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Parking Levy Policy Innovation in Malang City: From Cash-Based Collection to Virtual Accounts

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Abstract

Parking levy management is an important component of local revenue governance because it contributes to locally generated revenue. However, conventional cash-based collection systems continue to face governance challenges, including revenue leakage, delayed reporting, and limited monitoring capacity. This study analyzes the implementation of a parking levy policy innovation through a Virtual Account payment system integrated with the Regional General Treasury Account (RKUD) in Malang City and identifies the factors supporting and constraining its implementation. A descriptive qualitative approach was employed using observation, in-depth interviews, and document analysis. The participants consisted of the Head of the Transportation Agency, the Head of the Parking Management Division, field supervisors, official parking attendants, and parking service users selected through purposive sampling. The analysis draws on the perspectives of policy innovation and digital governance to explain how digital payment transformation strengthens accountability and local revenue governance. The findings indicate that the Virtual Account system transaction traceability, strengthened monitoring mechanisms, enhanced administrative order, and reduced opportunities for revenue leakage. Nevertheless, several challenges remain, including limited performance evaluation, continued reliance on manual field supervision, and uneven compliance among parking attendants. The findings demonstrate that the digitalization of parking levy collection strengthens local revenue governance, although improvements in evaluation and supervisory mechanisms remain necessary.

Keywords: digital governance; local revenue governance; parking levy; policy innovation; virtual account

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Introduction

Local revenue is a key component of fiscal decentralization, enabling local governments to finance public services, strengthen institutional capacity, and promote sustainable regional development. Among local revenue sources, parking levies play an important role in urban areas with high economic activity and traffic mobility. Effective parking levy management reflects the ability of local governments to ensure transparent, accountable, and efficient public financial governance while strengthening fiscal sustainability. Contemporary public management scholarship emphasizes that improving governance requires not only administrative efficiency but also institutional transformation

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supported by accountability, institutional capacity, policy integration, and digital government (Budi et al., 2026).

Despite its fiscal importance, parking levy administration continues to face persistent governance challenges. Conventional cash-based collection systems remain vulnerable to administrative inefficiency, delayed reporting, weak supervision, and revenue leakage because manual procedures limit transparency and accountability. Previous studies report overlapping regulations, inadequate supervision, inconsistent compliance among parking attendants, and ineffective parking management systems (Larasati & Rohman, 2020). These findings indicate that parking levy administration represents a broader governance problem rather than merely an operational issue.

Malang City reflects these challenges. Parking levy revenue reached only IDR 11–11.7 billion against a target of IDR 15 billion in 2025, while realization as of June 2026 reached IDR 5.43 billion (36.22% of the annual target). Internal evaluations identified on-street parking as the principal source of revenue leakage and showed that conventional supervision was insufficient to oversee hundreds of parking locations. These conditions demonstrate that improving local revenue collection requires governance reform rather than simply increasing revenue targets.

To address these problems, the Government of Malang City introduced a Virtual Account payment system integrated with the Regional General Treasury Account (RKUD). Unlike the previous cash-based model, the system records every transaction electronically, improving traceability, reconciliation, and financial monitoring. The reform is supported by strengthened field supervision, the Malang Parking Information System (Sisparma), and continuous capacity building for parking attendants. Collectively, these measures indicate that the Virtual Account system represents not merely a technological upgrade but an institutional reform designed to strengthen transparency, accountability, and local revenue governance (Mergel et al., 2019).

From a public administration perspective, the Virtual Account system should be understood as a policy innovation rather than merely a digital payment technology. Policy innovation encompasses new administrative arrangements, institutional processes, and governance mechanisms that enhance organizational performance, accountability, and public value (Hartley, 2005; Mulgan & Albury, 2003). In parking levy administration, the Virtual Account system simplifies administrative procedures, improves transaction traceability, reduces reliance on manual reporting, and strengthens institutional accountability. Accordingly, it represents a governance-oriented digital transformation rather than merely a technological change.

Previous studies have examined parking governance from the perspectives of institutional arrangements, administrative effectiveness, law enforcement, service quality, and

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electronic payment systems (Ramdhan et al., 2024; Widaty et al., 2024; Winarsih et al., 2017). Although these studies improve understanding of parking management, they generally conceptualize digital payment systems as instruments for enhancing service efficiency, with limited attention to their role in reshaping institutional accountability and local revenue governance. Consequently, empirical evidence explaining how digital payment systems function as policy innovations that transform governance processes remains limited. This study addresses this gap by conceptualizing the Virtual Account system as an institutional innovation that restructures administrative procedures, strengthens accountability, improves financial control, and enhances local revenue governance. By integrating policy innovation and digital governance perspectives, the study explains how technological change becomes institutionalized through new governance arrangements.

Empirically, this study focuses on the Pasar Besar parking area in Malang City, one of the municipality's busiest parking locations with substantial parking levy potential and a history of revenue leakage under the previous cash-based collection system. This setting provides an appropriate context for examining how the Virtual Account system strengthens accountability, monitoring, and local revenue governance. Using a descriptive qualitative approach, the study analyzes how the Virtual Account system transforms parking levy governance and identifies the institutional factors facilitating or constraining its implementation from the perspectives of key stakeholders.

This study contributes to the literature in three ways. First, it conceptualizes the Virtual Account system as a policy innovation representing institutional and governance reform rather than merely a digital payment technology. Second, it demonstrates how digital payment systems strengthen accountability, financial control, and local revenue governance through institutional change. Third, it provides empirical evidence from an Indonesian local government, offering practical insights for policymakers seeking to modernize public revenue management through governance-oriented digital transformation.

Literature Review

1. Policy Innovation in the Public Sector

Policy innovation has become a central concept in public administration because governments are increasingly required to respond to complex governance challenges through new institutional arrangements rather than relying solely on incremental administrative improvements. In the public sector, innovation is not limited to the adoption of new technologies but also encompasses the introduction of new organizational processes, governance mechanisms, and policy instruments that improve public value, organizational performance, and service quality. Mulgan and Albury (2003) define public sector innovation as the creation and implementation of new processes, services, and methods of delivery that produce significant improvements in effectiveness, efficiency, quality, and public outcomes.

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Innovation therefore becomes meaningful when new ideas are successfully institutionalized and embedded within routine governmental practices.

Hartley (2005) further argues that policy innovation extends beyond technological change by emphasizing institutional transformation, governance arrangements, and managerial processes that improve governmental capacity. From this perspective, innovation should be understood as a governance reform that reshapes relationships among public organizations, stakeholders, and administrative procedures. Consequently, the success of policy innovation cannot be assessed solely through the introduction of new technologies but must also consider whether the innovation strengthens accountability, transparency, coordination, and public trust.

Within local government administration, policy innovation is increasingly associated with efforts to modernize public financial management through digital technologies. Nevertheless, digital technology itself does not automatically constitute policy innovation. Technology becomes a policy innovation only when it changes administrative procedures, redistributes institutional responsibilities, improves accountability mechanisms, and creates measurable improvements in governance outcomes. Therefore, evaluating policy innovation requires attention not only to technological adoption but also to the institutional changes generated by the innovation.

From this perspective, the implementation of Virtual Accounts in parking levy administration represents more than a transition from cash-based to electronic payment systems. The innovation restructures revenue collection procedures, integrates payment transactions with the Regional General Treasury Account (RKUD), improves transaction traceability, and strengthens monitoring and accountability within local revenue administration. Accordingly, the concept of policy innovation provides an appropriate theoretical lens for examining how administrative reform contributes to improving local revenue governance.

2. Digital Governance and Public Revenue Management

Digital governance has emerged as an important approach for improving government performance through the utilization of information and communication technologies in administrative processes, public services, and financial management. Rather than replacing conventional governance, digital governance integrates technological capabilities into decision-making, monitoring, accountability, and service delivery. The adoption of digital systems enables governments to improve transparency, accelerate administrative processes, strengthen institutional coordination, and enhance public accountability. Recent studies consistently demonstrate that digital transformation contributes to more effective and accountable governance systems (Kannapadang et al., 2025; Sumantri, 2022).

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Digital transformation in government should therefore be understood as a comprehensive institutional process involving changes in organizational structures, administrative processes, stakeholder relationships, and public value creation rather than merely converting manual procedures into electronic systems (Mergel et al., 2019). Recent governance literature also indicates that contemporary public sector reform increasingly combines digital government with institutional accountability, cross-agency coordination, and adaptive governance capacity as integrated components of governance modernization (Budi et al., 2026).

Digital transformation in the public sector extends beyond the adoption of information technologies. It involves fundamental changes in organizational processes, institutional arrangements, and public value creation through digitally enabled governance (Mergel et al., 2019). Digital Era Governance emphasizes the reintegration of government functions, citizen-centered services, and extensive digitalization of administrative processes as essential characteristics of contemporary public administration (Dunleavy et al., 2006).

Within the field of public revenue management, digital payment systems have become increasingly important because they improve the accuracy, traceability, and reliability of financial transactions. Electronic payment mechanisms reduce dependence on manual reporting systems while enabling governments to monitor revenue collection in real time. Previous studies indicate that digital financial management contributes to stronger internal control, more accurate financial reporting, and improved institutional transparency (Wahyudin et al., 2025). Consequently, digital payment systems are increasingly viewed as strategic instruments for strengthening public financial governance rather than merely improving administrative efficiency.

In local governments, the transition from cash-based collection systems to digital payment mechanisms has become part of broader bureaucratic reform initiatives aimed at addressing administrative inefficiencies, reporting delays, and potential revenue leakage. These initiatives also encourage closer integration between financial institutions and government treasury systems, allowing revenue collection to be monitored more transparently and systematically. As a result, digital governance contributes not only to service modernization but also to strengthening accountability and institutional capacity in managing local revenue.

Although previous studies have demonstrated the benefits of digital payment systems, relatively few have examined how these systems function as policy innovations that transform governance structures within local revenue administration. Most existing studies focus primarily on technological implementation or service efficiency, while paying limited attention to institutional changes involving accountability, monitoring mechanisms, and revenue governance. This theoretical limitation reinforces the need to examine Virtual Account implementation as a governance innovation that links digital transformation with improvements in accountability and local revenue governance.

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3. Analytical Framework

This study is grounded in the premise that policy innovation functions as a governance instrument through which governments redesign administrative processes, institutional arrangements, and accountability mechanisms to improve public sector performance. Rather than viewing innovation solely as the adoption of new technologies, this study adopts the perspective proposed by Mulgan and Albury (2003) and Hartley (2005), which conceptualizes policy innovation as the introduction and institutionalization of new administrative processes that generate improvements in efficiency, effectiveness, accountability, and public value. Within this perspective, innovation is considered successful when it becomes embedded in routine governmental practices and contributes to better governance outcomes.

The analytical framework further incorporates the concept of digital governance, which emphasizes the strategic use of information and communication technologies to improve administrative processes, decision-making, transparency, accountability, and public service delivery. Digital governance is not interpreted merely as technological modernization but as a governance transformation that reshapes institutional interactions, strengthens organizational capacity, and improves public financial management (Hartley, 2005; Kannapadang et al., 2025; Mulgan & Albury, 2003; Sumantri, 2022). Within the context of public revenue management, digital payment systems enable governments to enhance transaction traceability, improve financial reporting, strengthen monitoring mechanisms, and reduce opportunities for administrative errors and revenue leakage (Wahyudin et al., 2025).
Based on these theoretical perspectives, this study conceptualizes the implementation of Virtual Accounts as a form of policy innovation that transforms parking levy governance in Malang City. The transition from cash-based collection to a Virtual Account payment system integrated with the Regional General Treasury Account (RKUD) represents a fundamental change in administrative procedures rather than merely a substitution of payment methods. Through this innovation, every parking levy transaction is electronically recorded and directly connected to the regional treasury system, enabling greater transaction traceability, faster payment verification, improved monitoring, and stronger financial accountability. Consequently, Virtual Accounts function as an institutional mechanism that supports governance reform by strengthening transparency and improving the management of locally generated revenue.

Accordingly, this study analyzes policy innovation through four interrelated analytical dimensions. First, administrative transformation, referring to changes from manual cash-based collection to electronically integrated payment procedures. Second, accountability enhancement, reflected in the ability to record, verify, and monitor parking levy transactions more accurately and transparently. Third, monitoring and financial control, referring to strengthened supervisory mechanisms, improved transaction traceability, and reduced

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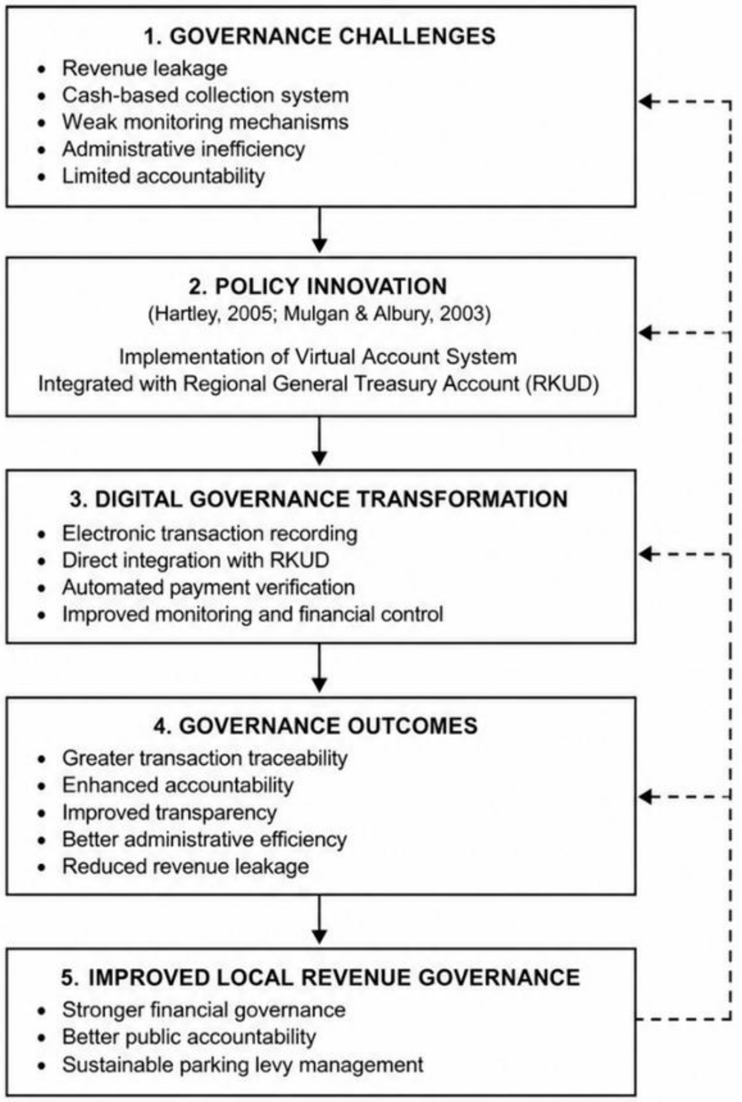
opportunities for revenue leakage. Fourth, local revenue governance, referring to the broader institutional outcomes resulting from policy innovation, including improved transparency, administrative efficiency, financial accountability, and governance quality. These four dimensions provide the analytical basis for interpreting empirical findings concerning the implementation of Virtual Accounts in Malang City's parking levy administration.



Source: Adapted from Hartley (2005); Mulgan and Albury (2003); developed by the authors (2026)

Figure 1. Analytical Framework of Parking Levy Policy Innovation in Malang City

The relationship among these concepts is illustrated in Figure 1. The framework explains that persistent governance challenges associated with conventional cash-based collection, including revenue leakage, weak monitoring mechanisms, and manual administrative procedures, create the need for policy innovation. This innovation is operationalized through the implementation of Virtual Accounts integrated with the Regional

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General Treasury Account (RKUD), producing improvements in automated transaction recording, monitoring, verification, accountability, and administrative order. Collectively, these improvements contribute to strengthening local revenue governance, demonstrating that digital payment systems function not merely as technological innovations but as governance reforms capable of improving transparency, accountability, and the effectiveness of public financial management.

Method

This study employed a descriptive qualitative approach to explore the implementation of parking levy policy innovation through a Virtual Account-based payment system in Malang City (Sugiyono, 2023). A qualitative approach was selected because it enables an in-depth understanding of policy implementation processes, institutional practices, and stakeholders experiences regarding the transition from cash-based collection to digital payment mechanisms (Denzin & Lincoln, 2018). Rather than testing causal relationships or developing a new theory, this study sought to provide a comprehensive understanding of how the policy innovation was implemented within its institutional context. The descriptive qualitative design therefore enabled the researchers to systematically examine administrative practices, implementation processes, stakeholder interactions, governance transformation, and the factors influencing the implementation of the Virtual Account system.

The study was conducted at the Department of Transportation of Malang City and the Pasar Besar area, one of the city's major public parking locations. These sites were selected due to their strategic role in parking levy collection and the implementation of the Virtual Account payment system, which constitutes the focus of this research (Yin, 2017). In particular, Pasar Besar was purposively selected because it represents one of the largest and busiest public parking areas in Malang City, characterized by a high volume of parking transactions and intensive parking management activities. Furthermore, it was among the locations where the Virtual Account payment system was implemented by the Department of Transportation, making it an appropriate setting for examining the implementation of parking levy policy innovation. Although the findings are not intended to be statistically generalized to all parking locations in Malang City, the characteristics of Pasar Besar provide a relevant institutional context for understanding governance transformation associated with the transition from cash-based collection to Virtual Account payments.

Research informants were selected using purposive sampling, a technique that identifies participants based on their relevance to the research objectives and their knowledge of the phenomenon under investigation (Creswell, 2013). The informants included the Head of the Department of Transportation, the Head of the Parking Management Division, field supervisors, official parking attendants, and parking service users. These actors were

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considered to possess direct experience and insights regarding the implementation of the parking levy policy innovation.

Table 1. Research Informants

No	Informant	Number	Category	Role
1	Head of the Department of Transportation	1	Key Informant	Policy maker and program supervisor
2	Head of Parking Management Division	1	Key Informant	Technical manager of parking levy administration
3	Field Supervisors	1	Main Informant	Responsible for field monitoring and enforcement
4	Official Parking Attendants	1	Main Informant	Direct implementer of the parking levy policy
5	Parking Service Users	3	Supporting Informants	Recipients of parking services
Total		**7**		

Source: Compiled by the Authors (2026).

Data collection involved seven purposively selected informants, as presented in Table 1. The fieldwork was conducted from February to April 2026, while field observations were undertaken for one month to capture the day-to-day implementation of the Virtual Account payment system. Documentary evidence included Malang City Regional Regulation No. 4 of 2023, the Standard Operating Procedures (SOP) of the Department of Transportation, monthly parking levy revenue reports, Regional General Treasury Account (RKUD) transaction reports, Virtual Account transaction reports, and official minutes of meetings. These documentary sources complemented the interview and observation data and strengthened the credibility of the findings through data triangulation.

Data were collected through in-depth interviews, field observations, and document analysis. Interviews were conducted to obtain information regarding policy implementation, administrative processes, accountability mechanisms, and implementation challenges. Observations were carried out to understand operational practices in parking management, while document analysis was used to review policy documents, local regulations, administrative reports, and other relevant records. Data analysis followed the interactive model, which consists of data condensation, data display, and conclusion drawing (Matthew B. Miles et al., 2014). These analytical processes were conducted iteratively throughout the research to ensure a comprehensive understanding of the phenomenon under study.

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To enhance the trustworthiness of the findings, this study employed source triangulation and method triangulation. Source triangulation was conducted by comparing information obtained from different informants, while method triangulation involved cross-checking findings derived from interviews, observations, and documentary evidence. These procedures were applied to improve the credibility and reliability of the research findings (Emzir, 2018).

Result and Discussion

1. Parking Levy Policy Innovation: Transforming Cash-Based Collection into Virtual Accounts

The implementation of Virtual Accounts in Malang City's parking levy management represents a policy innovation aimed at addressing governance problems associated with conventional cash-based collection, particularly revenue leakage, weak monitoring mechanisms, and administrative inefficiencies. The following findings explain how this innovation transformed parking levy governance through changes in payment procedures, monitoring practices, and institutional accountability.

An interview with the Head of the Malang City Transportation Department revealed that the implementation of Virtual Accounts was intended to strengthen financial control and minimize potential leakages in parking levy collection. As the informant explained:

> *"The Virtual Account system allows every parking levy payment to be recorded electronically and linked directly to the Regional General Treasury Account. This mechanism makes monitoring easier because every transaction can be verified through the banking system." (KI-01, Interview, 18 February 2026).The interview findings indicate that the adoption of Virtual Accounts was designed not merely to introduce a new payment mechanism but also to strengthen transparency and institutional control over parking levy administration.*

The findings of this study indicate that parking levy policy innovation in Malang City has been implemented through the transformation of the levy collection system from a conventional cash-based mechanism to a non-cash payment system utilizing Bank Jatim virtual accounts directly connected to the Regional General Treasury Account (RKUD). This policy was introduced as a response to persistent challenges in parking levy administration, particularly concerns regarding revenue leakage, weak monitoring mechanisms, and manual administrative procedures that complicated the tracking of levy payments.

The transformation from cash-based collection to Virtual Accounts represents a significant shift in parking levy governance. Under the previous system, levy payments were submitted manually, making the verification process highly dependent on administrative reports and field supervision. Such arrangements created opportunities for reporting delays, recording errors, and inconsistencies between expected and actual revenue. By contrast, the Virtual Account system automatically records transactions through the banking system,

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enabling more effective monitoring and verification of levy payments. These findings were consistently supported by interview data, field observations, and documentary evidence, including the Department of Transportation's Standard Operating Procedures and Virtual Account transaction reports.

Table 2. Transformation of the Parking Levy Collection System from Cash-Based Payments to Virtual Accounts

Aspect	Cash-Based System	Virtual Account System
Payment Mechanism	Payments submitted manually	Payments submitted through virtual accounts
Record Keeping	Manual	Automated
Monitoring	Periodic monitoring	Supported by electronic monitoring
Payment Tracking	Difficult to verify	Recorded in the system
Accountability	Relies on manual reports	Supported by electronic transaction records
Integration with RKUD	Indirect	Directly connected

Source: Compiled by the authors from interviews, observations, and official administrative records (2026)

Table 2 illustrates the key differences between the previous cash-based collection system and the newly adopted Virtual Account mechanism. The findings demonstrate that the innovation extends beyond a simple change in payment methods. Rather, it represents a broader transformation in administrative procedures, monitoring mechanisms, reporting systems, and accountability arrangements. Based on interview findings, field observations, and documentary evidence, the integration of Virtual Accounts with the Regional General Treasury Account (RKUD) enhanced transaction traceability and strengthened institutional control over local revenue collection.

Further evidence was obtained through an interview with the Head of the Parking Management Division, who explained that the implementation of Virtual Accounts substantially simplified the verification of parking levy payments. As the informant stated:

> *"Under the previous cash-based system, every payment had to be verified manually by comparing administrative records with field reports. Since the implementation of Virtual Accounts, every payment can be verified directly through the banking system because each transaction is automatically linked to the Regional General Treasury Account (RKUD)." (KI-02, Interview, 24 February 2026).*
>
> *The interview findings demonstrate that the Virtual Account system simplified payment verification by reducing dependence on manual cross-checking procedures and strengthening the reliability of transaction records.*

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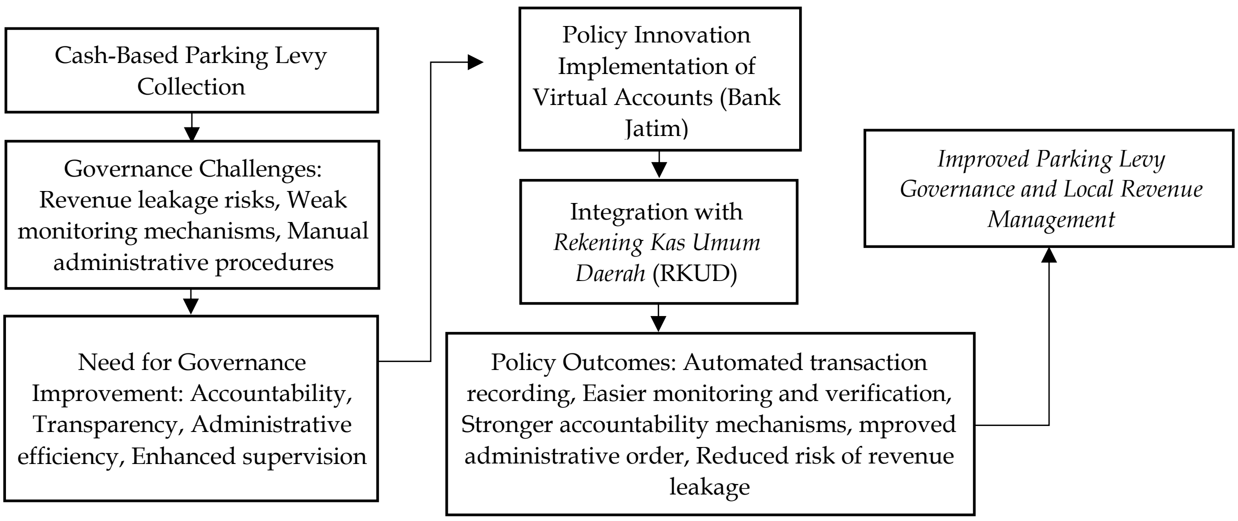
From the perspective of governance transformation, this policy innovation reflects a transition from conventional administrative practices toward digitally enabled revenue management. The adoption of virtual accounts has not only modernized payment procedures but has also enhanced institutional capacity to monitor, verify, and manage parking levy revenue. These findings support Hartley's (2005) argument that public sector innovation contributes to organizational improvement by introducing more effective administrative processes and governance arrangements.

Figure 2 summarizes the transformation process identified in this study. The figure demonstrates how governance problems associated with cash-based collection-including revenue leakage, weak supervision, and manual administration prompted policy innovation in the form of digitalized parking levy management. The implementation of virtual accounts generated several immediate outcomes, including improved administrative order, enhanced transparency, strengthened accountability, and easier monitoring, which ultimately contributed to better local revenue governance.

Overall, the findings suggest that the introduction of virtual accounts represents a significant policy innovation in parking levy management. Rather than merely replacing cash transactions with digital payments, the policy has transformed the governance structure of local revenue collection by strengthening accountability mechanisms, improving administrative efficiency, and enhancing the government's capacity to oversee parking levy revenue.



Source: Developed by the authors based on interview findings, field observations, documentary evidence, and the analytical framework of this study (2026)

Figure 2. Transformation Model of Parking Levy Policy Innovation in Malang City

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2. Strengthening Accountability through Virtual Account-Based Parking Levy Management

Accountability is one of the key indicators used to assess the effectiveness of public sector policy innovation. Policy innovation is not merely intended to introduce new administrative mechanisms but also to enhance the capacity of public organizations to account for the use of public resources and the implementation of government policies. In the context of parking levy management, accountability is particularly important because it is directly related to the collection, monitoring, and reporting of local government revenue.

The findings of this study indicate that the implementation of Virtual Account-based payments has contributed to strengthening accountability in parking levy management in Malang City. The transition from cash-based collection to digital payment mechanisms has strengthened administrative control by ensuring that every payment transaction is properly recorded and can be verified through the banking system. As a result, the Department of Transportation is better able to monitor levy payments and maintain accurate revenue records.

An interview with the Head of the Parking Management Division further confirmed that the Virtual Account system has simplified the recording and reporting of parking levy revenues. As the informant explained:

"Every payment transaction is automatically recorded in the system and can be monitored directly through the banking system. This mechanism minimizes the risk of recording errors and makes revenue reporting more reliable than under the previous cash-based system." (KI-02, Interview, 24 February 2026).

The interview findings indicate that the implementation of Virtual Accounts strengthened the reliability of financial records by reducing dependence on manual recording and reporting procedures.

The implementation of Virtual Accounts has also improved administrative order in parking levy collection. Based on interview findings and administrative records, every registered parking attendant has been assigned an individual Virtual Account, enabling levy payments to be electronically recorded and connected to the Regional General Treasury Account (RKUD) deposit mechanism. This arrangement enhances transaction traceability and reduces dependence on manual reporting procedures that were previously prone to delays and inconsistencies.

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Table 3. Impacts of Virtual Account Implementation on Accountability in Parking Levy Management

Research Findings	Impact on Accountability
Levy payments through virtual accounts	Facilitates transaction tracking and verification
Integration Regional General Treasury Account (RKUD)	Enhances revenue transparency
Automated transaction recording	Reduces administrative errors
Clear division of administrative and field responsibilities	Clarifies accountability and responsibilities
Supervision by the Department of Transportation	Strengthens control over levy payments

Source: Compiled by the authors from interviews, observations, and official documents (2026)

In addition to the technological aspects of digital payment systems, the implementation of virtual accounts has been supported by a clear division of responsibilities between administrative personnel and field supervisors. Administrative staff are responsible for transaction recording, data management, and revenue reporting, while field supervisors oversee parking activities and ensure compliance with parking levy regulations at designated locations. This organizational arrangement demonstrates that policy innovation involves not only the adoption of new technologies but also adjustments to institutional work processes and accountability mechanisms.

> *"An interview with a field supervisor revealed that the non-cash payment system has facilitated monitoring activities because supervisors can compare electronically recorded levy payments with actual parking operations observed in the field. This verification process involves comparing transaction records with parking activities at designated locations while confirming that parking services are provided by officially registered parking attendants. The informant further explained that the use of official identification cards (Kartu Tanda Anggota/ KTA) helps ensure that parking operations are conducted by authorized personnel under the supervision of the Department of Transportation. These mechanisms strengthen institutional control and contribute to greater accountability in parking levy administration."*

Furthermore, the availability of accurate and real-time transaction data has strengthened monitoring and verification processes within the Department of Transportation. The findings indicate that the digital payment system enabled officials to track revenue flows more effectively and identify discrepancies more quickly than under the previous cash-based collection mechanism. As a result, monitoring activities are no longer solely dependent on manual reporting procedures and field inspections. The findings indicate that the

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digitalization of parking levy payments through virtual accounts has enhanced accountability through automated transaction recording, improved organizational coordination, and stronger supervision mechanisms. By providing electronically documented transaction records and clearer accountability structures, the system enables more effective oversight of local revenue collection and reduces the potential for irregularities in levy payments.

These findings support the argument that policy innovation can contribute to improved governance outcomes by strengthening accountability mechanisms and enhancing administrative efficiency. In the case of Malang City, the adoption of virtual accounts has not only modernized parking levy collection procedures but has also transformed accountability practices by providing a more transparent, traceable, and reliable system for managing local revenue.

3. Advancing Local Revenue Governance through Virtual Account-Based Policy Innovation

Policy innovation is not merely intended to introduce new administrative mechanisms within government institutions but is also expected to generate improvements in public sector governance. In the context of parking levy management, the adoption of a Virtual Account-based payment system has contributed not only to strengthening administrative accountability but also to improving local revenue governance by enhancing transparency, financial control, and institutional oversight.

The findings of this study indicate that the implementation of the Virtual Account system has strengthened local revenue governance by improving the transparency, traceability, and institutional oversight of parking levy collection in Malang City. All levy payments are electronically recorded and directly linked to the Regional General Treasury Account (RKUD), enabling the Department of Transportation to monitor revenue flows more systematically than under the previous cash-based collection system. This arrangement provides more accurate and well-documented financial information, thereby supporting better financial administration, stronger accountability, and more effective governance of locally generated revenue.

> *"An interview with the Head of the Parking Management Division revealed that the implementation of virtual accounts has simplified the control and verification of parking levy revenues because every transaction can be traced directly through the banking system. According to the informant, this mechanism assists the Department of Transportation in ensuring consistency between the levy obligations of parking attendants and the revenues deposited into Rekening Kas Umum Daerah* (RKUD). *The ability to verify transactions in real time has strengthened institutional oversight and reduced the reliance on manual reporting procedures."*

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In addition to improving administrative order, the findings indicate that the Virtual Account system has strengthened supervisory functions within parking levy management. Payment information can be accessed and verified more quickly, enabling the Department of Transportation to conduct monitoring and internal control more effectively. These findings suggest that the digital payment system functions not only as a payment mechanism but also as an institutional governance instrument that supports accountability, transparency, and the effective management of local revenue. Consistent with the policy innovation perspective proposed by Hartley (2005) and Mulgan and Albury (2003), the findings demonstrate that the value of the innovation lies not merely in technological adoption but in its capacity to institutionalize more transparent and accountable governance practices within local revenue administration.

From the perspective of public sector innovation, the adoption of virtual accounts reflects a governance transformation from a predominantly manual administrative system to a digitally enabled revenue management framework. Hartley (2005) argues that public sector innovation can improve organizational processes, service quality, and the effectiveness of public resource management. Consistent with this perspective, the implementation of virtual accounts in parking levy management demonstrates how digital technologies can be utilized to strengthen governance practices and improve the effectiveness of local revenue administration. Furthermore, this policy innovation contributes to improving the quality of local financial governance by providing revenue data that are more accurate, traceable, and accountable. The availability of reliable financial information supports better monitoring, facilitates decision-making, and enhances institutional transparency. As a result, local governments are better positioned to ensure that public revenues are managed in accordance with principles of accountability and good governance.

Overall, the transition from cash-based collection to virtual account-based payments has generated impacts beyond administrative modernization. The findings demonstrate that the innovation has strengthened local revenue governance through enhanced accountability, improved supervision, greater transaction traceability, and more orderly financial administration. Consequently, virtual account-based parking levy management represents not only a technological innovation but also a governance innovation that contributes to more effective and accountable local revenue management.

4. Enablers and Challenges in the Implementation of Parking Levy Policy Innovation

The successful implementation of policy innovation is determined not only by the quality of policy design but also by various factors that facilitate or constrain its execution. In the context of parking levy management in Malang City, the adoption of a virtual account-

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based payment system has revealed several enabling factors that support policy implementation, as well as challenges that continue to affect its effectiveness in practice.

The findings indicate that one of the primary enabling factors is the implementation of a virtual account system directly connected to the *Regional General Treasury Account* (RKUD). This arrangement allows parking levy payments to be processed in a more orderly and well-documented manner, thereby facilitating monitoring and control over local revenue collection. In addition, the clear division of responsibilities between administrative personnel and field supervisors contributes to the effectiveness of parking levy management by ensuring that operational and administrative functions are performed in a coordinated manner.

> *"An interview with the Head of the Parking Management Division revealed that the virtual account system has accelerated the verification process of parking levy payments because all transactions can be monitored through the banking system. According to the informant, the system also simplifies reporting procedures and strengthens control over revenues deposited into the Regional General Treasury Account. These findings demonstrate how digital payment mechanisms can enhance administrative efficiency and support more effective revenue governance."*

These findings reinforce the argument that the success of policy innovation depends not merely on the adoption of digital technology but also on its institutional integration into governmental financial management. The linkage between Virtual Accounts and the *Regional General Treasury Account* (RKUD) has transformed payment verification from a fragmented manual process into a more transparent and traceable governance mechanism. Consistent with Hartley (2005), the innovation demonstrates how administrative reforms supported by digital technology can strengthen institutional accountability and improve governance capacity beyond operational efficiency.

Beyond technological factors, regulatory support has also played a crucial role in facilitating policy implementation. Parking levy management is governed by Malang City Regional Regulation *Nomor 4 Tahun 2023 tentang Pajak Daerah dan Retribusi Daerah*, which provides the legal basis for levy collection, supervision, and enforcement activities. The existence of a clear regulatory framework offers institutional certainty for the Department of Transportation in managing parking operations and supervising registered parking attendants.

> *"A field supervisor explained that routine patrol activities are conducted to ensure that parking attendants perform their duties in accordance with established regulations. In addition to checking official identification cards, supervisors monitor compliance with parking tariffs and levy payment procedures. Such activities contribute to maintaining operational discipline and strengthening the enforcement of parking levy regulations." These findings indicate that regulatory support functions not only as a legal foundation but also as an institutional mechanism that enables policy innovation to be implemented consistently across organizational*

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levels. The existence of formal regulations, combined with routine supervisory practices, helps institutionalize the innovation by ensuring that digital payment procedures are supported by organizational compliance and enforcement.

Another enabling factor identified in this study is the routine supervision conducted by the Department of Transportation. Monitoring activities include field inspections and verification of the legal status of parking attendants, including the possession of official identification cards as proof of registration. These measures contribute to improving institutional oversight and ensuring compliance with administrative requirements.

Despite these achievements, the implementation of parking levy policy innovation continues to face several challenges. One of the main constraints identified in this study is the limited evaluation of policy performance. Existing evaluation practices remain largely focused on operational aspects and have not yet comprehensively assessed the long-term effectiveness of the virtual account system in improving local revenue governance.

These constraints indicate that policy innovation should be viewed as an ongoing governance reform rather than a completed technological project. While the Virtual Account system has improved administrative procedures, the absence of comprehensive performance evaluation limits the government's ability to assess whether the innovation consistently achieves its intended governance outcomes. Sustainable innovation therefore requires continuous institutional learning, organizational adaptation, and periodic policy evaluation.

Furthermore, supervision of parking activities still relies heavily on field patrols, which require considerable human resources and time. As a result, monitoring activities cannot always cover all parking locations effectively, particularly during periods of high parking demand. This situation limits the ability of the Department of Transportation to ensure consistent oversight across all parking areas.

"An interview with a registered parking attendant revealed that differences in understanding and compliance regarding the virtual account payment mechanism still exist among parking personnel. According to the informant, some parking attendants require additional guidance and socialization to fully adapt to the newly implemented system. This finding highlights the importance of human resource capacity and organizational learning in supporting the sustainability of policy innovation." This finding demonstrates that technological innovation alone cannot guarantee successful policy implementation. The effectiveness of digital governance also depends on the readiness of implementing actors to adapt to new administrative procedures. Therefore, continuous capacity-building and organizational learning become essential components for sustaining policy innovation over time.

Table 4 summarizes the key enabling and constraining factors identified in this study regarding the implementation of parking levy policy innovation in Malang City.

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Table 4. Enablers and Challenges in the Implementation of Parking Levy Policy Innovation

Enablers	Challenges
Virtual account system integrated with the *Regional General Treasury Account* (RKUD)	Limited policy evaluation and performance assessment
Support from Regional Regulation No. 4 of 2023	Supervision remains highly dependent on field patrols
Clear division of responsibilities among personnel	Limited supervisory resources
Routine monitoring by the Department of Transportation	Uneven compliance among parking attendants
Legal registration of parking attendants through *Kartu Tanda Anggota* (KTA)	Adaptation challenges associated with the new system

Source: Authors' compilation from field data and official government documents (2026)

The findings suggest that the success of parking levy policy innovation depends not only on the availability of technology and regulatory support but also on the capacity of human resources and the consistency of organizational supervision. Therefore, strengthening evaluation mechanisms, enhancing the capacity of parking attendants, and optimizing monitoring systems are essential steps for ensuring the long-term sustainability of Virtual Account-based parking levy governance in Malang City.

Conclusion

This study examined the implementation of Samarinda City Regional Regulation Number 7 of 2023 concerning the Regional Spatial Plan (RTRW) through an integrated policy implementation framework that combines the perspectives of Van Meter and Van Horn with those of Mazmanian and Sabatier. The findings demonstrate that the regulation has strengthened the institutional foundation of spatial planning by establishing clearer policy standards, enhancing inter-agency coordination through the Spatial Planning Forum (FPR), and aligning regional development with Samarinda's vision of becoming a Centre of Civilization. Furthermore, the policy has facilitated the integration of environmental sustainability, economic development, and urban governance into the spatial planning process. Despite these achievements, its implementation continues to encounter significant challenges, including sectoral fragmentation, inadequate monitoring of spatial land use, limited institutional coordination, low levels of public compliance, and unresolved land-use violations that predated the current RTRW. These findings suggest that effective implementation of spatial planning policies is shaped by the interaction of policy standards, organizational capacity, resource availability, inter-agency coordination, policy objectives, and external contextual factors. Accordingly, an integrated implementation framework offers

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a more comprehensive explanation of policy implementation than reliance on a single theoretical model.

This study is subject to several limitations. First, the analysis primarily reflects the perspectives of institutional actors directly involved in implementing the RTRW, thereby limiting the representation of community and private-sector viewpoints. Second, the research was conducted during the early phase of policy implementation, preventing an assessment of its long-term outcomes and broader policy impacts. Consequently, the findings should be interpreted as an evaluation of the implementation process rather than as definitive evidence of policy effectiveness. Future research should incorporate a broader range of stakeholders, including local communities, private-sector actors, and civil society organizations, to develop a more comprehensive understanding of policy implementation. Longitudinal research is also recommended to examine the long-term impacts of the RTRW on spatial compliance, environmental sustainability, and urban development. Moreover, integrating qualitative evidence with quantitative indicators—such as land-use change, permit compliance, environmental quality, and spatial governance performance—would provide a more robust basis for evaluating the effectiveness of regional spatial planning policies.

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