

Analysis of the Use of Electronic and Web-Based Tax Applications in Optimizing Regional Tax and Levy Revenues in Manado City

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ARTICLE INFO

Keywords: Digitalization, Tax Applications, Regional Levies

Received : 13, September

Revised : 15, October

Accepted: 17, November

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ABSTRACT

This study aims to analyze the use of tax applications in optimizing regional tax and levy revenues in BAPENDA Manado City. The method used is qualitative descriptive with data obtained through interviews, observations, and documentation of tax and levy realization in 2021–2024. The results of the study show that BAPENDA uses two main applications, namely SmartGov and Ataksi-PD, which make it easier to manage taxes and levies. The implementation of this application has a positive impact on increasing regional revenue. However, there are still obstacles such as unstable internet connections, the threat of data hacking, and limited human resources. This research is expected to contribute to increasing the effectiveness of the regional tax system.

INTRODUCTION

The Indonesian government needs a significant source of funds to finance various needs and support the national development process. One of the main components of state revenue comes from taxes. Mardiasmo (2023) explained that taxes act as a source of financing for the state, which is used to cover various expenses for the benefit and welfare of the general public.

The large number of taxpayers in Indonesia encourages the central government to apply the principle of deconcentration, which is the delegation of tax service responsibilities to local governments in various regions. In Manado City, this task is carried out by the Manado City Regional Revenue Agency (BAPENDA) which acts as a public service institution in managing regional taxes and levies in the region. In carrying out its duties, the Manado City Regional Revenue Agency (BAPENDA) makes maximum efforts to increase regional tax and levy revenue. However, its implementation still faces a number of obstacles, including the tax collection process that is still carried out manually and takes a long time, limitations in the supervision and control of collection, uneven service coverage for taxpayers, and the risk of errors in tax recording and calculation due to the limitations of the manual system used.

Along with tax reform in Indonesia marked by regulatory changes during the pandemic, administrative digitalization, and updates through the Job Creation Law, HPP Law, and HKPD Law, the Manado City Regional Revenue Agency (BAPENDA) is required to adapt. One of the steps taken is the implementation of digitization of tax administration through the use of electronic and web-based applications to facilitate and overcome various obstacles in the process of collecting and managing taxes and regional levies.

Tax applications are software that supports various tax administration activities, both for taxpayers and government agencies. Since 2022, BAPENDA Manado City has implemented two electronic and web-based applications, namely SmartGov and Ataksi-PD, to optimize regional tax and levy revenue. Electronic applications can be installed and used online as well as offline, while web-based applications are accessed through a browser for reporting, payment, and monitoring of tax liabilities. The implementation of these two applications is expected to increase efficiency, transparency, and data accuracy, while reducing the potential for human error and fraud. This study aims to analyze the use, benefits, and constraints in the implementation of tax applications in BAPENDA Manado City.

LITERATURE REVIEW

Accounting

According to Sochib (2018), accounting is the process of recording financial transactions that produce financial statements as the basis for economic decision-making for interested parties. Meanwhile, Suhendar (2020) explained that accounting includes the activities of recording, classifying, and summarizing financial transactions that occur in an organization, then presented and analyzed to provide useful information. These financial statements are used by various parties such as creditors, owners or investors, potential investors, government agencies, employees, and other internal parties of the company.

Tax Accounting

Tax accounting is a branch of accounting that focuses on the activities of recording, calculating, reporting, and analyzing tax obligations for individuals and companies in accordance with applicable tax regulations. According to Arifai (2024:11), tax accounting is a special field in accounting that emerged as a response to tax regulations that require understanding and expertise.

Tax

According to Mardiasmo (2023:29), taxes are the obligation of citizens, both individuals and entities, to contribute to the state in accordance with laws and regulations without receiving direct rewards, with the aim of supporting state financing for the welfare of the people. Tax collection serves as the main source of state revenue to finance various national needs and development. In general, taxes are divided into two types, namely direct taxes, which are paid directly by the taxpayer based on income or wealth, and indirect taxes, which are imposed on the transaction of goods or services and the payment of which can be transferred to the consumer.

Tax Collection System

According to Mardiasmo (2023:12), there are three tax collection systems, namely: (1) Official Assessment System, where the government is authorized to determine the amount of tax owed; (2) Self Assessment System, which authorizes taxpayers to calculate and report their own taxes; and (3) Withholding System, which is a system in which a third party is appointed to deduct or collect taxes owed by taxpayers.

Taxpayer

Taxpayers are individuals or entities that have the obligation to pay taxes to the state in accordance with applicable regulations. This term includes any party that is required to meet tax obligations, such as income tax, VAT, or land and building taxes. According to Mardiasmo (2023:17), taxpayers are individuals or entities, including taxpayers, deductors, and collectors, who have tax rights and obligations as stipulated in the legislation.

Regional Taxes

Regional taxes are mandatory contributions from individuals or entities collected by local governments on certain tax objects, such as income, property, or transactions in their area. This tax is the main source of regional revenue to support development and public services. According to Mardiasmo (2023:16), regional taxes are compulsory contributions that are coercive based on the law, without direct compensation, and are used for the benefit and prosperity of the local community.

Provisions regarding regional taxes are regulated in Law Number 28 of 2009 concerning Regional Taxes and Regional Levies. This law is the legal basis for local governments in determining and managing taxes that apply in their areas while still referring to national regulations. Regional tax collection is based on the principle of regional autonomy, which provides flexibility for each region to adjust its tax policies according to the characteristics, needs, and economic potential of each region.

Types and objects of Regional Taxes

According to Law Number 1 of 2022 concerning Financial Relations between the Central Government and Regional Governments (HKPD Law), regional taxes are divided into two main groups:

1. Provincial Taxes, which are taxes collected by the provincial government and applicable throughout the province, include: Motor Vehicle Tax, Motor Vehicle Name Return Duty, Motor Vehicle Fuel Tax, Surface Water Tax, and Cigarette Tax.
2. Regency/City Taxes, which are taxes under the authority of the district or city government, consist of: Rural and Urban Land and Building Taxes, Land and Building Rights Acquisition Duties, Taxes on Certain Goods and Services, Billboard Taxes, Groundwater Taxes, Non-Metallic Minerals and Rocks Taxes, Swallow's Nest Tax, and Motor Vehicle Name Return Duty Options.

Regional Levy and Object of Regional Levy

Regional levy is a levy charged to individuals or entities for services or services provided by the local government, at a rate that has been regulated in laws and regulations. According to Arifai (2024:4), a levy is a payment to the local government in exchange for services or facilities provided to the community at the provincial, district, or city level. Regional levies are divided into two main types, namely service levies, which are levied on services or services provided by the local government to the community or business entities, and certain licensing levies, which are imposed on the granting of permits by local governments. In addition, there are other levies that are adjusted to regional policies and needs, such as location permit levies or natural resource management. According to Mardiasmo (2023:21), the object of regional levies includes public services, business services, and certain permits.

Tax Digitalization

Tax digitalization is a change in the tax administration system from manual to digital-based by utilizing information technology for tax management, reporting, payment, and supervision in a more efficient and transparent manner. According to Darussalam (2022), digital developments open up opportunities for the creation of a more modern tax system. One of the manifestations is the implementation of tax applications as a tool to improve regional tax and levy management. Electronic-based tax applications are systems or software used for reporting, calculating, and paying taxes digitally through devices such as computers with software installation. This application can operate offline or online without having to be constantly connected to the internet. Meanwhile, web-based taxation applications are run through a browser and make full use of the internet connection. This system allows taxpayers to access, fill, and submit reports or make tax payments without the need to install software, simply by logging in using their respective accounts.

METHODOLOGY

Types of Research

This study uses a qualitative method with a descriptive approach to describe in depth the phenomena that occur in the field. Based on the opinion of Sugiyono (2022:9), qualitative research is based on the philosophy of postpositivism and interpretation, where the researcher plays the role of the main instrument with data collection techniques through observation, interviews, and documentation. This approach is used to examine the application of electronic and web-based taxation applications in an effort to optimize tax revenues and regional levies in the Manado City BAPENDA, along with the obstacles that arise in its implementation.

Place and Time of Research

The place of this research is the Manado City Regional Revenue Agency Office which is located on Jl. Pierre Tendean, Public Service Mall Building 3rd Floor, Sario Tumpaan District, Sario District, Manado City, North Sulawesi. This research was conducted in May 2025 until the completion of this research.

Data Type

The data in the study serves as the basis for answering the research questions. This study uses two types of data, namely qualitative data and quantitative data. Qualitative data in the form of descriptive information obtained through interviews, observations, and documentation related to the use of electronic and web-based tax applications at BAPENDA Manado City. Meanwhile, quantitative data is in the form of numbers that show regional tax and levy revenues in a certain period at the Manado City BAPENDA.

Data Source

The source of research data is the origin of data that is used to answer the formulation of the problem. In this study, two types of data sources were used, namely primary data and secondary data. Primary data was obtained directly through interviews with parties related to the use of electronic and web-based tax applications at BAPENDA Manado City. Meanwhile, secondary data comes from documents or data that have been previously available and are relevant to this study.

Data Collection Methods

Data collection techniques are a way used by researchers to obtain relevant and accurate information to answer research problems. In this study, three techniques were used, namely:

1. Observation was carried out directly at the Regional Revenue Agency (BAPENDA) of Manado City to find out the types and uses of electronic and web-based tax applications.
2. Interviews were conducted with relevant officials at BAPENDA, such as the Head of Tax and the Head of the Supervision Sub-Division, to obtain in-depth information about tax revenue, regional levies, and the implementation of tax applications.
3. Documentation is carried out by tracing data and documents related to tax revenue and levies after the implementation of the tax application system at BAPENDA Manado City.

Data Analysis Methods

This study uses a qualitative descriptive analysis method, which is a technique that aims to describe and analyze phenomena without drawing general conclusions. This method is used to provide a clear and systematic overview of the use of electronic and web-based tax applications, as well as analyze regional tax and levy revenue data at the Manado City Regional Revenue Agency after the implementation of the system.

Data Analysis Process

Data analysis is an important stage in research that aims to process the data that has been obtained to produce meaningful information and in accordance with the research objectives. This analysis process is adjusted to the type of data used, both qualitative and quantitative, as well as the research approach applied.

1. Conducting direct observation on the object of research, namely the Manado City Regional Revenue Agency office to see what types of tax applications are used.
2. Conducted an interview on how to use electronic and web-based taxation applications in optimizing regional tax and levy revenues of the Manado City Regional Revenue Agency, as well as the challenges and obstacles faced.
3. Collecting documentation data regarding tax revenues and regional levies of the Manado City Regional Revenue Agency after the implementation of the use of tax applications.

4. Evaluate and analyze the results of interviews regarding the use of electronic and web-based tax applications, as well as documentation data related to regional tax and levy revenues of the Manado City Regional Revenue Agency after the implementation of the use of tax applications.
5. Determining the results of research related to the use of electronic and web-based tax applications in optimizing regional tax and levy revenues of the Manado City Regional Revenue Agency.
6. Draw conclusions and give suggestions.

RESEARCH RESULTS

The data of this research was obtained through interviews with two informants. The interviews were conducted directly using question guidelines related to the use of electronic and web-based tax applications in optimizing regional tax and levy revenues at the Manado City Regional Revenue Agency.

Use of Tax Applications at BAPENDA Manado City

1. Types of Tax Applications in BAPENDA Manado City

From the results of the interview, information was obtained that the Manado City Regional Revenue Agency (Bapenda) uses two main applications in its tax management, namely SmartGov and Atraksi-PD. This was also confirmed by another informant who stated that the two applications are the main support system in the implementation of tax administration in the Manado City Bapenda.

2. Benefits of Tax Applications at BAPENDA Manado City

Based on the results of the interview, it is known that the implementation of the tax application at the Regional Revenue Agency (Bapenda) of Manado City provides various benefits. First, this application simplifies the process of collecting taxpayer data compared to manual systems which are more time-consuming and at risk of errors. Second, the application allows tax officers to obtain taxpayer information quickly and accurately, such as the type of tax paid and payment status. Third, this system helps in supervising taxpayers, especially in monitoring arrears or late payments. Overall, the use of tax applications increases efficiency, accuracy, and effectiveness in regional tax management.

Based on the results of interviews with other informants, it is known that every tax application in the Manado City Bapenda has benefits according to its function. The SmartGov application plays an important role for tax officers because it simplifies the process of data management, supervision, and monitoring of taxpayer activities, including monitoring arrears and tax payment dues. Meanwhile, the Atraksi-PD application is intended for taxpayers to facilitate access and submission of information related to regional tax and levy payments. Thus, the two applications complement each other in supporting service efficiency and transparency of the tax system in Manado City.

Optimization of Regional Tax and Levy Revenue

The implementation of an electronic and web-based tax system at the Manado City Regional Revenue Agency (Bapenda) is carried out with the aim of increasing the effectiveness and optimization of regional tax and levy revenues. Based on the results of the interviews, it is known that the use of tax applications has had a positive impact on increasing tax and levy revenues since 2022. Through the digital system, the management of taxpayer data becomes more accurate and integrated, making it easier for Bapenda to determine tax potential and set revenue targets appropriately. Thus, the process of supervision and planning of regional revenues can run more efficiently and directed.

Furthermore, the implementation of tax applications also contributes to increasing public trust in the tax collection system. After the digital system was implemented, regional tax and levy revenues showed a significant increase because the process became more transparent and there was less fraud. This system helps ensure that every transaction and tax payment is recorded automatically, thus encouraging officer honesty and improving taxpayer compliance. Overall, tax digitalization in the Manado City Bapenda has succeeded in creating a tax management system that is more effective, accountable, and oriented towards optimizing regional revenues.

Documentation of Regional Tax and Levy Revenues for 2021 - 2024

Regarding efforts to optimize regional tax and levy revenues after the implementation of the tax application system at the Manado City Regional Revenue Agency (Bapenda), the researcher also obtained documentation data on the realization of regional tax and levy revenues from 2021 to 2024.

Table 1. Realization of Regional Tax and Levy Revenue at BAPENDA Manado City in 2021 - 2024

No.	Tahun	Target (Rp)	Realisasi (Rp)	Persentase
1.	2021	350.676.261.000,00	243.735.916.030,00	69,50
2.	2022	407.000.000.000,00	323.470.625.077,00	79,48
3.	2023	442.410.000.000,00	374.211.900.658,36	84,58
4.	2024	450.000.000.000,00	408.355.446.047,69	90,75

Source: Medan City Regional Revenue Agency (2025)

Based on the data in Table 1 regarding the realization of regional tax and levy revenues at the Manado City Regional Revenue Agency from 2021 to 2024, it can be seen that there has been an increase in revenue performance after the implementation of the tax application. Before the use of the application, in 2021 the realization of revenue was recorded at 69.50%, then after the application was applied in 2022 it increased to 79.48%. This upward trend will continue in 2023 at 84.58%, and will rise again in 2024 to 90.75%. The increase shows that the implementation of tax applications plays an important role in optimizing regional tax and levy revenues in Manado City.

In addition, documentation data was also obtained regarding the realization of regional tax and levy revenues at the Manado City Regional Revenue Agency which consisted of two parts, namely the realization of regional tax revenues and the realization of regional levy revenues.

Table 2. Realization of Regional Tax Revenue at BAPENDA Manado City in 2021 – 2024

No.	Tahun	Target (Rp)	Realisasi (Rp)	Persentase
1.	2021	343.676.261.000,00	240.245.296.030,45	69,90
2.	2022	400.000.000.000,00	318.619.315.077,17	79,65
3.	2023	435.500.000.000,00	369.470.655.658,36	84,84
4.	2024	450.000.000.000,00	408.355.446.047,00	90,74

Source: Manado City Regional Revenue Agency (2025)

Based on table 2 which shows the realization of regional tax revenues of the Manado City Regional Revenue Agency from 2021 to 2024, it can be seen that tax revenues have increased every year. This increase can be seen from the achievement of a realization percentage of 69.90% in 2021, then rose to 79.65% in 2022, then increased again to 84.84% in 2023, and reached 90.74% in 2024.

After that, table 3 shows the data on the realization of regional levy receipts of the Manado City Regional Revenue Agency during the period 2021 to 2024.

Table 3. Realization of Regional Levy Revenue at BAPENDA Manado City in 2021 – 2024

No.	Tahun	Target (Rp)	Realisasi (Rp)	Persentase
3.	2021	7.000.000.000,00	3.490.620.000,00	49,87
4.	2022	7.000.000.000,00	4.851.310.000,00	69,30
5.	2023	6.910.000.000,00	4.741.245.000,00	68,61
6.	2024	5.000.000.000,00	4.575.083.200,00	91,50

Source: Manado City Regional Revenue Agency (2025)

Based on table 3 regarding the realization of regional levy receipts at the Manado City Regional Revenue Agency for the period 2021 to 2024, there is an increase in performance in levy receipts. The percentage realization showed an improvement from 49.87% in 2021, increased to 69.30% in 2022, experienced a slight decrease to 68.61% in 2023, and then jumped significantly to reach 91.50% in 2024, which indicates an increase in the effectiveness of regional levy management.

Challenges and Obstacles in Using Tax Applications

The implementation of an electronic and web-based tax system at the Regional Revenue Agency (Bapenda) of Manado City provides various conveniences and benefits, but also presents a number of challenges and obstacles. From the results of the interviews, it is known that the main challenges are related to data security, such as the potential for hacks or system break-ins, while technical obstacles arise due to network interruptions or unstable internet connections, which can interfere with the performance of tax applications.

To overcome this, the Manado City Bapenda implemented a special strategy. Tax data is maintained by the Communication and Information Service (KOMINFO) as the database security manager, and collaborates with the State Cyber and Cryptography Agency (BSSN) for data backup and protection. In addition, efforts continue to be made to strengthen and stabilize the internet network in the office so that the process of managing regional taxes and levies runs more smoothly and efficiently.

Based on interviews, another challenge in using tax applications is also related to human resources. Tax officers and taxpayers are required to follow the application mechanism, so adequate education and understanding are needed. Technical obstacles in the form of an unstable internet network can also interfere with the tax management and service process. To overcome challenges related to human resources, the Manado City Bapenda routinely holds training for tax officers and socialization for taxpayers regarding the use of applications. As for network problems, Bapenda is collaborating with the Manado City Government to expand the reach of areas that are not served by the internet and continue to strengthen the network in the office, so that services and tax management can be smoother.

In addition to these steps, it is also important to evaluate the extent of the development of the tax application system used. Development is still needed because the tax field is dynamic and continues to adapt to changes in applicable regulations. Therefore, tax applications need to be updated regularly, including the addition of new modules, frequencies, and features every year to remain relevant and appropriate to user needs. Along with the development of technology and time, improving the tax application system is important in order to adapt to user needs. The addition of new features to the application aims to support the optimization of regional tax and levy revenues at the Manado City Regional Revenue Agency.

DISCUSSION

Use of the Manado City BAPENDA Tax Application

The Manado City Regional Revenue Agency (BAPENDA) has implemented tax digitalization since 2022 by changing the tax management system from manual to digital-based. The purpose of this step is to improve the efficiency and effectiveness of the tax system, so that regional tax and levy revenues can be optimized. This is in line with the opinion of Darussalam (2022) who states that the integration of digital technology opens up opportunities for the creation of a more modern and better tax system.

The digitization of the tax system at the Manado City Regional Revenue Agency has been realized through the implementation of electronic and web-based tax applications since 2022. There are two tax applications used by BAPENDA, namely:

1. SmartGov

The SmartGov application is designed to assist tax officers in managing, monitoring, and delivering tax services more effectively. This application allows regional tax management to be carried out in a transparent, accountable, and real-time manner. SmartGov supports a wide range of functions, including tax reporting, PBB-P2 services, BPHTB, and other types of tax services. This application is available in several modules according to the needs of officers, such as SmartGov Tax, SmartGov Retribution, and SmartGov Mobile, and has been actively used at the Manado City Regional Revenue Agency since 2022.

SmartGov is equipped with features that can be adjusted to the needs of its users. One of them is data monitoring, which allows tax officers to supervise taxpayer data more optimally. In addition, there are tax and levy service features, which include services for hotel taxes, restaurants, parking, entertainment, street lighting, groundwater, swallow's nests, billboards, PBB-P2, BPHTB, MBLB, PBJT, and other types of levies. All of these features include all types of regional taxes in Manado City in accordance with Law Number 1 of 2022 concerning Financial Relations between the Central Government and Regional Governments (HKPD). With these features, tax officers can carry out services more efficiently and effectively, thereby helping to increase the optimization of regional tax and levy revenues in the Manado City Bapenda.

2. Attractions - PD

The Atraksi-PD application is an electronic taxation system that has been implemented by the Manado City Regional Revenue Agency since 2022. This application can be installed directly on the device or smartphone of officers and taxpayers. Ataksi-PD makes it easier for taxpayers to access various services, such as registration, mutation, correction, cancellation, and obtaining other tax information. In addition, this application supports SPTPD reporting and makes it easier for tax officers to check tax arrears. With these features, Atraksi-PD plays an important role in improving the efficiency of management and revenue of taxes and regional levies in Manado City.

Attraction-PD also has features that can be customized to the user's needs. Tax officers can use the tax object management feature to obtain information related to tax objects, as well as the UN and non-UN arrears check feature to monitor taxpayer arrears. These features allow the management of tax data to be faster, more effective, and more accurate than manual methods that are time-consuming and error-prone. Thus, this application simplifies the tasks of officers and services for taxpayers while supporting the optimization of regional tax and levy revenues at the Manado City Regional Revenue Agency.

The use of the tax application certainly provides benefits for the Manado City Regional Revenue Agency in managing regional taxes and levies in Manado City. The benefits of using a tax app can be explained as follows:

1. Simplify the data collection process by tax officers

Tax applications allow tax officers to record taxpayer data systematically, quickly, and accurately. This system stores important information such as taxpayer names, NPWP, addresses, business types, and tax obligations. With automated data collection, error-prone manual processes are reduced, data validation is easier, and data collection can be done both in the office and in the field efficiently.

2. Facilitate access to taxpayer information

Tax officers can easily obtain data related to taxpayers, including the type of tax paid and the status of their payments. The integrated system allows officers to:

- a. Look at the types of taxes, such as income tax, VAT, or regional taxes.
- b. Monitor whether payments have been paid, partially, or not at all.
- c. Know the date of the last payment and the amount of tax paid.
- d. Access the proof of payment uploaded by the taxpayer.

This speeds up services, reduces the need to request physical documents, increases transparency, and enables real-time compliance analysis.

3. Supporting supervision and monitoring of arrears.

The app makes it easy for tax officials to monitor arrears, including:

List of delinquent taxpayers:

- a. The amount of arrears and their duration.
- b. Automatic notifications or reminders for taxpayers.
- c. Billing action history.

The system allows for more structured supervision and billing priorities can be determined based on the value or length of arrears. Monitoring can also be done remotely without having to be present directly at the taxpayer's location. With these various benefits, the use of tax applications makes it easier to manage data, speed up services, and support the optimization of tax revenues and regional levies in Manado City. This is in line with Wenji's (2024) research, which shows that the quality of systems and information has a positive effect on user satisfaction.

Optimization of Regional Tax and Levy Revenue

The use of tax applications at BAPENDA Manado City plays a role in increasing the optimization of tax revenues and regional levies. This is possible because of the existence of a well-managed database through the application, so that the Manado City Regional Revenue Agency can more easily set regional tax and levy revenue targets in Manado City.

Table 4. Realization of Regional Tax Revenue at BAPENDA Manado City in 2021 – 2024

No.	Tahun	Target (Rp)	Realisasi (Rp)	Persentase
1.	2021	343.676.261.000,00	240.245.296.030,45	69,90
2.	2022	400.000.000.000,00	318.619.315.077,17	79,65
3.	2023	435.500.000.000,00	369.470.655.658,36	84,84
4.	2024	450.000.000.000,00	408.355.446.047,00	90,74

Source: Manado City Regional Revenue Agency (2025)

In Table 4, there is a significant increase in the percentage of realization of regional tax revenue at the Manado City Regional Revenue Agency before and after the implementation of the tax application. The percentage of tax realization increased from 69.90% in 2021 to 79.65% in 2022, or an increase of 9.75%. Furthermore, tax realization continues to increase to reach 84.84% in 2023 and 90.74% in 2024, showing stable growth of around 5% per year. Furthermore, Table 4.5 presents data related to the realization of regional levy receipts of the Manado City Regional Revenue Agency from 2021 to 2024.

Table 5. Realization of Regional Levy Revenue at BAPENDA Manado City in 2021 – 2024

No.	Tahun	Target (Rp)	Realisasi (Rp)	Persentase
3.	2021	7.000.000.000,00	3,490,620,000.00	49.87
4.	2022	7.000.000.000,00	4,851,310,000.00	69.30
5.	2023	6.910.000.000,00	4,741,245,000.00	68.61
6.	2024	5.000.000.000,00	4,575,083,200.00	91.50

Source: Medan City Regional Revenue Agency (2025)

Table 5 shows a significant increase in the realization of regional levy receipts before and after the implementation of the tax application. In 2021, the percentage of levy realization was recorded at 49.87% and increased to 69.30% in 2022, with an increase of 19.43%. The reduction in the levy target in 2022 occurred due to the implementation of the Job Creation Law, which abolished or simplified several types of levies, such as IMB, route levies, traffic control, and IMTA. However, in 2024 the realization of regional levy revenue will again increase significantly, reaching 91.50%.

Changes in the realization of regional tax and levy revenues at the Manado City Regional Revenue Agency are influenced by a number of supporting factors, but overall the implementation of tax applications has a significant positive impact. In the regional tax sector, the realization of revenue increased from 69.90% in 2021 to 79.65% in 2022, an increase of 9.75% after the implementation of the application, and this trend continues to continue steadily at around 5% per year until it reaches 90.74% in 2024. Meanwhile, in the regional levy sector, despite the reduction in the target due to the Job Creation Law which abolished several types of levies such as IMB, route levies, and IMTA, the realization of revenue still increased significantly from 49.87% in 2021 to 69.30% in 2022, or an increase of

19.43%, and continued to increase until it reached 91.50% in 2024. Overall, the data shows that the use of tax applications helps improve administrative efficiency, facilitates supervision, and encourages taxpayer compliance, thus having a direct impact on improving the performance of tax revenues and regional levies, in accordance with Yunita's (2024) research which states that tax service applications can increase tax revenue.

Challenges and Obstacles in Using Tax Applications

The implementation of tax applications at the Manado City Regional Revenue Agency brings various benefits while playing a role in optimizing regional tax and levy revenue. However, in its use, this application also faces various challenges and obstacles that must be handled. The following is a description of the challenges and obstacles encountered along with the strategies and solutions implemented by the Manado City Regional Revenue Agency:

1. Challenges and Strategies carried out by BAPENDA Manado City
 - a. Data security challenges, such as the risk of hacking and breaking into the tax system. To anticipate this, the Manado City Bapenda collaborates with the State Cyber and Cryptography Agency (BSSN) to backup and secure all tax data. In addition, the Communication and Information Service (KOMINFO) also serves as a database security manager so that data remains protected from potential breaches.
 - b. Human resource challenges, especially related to adaptation to the update and development of tax applications. This requires tax officers and taxpayers to always adjust to system changes. As an effort to overcome this obstacle, the Manado City Bapenda routinely holds socialization and training to improve the understanding and skills of users in operating tax applications appropriately and effectively

2. Obstacles and Solutions Carried Out by BAPENDA Manado City

The obstacles that arise in the use of tax applications at the Manado City Regional Revenue Agency are related to the internet connection that is not completely stable, thus interfering with the smooth process of service and tax management through the application. As an anticipatory step, the Manado City Government is trying to expand network coverage to areas that were previously not covered by the internet and continuously strengthen and stabilize the internet network at the Manado City Bapenda office.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the analysis in the discussion of this study, the following conclusions can be drawn:

1. The Manado City Regional Revenue Agency has implemented the use of 2 (two) types of tax applications, namely SmartGov and Atraksi-PD since 2022. With the implementation of the use of the tax application, it provides benefits and many conveniences for the Manado City BAPENDA in carrying out the task of managing regional taxes and levies in Manado City.

2. The implementation of tax applications in Manado City has been proven to have a positive and significant impact on increasing the realization of tax revenues and regional levies through administrative efficiency, ease of supervision, and increased taxpayer compliance.
3. In the use of electronic and web-based tax applications, the Manado City BAPENDA still faces various challenges and obstacles, such as challenges in dealing with hacker attacks and break-ins, challenges in human resources, and obstacles such as unstable internet connections. However, in facing these challenges and obstacles, the Manado City BAPENDA has made a prevention strategy and made various efforts to handle every obstacle that exists.

Based on the results of the research conducted, the suggestions that researchers can give are as follows:

1. For the Manado City Regional Revenue Agency, it is expected to be able to maintain the performance that has been carried out and continue to carry out socialization and education activities regularly to tax application users about the mechanism of using the latest features of existing tax applications so that users of the tax application can continue to adjust to the updates of existing tax applications.
2. For the Regional Government, it is hoped to further improve the quality of internet connections and server quality so that there are no more obstacles and disruptions in the operation of tax applications by the Manado City Regional Revenue Agency.
3. For the next researcher, it is hoped that they will be able to conduct broader research not only from the Manado City Regional Revenue Agency but also from taxpayers who use the tax application provided by the Manado City Regional Revenue Agency.

ADVANCED RESEARCH

The next research is suggested to expand the scope of research not only limited to the internal parties of the Manado City Regional Revenue Agency, but also involve the perspective of taxpayers who use tax applications. This aims to gain a more comprehensive understanding of the user experience, satisfaction level, and obstacles experienced by taxpayers. In addition, future research may examine the long-term effectiveness of tax applications, including their impact on tax compliance, data management, and increased tax revenues and regional levies. Comparative research with other regions can also be conducted to identify best practices and the potential for more effective application development. Furthermore, it is important to examine the influence of technical and non-technical factors, such as internet network quality, data security, human resource capabilities, and user training, on the effectiveness of application use. Finally, advanced research can explore new feature innovations in tax applications and their impact on the optimization of tax revenues and regional levies.

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