeding the target, reaching 105.87% in 2023. This increase reflects the effectiveness of digital governance implementation, particularly through innovations in the E-SPPT digital service and easier payment access. The digital system has proven capable of increasing administrative efficiency, expanding service reach, and encouraging taxpayer compliance more systematically (Idrus, 2024; Muchsinin et al., 2025; Putra et al., 2024).

This research is motivated by the need to examine how digital governance can serve as an effective strategy for increasing PBB revenues. It also analyzes the obstacles faced and the efforts undertaken by the Bogor City Regional Revenue Agency (Bapenda). However, the implementation of this digital strategy is not without challenges, such as low digital literacy among the public, uneven technological infrastructure, and the lack of internal human resources (HR) preparedness to optimally manage the system (Rojak, 2024).

To address these challenges, the Bogor City Government has issued a series of regulations as a regional digital policy framework. These include Mayoral Regulation No. 71 of 2017 concerning the Implementation of E-Government, Mayoral Regulation No. 24 of 2021, and Mayoral Regulation No. 162 of 2022 concerning the SPBE (Educational Service Provider), and Mayoral Regulation No. 138 of 2021, which regulates the Administrative Information System at the Regional Revenue Agency (Bapenda). These regulations are reinforced by Mayoral Regulation No. 147 of 2019 concerning One Data for Bogor City, which emphasizes the importance of data integration in supporting digital governance.

The purpose of this study is to analyze Welchman, (2015) of digital governance in PBB services at the Bapenda of Bogor City based on three main dimensions, namely digital strategy, digital policy, and digital standards, and to provide recommendations that can be used as a reference to improve the quality of digital governance of the Land and Building Tax sector at the Bapenda of Bogor City.

This research is important to conduct because the results are expected to provide theoretical contributions in the development of digital governance concepts at the regional level, as well as practical contributions for regional governments in formulating inclusive and sustainable digital policies in order to increase PAD.

Literature Review

The focus of digital governance is to build better governance in accordance with the demands of the progress of the digital era, which has new characteristics such as speed, accuracy, reliability, openness, and innovation based on digital technology networks to overcome infrastructure and human resource obstacles (Milakovich, 2021).

Meanwhile, Welchman (2015:11) argues that "digital governance is a framework for establishing accountability, roles, and decision-making authority for an organization's digital presence, which means its website, mobile site, social channels and any other internet or web-enabled products and services, which means digital governance has a digital governance framework that aims to establish responsibility in the form of public service transformation to overcome all potential problems where digital is present in life, especially in public organizations.

Thus, this research was conducted based on the theoretical analysis proposed by Welchman (2015) that in digital governance, three dimensions must be considered, namely: 1) Digital Strategy, which is defined as an organization's approach to maximizing the potential of the internet and technology. 2) Digital Policy, digital policies that underpin online service management. 3) Digital Standards, which refer to technical provisions and specifications aimed at ensuring the quality of digital services.

Method

This study uses a descriptive quantitative method to analyze the implementation of digital governance based on three main dimensions: digital strategy, digital policy, and digital standards, with the measurement focus from the perspective of field practitioners (Welchman, 2015). Eight indicators are used as measures in this research, consisting of two indicators in the digital strategy dimension, three indicators in the digital policy dimension, and three indicators in the digital standards dimension. This study used a quantitative, descriptive method (Sidel et al., 2018). The research sample comprised 23 employees of the Regional Revenue Agency (Bapenda) of Bogor City, using a census sampling technique, and 80 taxpayers involved in the implementation of digital governance in Land and Building Tax (PBB) services, using an accidental sampling technique (Sugiyono, 2018). The number of samples was determined based on the number of indicators: 8×10 (Nasution & Aramita, 2024; Welsch et al., 2018). Then, a weighted mean score analysis was conducted using Likert-scale scores (León-Mantero et al., 2020; Nassar et al., 2023).

The questionnaire validation process is conducted statistically to ensure the reliability and validity of each indicator, so that the data obtained is accurate, consistent, and reliable for descriptive analysis (Wafudu et al., 2022). Data analysis in descriptive quantitative research is the process of simplifying data into a form that is easy to read, understand, and interpret. The data analyzed is sourced from both field research and literature studies. Next, the researcher conducts an analysis to draw conclusions relevant to the research problem. In this study, data calculation uses the Weighted Mean Score (WMS) formula (Pratidina et al., 2023). This approach allows the researcher to systematically quantify and describe the implementation of digital governance based on the data obtained.

Results

This section consists of results and discussion. Every result should be supported by sufficient data. Then, the result should be able to answer the research question or hypothesis stated earlier in the introduction. Digital governance is a form of government administration that utilizes digital technology to support decision-making, policy implementation, and the provision of public services. This concept is not merely a digitalization of processes, but rather an effort to build an integrated, participatory, efficient, and transparent government system (Sira, & Kuzior, 2025).

In the context of regional taxes, particularly Land and Building Tax (PBB), digital governance is a strategic approach to leverage technological advancements to improve taxpayer compliance, address limited human resources, and overcome complex bureaucracy. Digital governance offers a solution through the use of online applications, integration of land and building ownership data, and automation of the distribution of PBB documents, such as the E-SPPT (E-Summit Tax Return) (Munjin et al., 2023). The approach used to measure Digital Governance in the management of Land and Building Tax draws on the Digital Governance theory (Welchman, 2015), which has three dimensions: Digital Strategy, Digital Policy, and Digital Standards. The results of respondents' responses to the services or indicators of each Digital Governance item in the management of Land and Building Tax are as follows.

Digital Strategy

Table 4.
Summary of Respondents' Answers to the Dimensions of Digital Strategy

Dimension	Bapenda Employees		Taxpayer	
	Mean	Evaluation Criteria	Mean	Evaluation Criteria
<i>Digital Strategy</i>	3,87	Good	3,57	Good

Source: Data Processed by Research 2025

Based on the results of the table above, it can be seen that the average score for the Digital Strategy dimension among respondents from the Bogor City Regional Revenue Agency (Bapenda) employees across four indicators was 3.87, categorized as Good, while the average score for taxpayers was 3.57, categorized as Good. This indicates that the digital strategy dimension is considered good, but there is a need for improvement in the evaluation and strategy implemented by the Bogor City Regional Revenue Agency (Bapenda). This is in line with previous research that the success of a digital strategy depends on two factors: infrastructure support and taxpayer digital literacy Kasyoka et al, 2022).

Based on the interview results, the Head of the Data Collection Sub-Division explained that the Bogor City Regional Revenue Agency, has implemented digitalization of land and building tax services and payments since early 2021 by launching the E-SPPT PBB and Lapak ON applications. This is to accelerate the delivery of information to taxpayers and encourage online and real-time PBB payments. Digital governance is part of bureaucratic efficiency, shortening service channels and making it easier for taxpayers to access their rights and obligations. This digital-based service has been integrated with the regional financial system, and data is updated regularly through a database connected to the Population and Civil Registration Office, the National Land Agency (BPN), and the DPMPTSP.

Interviews with Bapenda employees and taxpayers revealed a lack of a clear sustainability plan for the e-SPPT website or application, as evidenced by frequent disruptions. Furthermore, many taxpayers, particularly the elderly, lacked understanding of how to use the e-SPPT PBB application or website.

Digital Policy

Table 5.
Summary of Respondents' Answers to Dimensions Digital Policy

Dimension	Bapenda Employees		Taxpayer	
	Mean	Evaluation Criteria	Mean	Evaluation Criteria
<i>Digital Policy</i>	3,71	Good	3,62	Good

Source: Data Processed by Research 2025

Based on the results of the table above, it can be seen that the average number of Digital Policy dimensions in the results of the respondents of the Bogor City Bapenda employees from 4 indicators was 3.71, categorized as Good, while the average taxpayer obtained by the taxpayers was 3.62, categorized as Good. This indicates that the digital policy dimension is considered good, but there is a need to improve the socialization of the

digitalization policy implemented by the Bogor City Bapenda. In line with previous research, the success of digital policies does not only depend on clear regulations, but also requires supervision of the implementation of these policies in all implementing units (Lindquist, 2020).

There is an objective indicator that gets the highest score in the digital policy dimension, for Bapenda employees in the statement item "digitalization policy aims to increase ease of payment", with a mean score of 3.95 with a good category, based on the findings of researchers in the field of digitalization policies carried out by Bapenda Bogor city many taxpayers choose to make PBB payments online or digitally, this can make it easier for taxpayers to carry out their obligations to pay PBB taxes, while for taxpayers get the highest score on the digital policy indicator in the statement item "Socialization to taxpayers regarding digitalization policies" with a mean score of 3.75 with a good category, based on the results of interviews with taxpayers, the socialization held by Bapenda Bogor city regarding the digitalization of Land and Building Tax is very detailed and Bapenda also always socializes the steps on how to register and use the E-SPPT PBB account of Bogor City which certainly makes it very easy for the public to access and pay PBB digitally, Bapenda also socializes the mayor's policy regarding a 10% PBB payment discount and exemption from fines. However, according to interviews with the community, outreach to the community was deemed not optimal; in fact, most residents were not aware of the digitalization policy issued by the mayor, and many people did not attend the digitalization socialization activities held by the Bogor City Bapenda.

However, the comprehensive indicator got the lowest score in the statement item "Regarding PBB digitalization regulations can adapt to technological developments" got a mean score of 3.15 with a fairly good category from Bapenda employees and 3.49 with a good category from taxpayers, this is reinforced by the results of interviews with Bapenda employees who said that, the effectiveness of digital governance implementation is not only determined by the number of personnel, but more on the capacity of human resources in understanding and managing digital systems, as well as the ability to respond quickly to technical problems and complaints from the public.

Digital Standards

Table 6.
Summary of Respondents' Answers to the Dimensions of Digital Standards

Dimension Recapitulation	Bapenda Employees		Taxpayer	
	Mean	Evaluation Criteria	Mean	Evaluation Criteria
<i>Digital Standards</i>	3,93	Good	3,74	Good

Source: Data Processed by Research 2025

Based on the results of the table above, it can be seen that the average number of Digital Standards dimensions in the results of the respondents of Bogor City Bapenda employees from 4 indicators is 3.93, categorized as Good, while the average taxpayer obtained by the taxpayers is 3.74, categorized as Good. This shows that the digital standards dimension is considered good, but there is a need for improvements to the E-SPPT website and real-time payment status for all online payments. In line with previous research, the success of digital standardization has great potential in increasing taxpayer compliance if the quality of service meets user comfort standards and responsive help services are available (Dhaliwal et al., 2023).

In the specification indicator, the highest score is in the statement item "the PBB digital system allows taxpayers to access payment history and services easily and accurately" getting a mean score of 4.15 with a good category from Bapenda employees and 3.80 with a good category from taxpayers, this is reinforced by the results of interviews with taxpayers who said that, The online service and payment system certainly makes it easier for taxpayers, so taxpayers do not have to come to the office or to bjb to make PBB payments and also for services if there are missing files can be uploaded on the online service website. And based on the findings of researchers in the field, the digitalization of PBB services in Bapenda Bogor City certainly makes it very easy for taxpayers to carry out services and payments digitally, because taxpayers can carry out services and payments digitally anywhere, with service times that have been determined by Bapenda Bogor City from 8 am to 3 pm.

Table 7.
Summary of Digital Governance Results as a PBB Improvement

No	Variable Recapitulation Digital Governance	Bapenda Employees		Taxpayer	
		Mean	Evaluation Criteria	Mean	Evaluation Criteria
1.	Digital Strategy	3,87	Good	3,57	Good
2.	Digital Policy	3,71	Good	3,62	Good
3.	Digital Standards	3,93	Good	3,49	Good
Digital Governance		3,83	Good	3,56	Good

Source: Data Processed by Research 2025

Based on the research results, Digital Governance in Improving PBB in Bogor City has been implemented in the Good category, with a score of 3.83 based on the responses of Bapenda employee respondents and 3.56 based on the responses of Taxpayer respondents. The results of the analysis of the Digital Governance variable across the three dimensions used by the researcher include a dimension with the lowest score and another with the highest score.

From the recapitulation results of the highest score of the three dimensions, namely the digital standards dimension, based on the results of the responses of Bapenda employee respondents with an average score of 3.93 with Good criteria, while the highest score based on the results of the responses of Taxpayer respondents is in the Digital Policy dimension with an average score of 3.62 with Good criteria. In this dimension, two indicators show good results. In the results of interviews with Bapenda employees and Taxpayers, they said that the two dimensions have been implemented well, in digital Standardization and digitalization policies.

Meanwhile, based on the average calculation results for Digital Governance in Increasing PBB in Bogor City, Taxpayers obtained the lowest score among the respondents, namely the digital policy dimension, with an average score of 3.71, which meets the Good assessment criteria. Meanwhile, the results of the responses from Taxpayer respondents were the digital standards dimension with an average score of 3.49, with a Good assessment criteria. The results of this study refer to the digital strategy dimension in digital governance theory, according to Welchman (2015), which focuses on strategic planning undertaken by the government in integrating digital technology into public service processes and decision-making. Digital strategy is not only related to the

use of technology itself, but also to how the technology can increase efficiency in government affairs, including the collection of Land and Building Tax in Bogor City.

Discussions

Based on the results of this study, the implementation of digital strategies at the Bogor City Regional Revenue Agency (Bapenda) has demonstrated positive results and performance. This is evident in the high score of Bapenda employee respondents on the digital strategy dimension (3.87), which is categorized as good. Taxpayers received a score of 3.57, categorized as good. This aligns with previous research showing that a sound digital strategy plays a crucial role in improving tax services. However, its success depends on two factors: infrastructure support and the community's level of digital literacy. Therefore, a social approach is still needed to introduce new technology to people who are not yet familiar with online systems (Pavlou & Castro-Varela, 2024).

According to Welchman (2015), the digital policy dimension in digital governance theory encompasses the formulation, implementation, and oversight of digital policies that support modern governance systems. Digital policy serves as a regulatory and operational framework that governs the effective and fair use of technology in government processes. In the context of regional taxation, digital policy provides technical guidance to government agencies and the public on fulfilling their tax obligations electronically. In this study, the analysis showed that the digital policy dimension received a score of 3.71 from employee respondents and 3.62 from the public. This score is in the good category, indicating that digital policies are in place and implemented, but not yet fully understood and optimally implemented in the field. Consistent with previous research, the success of digital policies depends not only on clear regulations but also on consistent training, coaching, and oversight of policy implementation across all implementing units. Without this, policies tend to become mere formal documents without any real impact on public service processes (Aamir, 2025).

According to Welchman (2015), the digital standards dimension within the digital governance framework focuses on the implementation of quality digital service standards, such as accessibility, responsiveness, system integration, and data transparency and reliability. In the context of public services, including the management of Land and Building Tax (PBB), this dimension serves to ensure that digital systems are not only available but also accessible, understandable, and usable by all levels of society. The results of this study indicate that the digital standards dimension received a score of 3.93 from employees and 3.49 from taxpayers, both of which fall into the Good category. This indicates that most users, both internal and external, benefit from the digital service standards implemented by the Bogor City Revenue Agency (Bapenda), particularly through the E-SPPT system and easily accessible online tax payment channels. In line with previous research, the implementation of digital service standards at the Bandung City Regional Revenue Service (RDAP) stated that the implementation of digital-based tax services has significant potential to improve taxpayer compliance, provided the service quality meets user convenience standards and responsive support is provided. Otherwise, digital systems tend to be used only by segments of society already familiar with technology (Zhou et al., 2024).

In other words, although the number of employees in the service and data collection sectors is generally sufficient to support the digitization efforts of land and building tax and related tax systems, particularly through the E-SPPT PBB and Lapak ON applications, this sufficiency is relative. The ability to implement effective digital governance depends not only on the number of personnel but also on the quality and competence of human resources in managing digital systems. The ability to swiftly address technical issues and feedback from the public is crucial for maintaining

operational efficiency. A shortage of dedicated IT personnel capable of handling system updates and troubleshooting indicates a vulnerability in the digital governance framework. Therefore, developing human resources in technical expertise is essential to ensure and enhance the reliability and responsiveness of digital tax services (Acquah, 2025).

The Head of the Land and Building Tax Services Sub-Division assessed the working norms and bureaucratic structure within the Bogor City Regional Revenue Agency as quite clear. Each work unit has specifically defined duties and functions, particularly in supporting the implementation of digital tax systems such as the E-SPPT PBB (land and building tax return). This division of labor is regulated in Standard Operating Procedures (SOPs) and internal regulations that serve as guidelines for carrying out digital tax services. The work is being carried out in accordance with the annual work program, designed based on regional policies such as the Bogor Mayor's Regulation and the direction of the Regional Digitalization Acceleration and Expansion Team (TP2DD). Furthermore, the digitally integrated tax administration information system supports regular activity reporting, including monitoring of PBB revenue realization and the effectiveness of digital service system utilization. The personnel reporting system and performance monitoring system have also been implemented with the support of information technology, streamlining the evaluation and decision-making processes. Thus, well-organized work norms and bureaucratic structures are essential foundations for the success of the digital governance strategy within the Bogor City Regional Revenue Agency (Bapenda). Judging from the conditions in the field, digital transformation in a process towards Good Governance is unavoidable (Shenkoya, 2025; Ridwanullah et al., 2019).

This research comprehensively affirms that the implementation of digital governance as a strategy to increase Land and Building Tax revenue at the Bapenda of Bogor City has been running well through three main dimensions: digital strategy, digital policy, and digital standards. In the digital strategy dimension, the research results indicate that strategic planning in integrating digital technology has been able to increase the efficiency and effectiveness of tax services. The average scores received from Bapenda employees and taxpayers, at 3.87 and 3.57 respectively, indicate that the implementation of digital strategies is already in the “good” category. Notably, the continuously updated E-SPPT system received the highest score, reflecting success in maintaining easy access and sustained service quality. However, there are significant challenges that need attention, such as the low level of digital literacy among senior taxpayers and the frequent technical disruptions in the digital system. This highlights the need for a more inclusive approach and enhanced technical support so that all segments of society can optimally utilize digital services (Repetto, 2023).

In the aspect of digital policy, this research reveals that the digitalization policies implemented by Bapenda and the Bogor City Government have had a positive impact in facilitating access to and payment of PBB digitally. The average scores from employees and taxpayers, 3.71 and 3.62 respectively, show that these policies have been running well, including incentive policies such as discounts and the removal of fines, which have successfully encouraged taxpayer participation. Regular socialization efforts to the community are also an important factor in raising awareness and utilization of this digital technology. However, the effectiveness of these outreach efforts is still not optimal because some residents remain unaware of these policies, and attendance at socialization events is still low. In addition, digital PBB regulations that are adaptive to technological developments still need to be improved, especially regarding human resource (HR) capacity in the field of information technology. This research stresses that the success of digital policies does not solely depend on the existence of formal regulations, but also on

consistent implementation, ongoing training, and effective supervision so these policies can have a real impact on public service (Hakim & Hayat, 2024).

The digital standards dimension illustrates that the implementation of quality digital service standards has succeeded in reducing dependence on manual processes and increasing taxpayer trust through transparent, responsive, and easily accessible systems. The average scores received 3.93 from employees and 3.74 from taxpayers demonstrate that most users experience tangible benefits from the applied digital service standards, especially through the ease of accessing payment history and services in real time. This greatly facilitates the process of PBB administration and payment online, thereby increasing user convenience and satisfaction. Nevertheless, the limitation in HR capacity, particularly in IT, continues to be an obstacle in maintaining service quality and responsiveness to technical disruptions. The research shows the need for sustained investment in developing technical personnel competencies so that digital systems can operate more optimally and adapt to technological changes and user needs (Jimenez et al., 2023).

Thus, the findings of this research reinforce Welchman's (2015) theory of digital governance, which emphasizes the importance of synergy between digital strategy, policy, and standards in achieving effective, efficient, and responsive governance. The implementation of digital governance at Bapenda, Bogor City, has made a real contribution to increasing PBB revenue through greater ease of service, transparency, and bureaucratic efficiency. This digitalization not only makes it easier for taxpayers to access services and make payments online, but also supports more accurate and real-time data management, thereby strengthening the accountability of local government. The main obstacles found namely, the lack of digital literacy among certain groups of taxpayers and the need to enhance IT HR capacity show that the sustainability and quality improvement of digital governance require ongoing attention to both human and technological aspects.

Therefore, sustainable development across the three dimensions of digital governance is essential. Strengthening socialization and training for taxpayers should focus on improving digital literacy, especially for groups less familiar with technology, so they can more easily adapt and benefit from digital services. Furthermore, improving IT HR capacity within Bapenda should be prioritized through the recruitment of experts, technical training, and the formation of rapid response teams for maintenance and troubleshooting of digital systems. These steps will reinforce the effectiveness of digital governance strategies, increase taxpayer compliance and participation in paying PBB, and contribute to more optimal local revenue growth in Bogor City. In this way, digital governance will not merely serve as a technological tool, but also as the foundation for inclusive, adaptive, and sustainable public service transformation (Djarmiko et al., 2025).

The findings of this research have several important practical implications for the management of digital governance in improving Land and Building Tax revenue at the Regional Revenue Agency of Bogor City.

First, strengthening the digital strategy dimension must be prioritized by focusing on developing a system that is inclusive and easily accessible to all segments of society, including elderly taxpayers and groups with low digital literacy. This can be achieved by simplifying the E-SPPT application interface and providing responsive technical assistance services, thereby reducing barriers to the utilization of digital technology.

Second, in the aspect of digital policy, there needs to be an increase in the effectiveness of digitalization policy outreach to the public in a broader and more continuous manner. Outreach strategies should be designed to reach various segments of the community using diverse communication methods, such as direct training, social media, and collaboration with local communities. In addition, incentive policies that have been implemented need

to be continuously developed and their impacts evaluated to ensure that these policies truly encourage taxpayer compliance and participation.

Third, strengthening human resource (HR) capacity in information technology is a crucial aspect within the digital standards dimension. Bapenda needs to recruit competent IT experts and conduct regular technical training for employees handling digital systems. The establishment of a rapid response team for maintenance and managing technical disruptions is also essential so that the digital system can operate optimally and provide reliable services without significant interruptions.

Fourth, the implementation of transparent and easily accessible digital service standards must be maintained and improved. Digital systems that allow taxpayers to access payment histories and services in real time should be developed with additional features that can enhance user comfort and trust, such as automatic notifications and personalized dashboards. This will strengthen accountability and transparency in regional tax management.

Lastly, the integration of technology with other administrative systems, such as the Civil Registry Office and the National Land Agency, must continue to be strengthened to ensure accurate and up-to-date data. This will support more precise and efficient decision-making in PBB management. Overall, the practical implementation of these findings requires synergy between technological development, adaptive policies, and HR capacity improvement so that digital governance can function as an effective and sustainable strategy for increasing regional tax revenue.

Conclusion

This study successfully analyzed the implementation of digital governance at the Bogor City Regional Revenue Agency (Bapenda) using a descriptive quantitative method based on three main dimensions: digital strategy, digital policy, and digital standards. The results showed that all three dimensions received average scores in the “good” category, with a score of 3.87 for the digital strategy dimension, 3.71 for the digital policy dimension, and 3.93 for the digital standards dimension from employee respondents. Taxpayer respondents gave a score of 3.57 for digital strategy, 3.62 for digital policy, and 3.49 for digital standards. The main findings indicate that the use of digital platforms such as E-SPPT PBB has generally improved land and building tax (PBB) revenue realization, especially since 2021. However, the success of this digital strategy is still limited by the low level of digital literacy in the community, particularly among the elderly and non-digital groups, as well as technical obstacles that have not been fully resolved.

Thus, the study emphasizes that the implementation of digital governance at Bapenda Kota Bogor has been well-executed and has contributed positively to increasing Land and Building Tax (PBB) revenue through easier service access, transparency, and bureaucratic efficiency. However, challenges remain, such as low digital literacy among certain taxpayers and limited human resource capacity in information technology. Therefore, strengthening outreach and training for taxpayers, as well as improving the quality of technical human resources, are crucial to ensure the sustainability and effectiveness of digital governance as a strategy for optimally increasing regional revenue.

Meanwhile, the suggestions based on the results of this study are: (1) The Regional Government, through Bapenda, should increase the frequency and quality of socialization of the use of E-SPPT PBB to the community, especially at the RT/RW level, community leaders, and community residents, so that digital awareness increases overall; (2) The E-SPPT application system infrastructure needs to be strengthened to make it more stable, responsive, and experience minimal technical disruptions. Adding features such as payment status tracking, live chat, and a lighter version of the mobile app can improve

public satisfaction; (3) The government needs to consider direct education programs for digitally vulnerable groups (e.g., the elderly or underprivileged), including providing technical assistance, mobile helpdesks, and field mentoring; (4) Closer collaboration is needed between Bapenda, sub-districts, communication and information services, and the private sector (such as banks and fintech) to strengthen the digital ecosystem that supports the acceleration of the implementation of digital governance as a whole.

Acknowledgments

We would like to express our gratitude to the Bogor City Bapenda for granting research permits and to Djuanda University for facilitating the research process.

Declaration of conflicting interests

The author declares that there is no conflict of interest in this research. The entire planning, data collection, analysis, and report writing process was conducted independently without any influence or involvement from any party that could give rise to a conflict of interest.

ORCID ID

¹ Cecep Wahyudin <https://orcid.org/0009-0009-8668-3503>

References

- Aamir, A. A. (2025). Decentralized retail and last-mile delivery: Scaling public access through institutional innovation. *Review of Education, Administration & Law*, 8(2), pp. 387-400.
- Acquah, A. (2025). E-taxing maturity in developing economies: evidence from corporate tax payers in Ghana. *Digital Policy, Regulation and Governance*, 27(4), pp. 466-485.
- Dhaliwal, S. B., Sohail, D., Keeley Hafer, S. A., & Hafer, B. (2023). Digitalization of tax administration: A review of the organization for economic co-operation and development (OECD) guidelines. *Accounting & Taxation*, 15(1).
- Djatmiko, G. H., Sinaga, O., & Pawirosumarto, S. (2025). Digital transformation and social inclusion in public services: A qualitative analysis of e-government adoption for marginalized communities in sustainable governance. *Sustainability*, 17(7), p. 2908.
- Hakim, A., & Hayat, A. (2024). Transforming Public Policy in Developing Countries: A Comprehensive Review of Digital Implementation. *Journal of ICT Standardization*, 12(3), pp. 337-364.
- Idrus, M. (2024). Efficiency of Tax Administration and Its Influence on Taxpayer Compliance. *Economics and Digital Business Review*, 5(2), pp. 889-913.
- Jimenez, J., Del Rio, A., Berman, A. N., & Grande, M. (2023, July). Personalizing digital health: adapting health technology systems to meet the needs of different older populations. In *Healthcare* (Vol. 11, No. 15, p. 2140). MDPI.
- Kasyoka, E. M., Yusuf, M., & Senelwa, A. (2022). Digital literacy and successful implementation of electronic tax administration system in Nairobi County. *International Academic Journal of Information Systems and Technology*, 2(1), pp. 311-320.
- Latupeirissa, J. J. P., Dewi, N. L. Y., Prayana, I. K. R., Srikandi, M. B., Ramadiansyah, S. A., & Pramana, I. B. G. A. Y. (2024). Transforming public service delivery: A comprehensive review of digitization initiatives. *Sustainability*, 16(7), p. 2818.

- León-Mantero, C., Casas-Rosal, J. C., Pedrosa-Jesús, C., & Maz-Machado, A. (2020). Measuring attitude towards mathematics using Likert scale surveys: The weighted average. *Plos one*, 15(10), e0239626.
- Lindquist, E. (2020). Organizing for policy implementation: The emergence and role of implementation units in policy design and oversight. In *Institutions and Governance in Comparative Policy Analysis Studies* (pp. 116-129). Routledge.
- Milakovich, M. E. (2021). Digital governance: Applying advanced technologies to improve public service. Routledge.
- Munjin, R. A., Zidane, M. R. D., & Seran, M. Y. G. G. (2024). Strategi Peningkatan Pendapatan Pajak Bumi Bangunan Perdesaan dan Perkotaan (PBB-P2). *Karimah Tauhid*, 3(2), pp. 1503-1512.
- Muchsinin., Yulianti, R., & Sjafari, A., (2025). Implementasi Akses Keterbukaan Informasi Publik Era Digital Pada Perumdam Tirta Berkah Pandeglang. (2025). *Kolaborasi: Jurnal Administrasi Publik*, 11(1), pp. 52-63. <https://doi.org/10.26618/kjap.v11i1.17440>
- Nassar, H. M., Tekian, A., Linjawi, A. I., & Park, Y. S. (2023). Comparative evaluation of weighted mean and composite score for combining assessments. *Journal of Dental Education*, 87(7), pp. 963-973.
- Pavlou, V., & Castro-Varela, A. (2024). E-learning canvases: Navigating the confluence of online arts education and sustainable pedagogies in teacher education. *Sustainability*, 16(5), p. 1741.
- Pratidina, G., Wahyudin, C., Rahmawati, R., Zakiah, R. U., Handayani, Y., & Putri, R. N. A. (2023, December). Implementation of the Accelerated Stunting Handling Program. In *Iapa Proceedings Conference* (pp. 20-28).
- Putra, A., & Mahiswara, A. (2024). Exploring the Impact of Land and Building Tax (PBB) on Original Regional Income (PAD): A Study in Regional Economics and Fiscal Governance. *Indonesia Accounting Research Journal*, 11(3), pp. 138-149.
- Putra, I. M. A. W. W., Suharnoko, D., Salsabila, F., & Putri, D. D. U. (2024). Implementation of Fiscal Decentralization in the Digital Era: Effectiveness and Challenges in Indonesia. *Kolaborasi: Jurnal Administrasi Publik*, 10(3), pp. 171-195. <https://doi.org/10.26618/kjap.v10i3.16114>
- Repetto, M. (2023). Adaptive monitoring, detection, and response for agile digital service chains. *Computers & Security*, 132, 103343.
- Ridwanullah, M., Utami, A. A., Wahyudin, C., Nurpadillah, S., Pratama, F., Rukmana, H., & Muhammad, F. (2019). Implementation of e-Governance to Improve the Civil Administration Service Quality in Public Sector. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 48(3), pp. 168-178.
- Rojak, J. A. (2024). Government policy in improving human resource competencies based on digital technology. *Bulletin of Science, Technology and Society*, 3(2), pp. 1-8.
- Shenkoya, T. O. (2025). Digital transformation: an investigative study of the performance of digitalization in governance. *International Journal of Organizational Analysis*, 33(8), pp. 2122-2136.
- Sidel, J. L., Bleibaum, R. N., & Tao, K. C. (2018). Quantitative descriptive analysis. Descriptive analysis in sensory evaluation, pp. 287-318.
- Sira, M., & Kuzior, A. (2025). Digitalization of Government Management Processes in the Context of Sustainable Development. *Management Systems in Production Engineering*.
- Wafudu, S. J., Kamin, Y. B., & Marcel, D. (2022). Validity and reliability of a questionnaire developed to explore quality assurance components for teaching and

- learning in vocational and technical education. *Humanities and Social Sciences Communications*, 9(1), pp. 1-10.
- Welchman, L. (2015). Managing chaos: Digital governance by design. Rosenfeld Media.
- Welsch, J., Songling, C., Buckley, H. L., Lehto, N. J., Jones, E. E., & Case, B. S. (2019). How many samples? Soil variability affects confidence in the use of common agroecosystem soil indicators. *Ecological Indicators*, 102, pp. 401-409.
- Zhou, C., Qian, Y., & Kaner, J. (2024). A study on smart home use intention of elderly consumers based on technology acceptance models. *Plos one*, 19(3), e0300574.
- Peraturan Walikota Tahun 2020. (2020). Perubahan Atas Peraturan Walikota Bogor Nomor 81 Tahun 2014 Tentang Tata Cara Penerbitan Dan Penyampaian Surat Pemberitahuan Pajak Terhutang Dan Surat Ketetapan Pajak Daerah Pajak Bumi Dan Bangunan Perdesaan dan Perkotaan. Walikota Bogor 2020.