



PBB Digitalization: Analysis of the Effectiveness of E-PBB in PBB-P2 Data Collection in Langkat Regency

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Abstract

This study aims to analyze the effectiveness of the implementation of E-PBB in PBB-P2 data collection in Lalat Regency. The E-PBB system is expected to increase efficiency, accuracy, and transparency in the management of taxpayer data, as well as accelerate the process of data collection and tax payment. This study uses a qualitative approach with interview, observation, and documentation methods to explore information related to the implementation of E-PBB, supporting factors, and obstacles in the tax digitization process in Langkat Regency. The results of the study show that E-PBB has a positive impact in accelerating and simplifying the taxpayer data collection process. However, several obstacles, such as the low digital literacy of the community and the limitations of technological infrastructure, are still challenges in optimizing this system. Support from local governments and the use of digital payment platforms are the main supporting factors, while limited internet networks and lack of socialization are significant inhibiting factors. The study suggests increasing education and socialization to the public, improving technological infrastructure, and providing incentives to taxpayers who use digital systems to increase their participation in tax reporting and payment. Thus, it is hoped that the implementation of E-PBB can be more effective in supporting better data collection and regional tax revenue in the future.

Introduction

In the era of digitalization, various government sectors have begun to adapt to technological developments to improve the efficiency and effectiveness of public services (Alim & Ibrahim, 2024). One of the areas that has undergone significant transformation is the regional tax system, including in the management of Rural and Urban Land and Building Tax (PBB-P2). Lalat Regency, as one of the regions that continues to grow, has implemented the E-PBB system as a modernization step in regional tax data collection.

Land and Building Tax (PBB) is one of the sources of regional revenue that plays an important role in infrastructure development and community services (Wicaksono & Pamungkas, 2017; Putra & Mahiswara, 2024; Mandiri et al., 2024). Therefore, accuracy and effectiveness in tax data collection are needed so that local governments can optimize tax revenues and minimize the potential for revenue loss due to administrative errors or delays in recording.

The implementation of the E-PBB system aims to increase transparency and efficiency in the management of PBB-P2 (Ariska et al., 2024). With digitalization, the process of data collection, assessment, and tax payment can be carried out faster and more accurately than conventional methods that still use manual systems (Anggereni, 2024). The existence of this system is expected to overcome various problems in regional tax management, such as delays in recording, unsynchronized data, and lack of access to information for taxpayers.

In Lalat Regency, the implementation of E-PBB is still a relatively new phenomenon and continues to develop. Local governments have made various efforts to integrate this system in regional tax management to create a more transparent and accountable system (Bakhtiar, 2021; Shin & Jhee, 2021; Mislawaty et al., 2022). However, the effectiveness of the implementation of this system is still subject to evaluation, especially in terms of receipts and adaptation by the community and tax officers in the field.

One of the important factors in the success of tax digitization is the readiness of the infrastructure and human resources that support the system (ashar Mawardi et al., 2024; Saruji et al., 2023). Langkat Regency faces challenges in terms of access to technology, people's digital literacy, and the readiness of software and hardware used in the E-PBB system. Therefore, further studies are needed on how effective this system is in improving PBB-P2 data collection as a whole.

In addition, the level of taxpayer compliance is also a key factor in the success of the E-PBB system. With digitalization, it is hoped that it will be easier for people to access tax information and make payments without having to go through long and complicated procedures (Ariska et al., 2024). However, wider education is still needed so that the public understands the benefits and how to use the E-PBB system optimally

On the other hand, local governments need to ensure that the system implemented not only improves internal efficiency, but also provides convenience for taxpayers. Policies and regulations that support the implementation of E-PBB must be continuously updated to suit the needs and technological developments that continue to change.

This study aims to analyze the effectiveness of the implementation of E-PBB in PBB-P2 data collection in Langkat Regency. This research will explore various aspects related to tax digitization, ranging from the benefits obtained, the challenges faced, to solutions that can be applied to improve the effectiveness of the system.

This research will also explore the extent to which the use of E-PBB has had a positive impact on regional tax management. Has this digitization been able to reduce errors in data collection, increase the speed of administrative processes, and increase transparency and accountability in tax management? These questions are the main focus of the study.

Furthermore, this study will also discuss how the E-PBB system can help in improving taxpayer compliance. With more open access to information, it is hoped that public awareness of tax obligations will increase. However, the social and economic challenges faced by the community must also be considered in assessing the success of the implementation of this system.

The methods used in this study include qualitative and quantitative approaches, by conducting interviews, observations, and secondary data analysis related to the implementation of E-PBB in Lalat Regency. The results of this study are expected to provide recommendations that can be used by local governments to increase the effectiveness of the digital-based tax system.

In the long term, tax digitization is not only a solution to increase the effectiveness of tax administration, but can also contribute to an increase in Regional Original Revenue (PAD) (Sholichah & Pramudiana, 2024). With a better system, the government can allocate resources more efficiently for the benefit of regional development and community welfare.

As a form of innovation in public services, E-PBB also reflects the commitment of local governments to bring better governance. Therefore, the success of this system depends not only on infrastructure and technology, but also on synergy between the government, the community, and other stakeholders in creating a more modern and effective tax ecosystem.

As such, this study will provide a comprehensive overview of the extent to which E-PBB has been implemented and how the system can continue to be improved to provide maximum benefits for all parties involved. Tax digitalization is a step forward that not only improves efficiency, but also strengthens the foundation of the regional economy through better tax management.

Methods

This research is qualitative descriptive, namely describing and analyzing the implementation of E-PBB in PBB-P2 data collection based on empirical data obtained through observation, interviews, and documentation (Sutopo, 2002). This approach aims to comprehensively understand how the E-PBB system is implemented as well as the constraints and benefits felt by various stakeholders.

This research was conducted in Lalat Regency, North Sumatra, as the main location for the implementation of E-PBB. The research time will be adjusted to the availability of data and the readiness of the interviewed informants, with a sufficient time span to obtain valid and in-depth information.

This study uses two types of data sources, namely: 1) Primary Data: Obtained directly from informants through in-depth interviews, observations, and discussions with related parties; 2) Secondary Data: In the form of policy documents, E-PBB implementation reports, and other relevant supporting data.

Data Collection Techniques

To obtain valid and comprehensive data, this study uses several data collection techniques, namely: Carried out against regional tax officials, field officers, and (Jogiyanto Hartono, 2018) people as taxpayers. It aims to find out the extent of understanding, acceptance, and challenges faced in the use of the E-PBB system. Key informants in this interview include: Officials at the Regional Revenue Agency (Bapenda) of Langkat Regency. Tax officer handling PBB-P2: Taxpayers (individuals and business entities) who use the E-PBB system.

It was carried out to see firsthand how the E-PBB system is implemented in the process of collecting data and paying taxes. Observing how tax officers and the public interact with the digital system. Identify technical or administrative obstacles that may arise in the implementation of this system.

Collect secondary data from official reports, government policies, and publications related to E-PBB and regional tax digitization. The data collected includes tax revenue statistics before and after the implementation of E-PBB, local regulations related to taxes, and official evaluations that have been carried out by local governments.

Data Analysis Techniques

The data analysis in this study uses the Miles and Huberman model, which includes three main stages (Miles & Huberman, 1992): The data collected through interviews, observations, and documentation are reduced by sorting out information relevant to the focus of the research. Data that are not related or considered less significant will be eliminated to maintain the clarity of the analysis results. The reduced data is presented in the form of narratives, tables, and diagrams to facilitate understanding. The presentation of data helps in identifying patterns, relationships, and key findings related to the implementation of E-PBB. Initial conclusions are drawn based on the results of the analysis, then verified by comparing findings from various data sources. The conclusions obtained will be tested for validity by data triangulation techniques.

Data Validity

To ensure the validity of the data in this study, several data validation techniques were used, namely: Comparing the results of interviews from various informants with observation data and documentation to ensure consistency of findings. Using various data collection methods (interviews, observations, documentation) to get a more accurate picture. Confirm the results of the interview to the informant to ensure that the interpretation of the data is in accordance with what the source intended. Systematically keep research records, including interview transcripts, observation records, and analyzed documents, so that research results can be traced back.

Results and Discussion

Implementation of E-PBB in the Effectiveness of PBB-P2 Taxpayer Data Collection in Langkat Regency

The results of the study show that the implementation of E-PBB in Langkat Regency has brought positive changes in the PBB-P2 data collection system. This system allows for faster, more accurate, and more transparent taxpayer data collection compared to the manual methods previously used. Some of the key aspects in the implementation of this system include:

Digitization of Taxpayer Data

The local government has re-collected data and input taxpayer data into the E-PBB system. This aims to minimize data errors and ensure that the stored information is more accurate and easily accessible.

Integration with Online Payment Systems

With E-PBB, taxpayers can make payments online through various payment channels, including banks, mobile applications, and official payment counters. This makes it easier for taxpayers to fulfill their obligations without having to come directly to the tax office.

Improving Efficiency in Tax Services

The tax officer interviewed revealed that the use of E-PBB has accelerated the service process, both in data recording, issuance of Tax Payable Returns (SPPT), and in other administrative processes.

Although this system has provided many benefits, the utilization rate is still not optimal, especially in areas with limited internet access. The following is data on the effectiveness level of the E-PBB system compared to the manual system based on the results of observations and interviews:

Table 1. Comparison of the Effectiveness of PBB-P2 Data Collection Before and After the Implementation of E-PBB

Aspects	Before E-PBB (Manual)	After the implementation of E-PBB
Data Collection Speed	Slow, taking weeks	Fast, real-time access
Data Accuracy	Prone to recording errors	More accurate with digital data
Ease of Access	Must come to the tax office	Can be accessed online from anywhere
Transparency	Lack of transparency, data is difficult for taxpayers to check	More transparent, taxpayers can check bills directly

Cost Efficiency	High operational costs (paper, labor)	More economical, minimal printing and administration costs
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From the table above, it can be seen that the implementation of E-PBB has significantly increased the effectiveness in PBB-P2 data collection. However, there are still obstacles that need to be overcome so that this system can run more optimally. According to public administration theory, digitalization in the tax system is part of administrative reform that aims to improve bureaucratic efficiency, transparency, and government accountability (Schneider, 1995). Tax digitization, including in the implementation of E-PBB, is expected to reduce inefficiencies in data collection and tax services.

The results of this study show that in Lalat Regency, E-PBB has accelerated the taxpayer registration process, reduced errors in data input, and increased public accessibility in obtaining tax information and making payments. This finding is in line with research conducted by (Gultom et al., 2024) which found that tax digitization in several regions in Indonesia has succeeded in increasing the efficiency of tax administration by up to 30% compared to the manual system.

Furthermore, based on interviews with local tax officials, the E-PBB system allows taxpayer data collection to be carried out in real-time and minimizes the risk of data loss due to human error. Previously, the manual system often experienced delays in data processing, especially in the process of updating tax object data that changed from time to time. However, the results of the study also show that not all people in Langkat Regency can easily access or use this system, especially in areas that have limited internet infrastructure and low digital literacy. This condition strengthens the findings of the study (Zein & Septiani, 2024) who stated that the main challenge of regional tax digitization is the inequality of technological infrastructure and the readiness of the community to adapt to the new system.

From the perspective of public administration, the effectiveness of the E-PBB system in tax data collection can also be attributed to the Technology Acceptance Model (TAM) theory by (Davis, 1989) which explains that the acceptance of technology by users is influenced by perceived usefulness and perceived ease of use. In this context, taxpayers who feel that E-PBB makes it easier for them to pay taxes tend to adopt this system more quickly, while those who experience difficulties or feel less benefited will be slower to adapt. Therefore, a more intensive strategy is needed to increase socialization and training for taxpayers so that they better understand the benefits and how to use the E-PBB system, so that its effectiveness in tax data collection can be more optimal.

Supporting or Inhibiting Factors for the Implementation of E-PBB in the Effectiveness of PBB-P2 Taxpayer Data Collection in Langkat Regency

Based on the results of interviews and observations, several factors were found that supported or hindered the implementation of E-PBB in Lalat Regency. These factors affect the success of the digitization of PBB-P2 data collection.

Supporting Factors

There are several main factors that support the successful implementation of E-PBB in Langkat Regency, including:

Commitment of Local Governments

The Langkat Regency Government shows a strong commitment to supporting tax digitization by providing budgets and regulations that support the implementation of E-PBB.

The Existence of Technological Infrastructure

The E-PBB system has been integrated with a digital database, allowing taxpayer data to be stored securely and easily accessible.

Ease of Access for Taxpayers

Taxpayers now have an easier time accessing information and making payments without having to come directly to the tax office, increasing the level of compliance. Cooperation with banks and digital payment platforms makes it easier for taxpayers to make tax payment transactions online.

Inhibiting Factors

However, in its implementation, the E-PBB system also faces several obstacles that hinder its effectiveness, including: Some taxpayers, especially in rural areas, still have difficulty in using digital systems and are more accustomed to manual methods. Not all areas in Langkat Regency have adequate internet access, so some areas are still experiencing difficulties in using the E-PBB system optimally. There are still taxpayers who are reluctant to switch to the digital system due to a lack of socialization about the benefits and how to use it.

Technical Problems in the System

In some cases, taxpayers experience technical obstacles such as server disruptions, data input errors, or delays in information synchronization between central and regional systems. To clarify the factors that affect the implementation of E-PBB, the following is a comparison table of supporting and inhibiting factors found in this study:

Table 2. Supporting and Hindering Factors for the Implementation of E-PBB

Category	Supporting Factors	Inhibiting Factors
Government	Commitment to tax digitalization	Regulations still need to be refined
Technology	System infrastructure is already in place	Technical glitches and internet connectivity
Community	Ease of access and online services	Low digital literacy among taxpayers
Financial Institutions	Bank support in the payment process	Not all payment methods can be integrated.

The success of the implementation of the E-PBB does not only depend on the readiness of the technology system, but also on external factors such as regulatory support, the readiness of human resources, and public acceptance. The results of this study identify several factors that play a role in supporting or hindering the effectiveness of the E-PBB system.

Supporting Factors

The Langkat Regency Government has shown a strong commitment to supporting tax digitalization, by implementing policies that allow E-PBB to be integrated with the regional financial system. Research conducted by (Kumorotomo, 2009) shows that the success of e-government in regional taxes is highly dependent on clear regulations and support from regional officials. The integration with digital payment services (banks, mobile applications) has increased convenience for taxpayers.

According to (Raspati et al., 2024), the integration of the tax system with digital platforms increases taxpayer compliance by up to 25% due to ease of accessibility. Compared to the manual system, E-PBB has reduced the time needed in processing tax data and issuing SPPT.

Research by (Ramadhani et al., 2024) It also emphasized that tax digitization helps reduce operational costs and increase the speed of public services.

Inhibiting Factors

There are still many taxpayers who are not familiar with the digital system and are more comfortable with the manual method. Study by Manzil & Maulana (2025) found that low digital literacy is the main obstacle in the implementation of tax digitization in rural areas. Not all areas in Langkat Regency have stable internet access, so some areas have difficulty accessing the E-PBB system. Research by Zega et al. (2024) also mentioned that the gap in access to technology is still an obstacle in the implementation of tax digitalization in Indonesia.

In some cases, taxpayers experience data input errors, server disruptions, and delays in information synchronization between the central and regional systems. The system's unpreparedness to handle large volumes of data in real-time. The results of the interviews show that there is still a lack of socialization programs from local governments to the community regarding the benefits and ways to use E-PBB. Research by Fadri & Fil (2024) concluded that the success of digital transformation in tax administration is highly dependent on effective education for the public.

Conclusion

Based on the results of the research and discussions that have been carried out, it can be concluded that the implementation of E-PBB in Langkat Regency has had a positive impact on the effectiveness of PBB-P2 tax data collection. The digitization of the tax system increases efficiency, accuracy, and transparency in the recording and management of taxpayer data. With the E-PBB system, the data collection process that was previously carried out manually becomes faster and has fewer errors, as well as providing convenience for taxpayers in accessing information and making tax payments online. However, in its implementation, there are still various challenges that need to be overcome. The main factors that support the success of this system include full support from local governments, the availability of technological infrastructure, and integration with digital payment services. Clear policies and the government's commitment to developing this system are key factors in encouraging effective tax digitalization. In addition, the ease of access provided by the E-PBB system also contributes to increasing taxpayers' compliance with regional tax payments. On the other hand, the factors that hinder the implementation of the E-PBB are still a big challenge. The lack of digital literacy among taxpayers, especially in rural areas, is the main obstacle that causes the low utilization of this system. In addition, limited internet access and technical obstacles in the system are also obstacles in optimizing E-PBB. Some taxpayers still experience difficulties in accessing and using this digital service due to a lack of socialization and education from local governments. The findings in this study are in line with the Technology Acceptance Model (TAM) theory by Davis (1989) which states that technology adoption is influenced by the benefits and ease of use felt by users. In this context, increasing digital literacy and improving technology systems are strategic steps to increase the effectiveness of E-PBB implementation. To overcome the existing challenges, several recommendations are needed, including increasing socialization and education to the public about the benefits and ways to use E-PBB, improving technological infrastructure and internet access, improving the stability and security of the E-PBB system, and providing incentives for taxpayers who actively use digital services. With improvements in technology, socialization, and supportive regulations, it is hoped that the implementation of E-PBB in Langkat Regency can run more optimally and be able to significantly increase the effectiveness of PBB-P2 tax data collection. Tax digitization is not only a solution in improving

the efficiency of tax administration, but also a strategic step in realizing a more transparent, accountable, and modern government system.

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