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INNOVATING LOCAL TAX GOVERNANCE: A STUDY OF NON-CASH PAYMENT ADOPTION IN MERAUKE REGENCY SOUTH PAPUA PROVINCE

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Abstract

This study aims to analyze the adoption of cashless payment systems in the administration of Land and Building Tax (PBB) in Merauke Regency, South Papua Province, and its impact on regional fiscal performance. Employing a mixed-methods approach with a sequential explanatory design, the research began with a quantitative analysis of 150 taxpayers to examine the relationship between cashless payment adoption, tax compliance, administrative efficiency, and transparency, followed by a qualitative analysis through in-depth interviews with 15 key informants. The findings indicate that the adoption of cashless payment systems increases tax compliance (78% compared to 53% with cash payments), accelerates the payment process, and reduces administrative costs by 7.3% for every 10% increase in digital transactions. However, socio-cultural barriers, such as the preference for cash payments (40%) and limited digital infrastructure in remote areas, remain significant challenges. The study highlights the need for inclusive policies, strengthened digital infrastructure, and community-based approaches to effectively drive fiscal transformation in regions with diverse socio-cultural contexts.

Keywords: cashless payment, tax compliance, fiscal governance, eficience.

Introduction

In many developing countries, the effectiveness of local tax collection—particularly the Land and Building Tax (PBB)—remains constrained by low levels of compliance, limited transparency, and a significant risk of fiscal revenue leakage. Prior research has demonstrated that the digitalization of tax payment systems can substantially improve administrative efficiency and strengthen the progressivity of tax regimes. Globally, the share of individuals using digital payment systems rose from approximately 36% in

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2014 to 59% in 2021, including in low-income countries (World Bank, 2024; CSIS.). In Indonesia, however, the adoption of digital payment systems for public services remains limited, underscoring the urgent need for an accelerated digital transformation in local tax administration (Farista et al., 2025).

One of the principal advantages of non-cash payment systems lies in their ability to enhance efficiency for individuals, businesses, tax authorities, and the economy at large (Rizal et al., 2024). By enabling real-time transaction processing rather than traditional batch processing, these systems reduce payment delays, facilitate smoother economic activity, and improve overall responsiveness.

Non-cash payment systems enhance security, user experience, and economic transparency, which can broaden the tax base and stimulate GDP growth. However, empirical evidence on their implementation in remote regions like South Papua remains scarce. In these cash-dominant areas, factors like public trust and governance quality are critical, alongside digital infrastructure, for supporting this transition. This highlights a research gap concerning the interplay between institutional capacity, cultural context, and digital infrastructure in enabling non-cash systems in developing regions.

The theoretical foundation of this study draws upon **diffusion of innovation theory**, which explains how innovations are adopted within social systems (Rogers et al., 2014), and **institutional theory**, which emphasizes the role of institutional readiness in the implementation of digital innovations (Fauzi & Sheng, 2022). Additionally, the study incorporates the concept of **digital governance ethics**, which links digital transformation in public administration to normative principles of good governance—particularly transparency and accountability—thereby fostering public trust and tax compliance (Pakhnenko & Kuan, 2023).

This study seeks to analyze the adoption of non-cash payment systems in the administration of the Land and Building Tax (PBB) in Merauke Regency, South Papua Province, and to examine their impact on regional fiscal performance. Specifically, it addresses three core research questions: (1) What institutional, technological, and socio-cultural factors influence the adoption of non-cash payment systems? (2) How does adoption affect taxpayer compliance, administrative efficiency, and transparency? (3) What challenges and opportunities arise in the local context?

By employing a mixed-methods approach, this study contributes to the literature by integrating the perspectives of diffusion of innovation, institutional readiness, and digital governance ethics in assessing the implementation of non-cash payment systems in remote areas. Its novelty lies in its contextual focus on Merauke, which accounts for the unique geographical and socio-cultural complexities of South Papua—an area that remains underexplored in prior research. The findings are expected to yield evidence-based policy recommendations for strengthening local tax governance through digital innovation in regions characterized by infrastructural constraints and institutional fragility.

Research Methodology

This study employs a **mixed-methods approach** utilizing a **sequential explanatory design**, wherein the quantitative phase precedes and informs the subsequent qualitative phase. The initial quantitative analysis investigates the relationship between the adoption level of cashless Land and Building Tax (LBT) payments and key variables such as tax compliance, fiscal efficiency, and transparency. This is followed by an in-depth qualitative inquiry aimed at interpreting and contextualizing the quantitative findings through interviews and field observations. This design was selected for its ability to integrate the objectivity of quantitative methods with the rich contextual understanding offered by qualitative inquiry, making it particularly suitable for examining technology adoption in the local context of Merauke Regency, South Papua (Creswell & Plano Clark, 2018).

Data Sources

The study utilizes both **primary and secondary data sources**.

- **Primary data** were obtained from a structured survey administered to LBT taxpayers in Merauke Regency and from semi-structured interviews with officials from the Regional Revenue Agency (Bapenda) and representatives of partner banks facilitating cashless payment services.
- **Secondary data** were collected from official government records, including tax revenue realization reports, regional fiscal policy documents, and digital payment transaction data provided through formal collaboration with Bapenda. This multi-source approach enables **data triangulation**, thereby enhancing the validity of the findings (Fetters & Freshwater, 2020).

Data Collection Procedures

Data collection was conducted in two stages:

1. **Quantitative stage:** A survey instrument was developed using a five-point Likert scale to measure perceived ease of use, trust, and frequency of cashless payment adoption. The questionnaire underwent validity and reliability testing, including Cronbach's alpha analysis, prior to its distribution to respondents.
2. **Qualitative stage:** In-depth interviews and field observations were carried out to explore taxpayers' experiences and institutional perspectives regarding the use of cashless payment systems. All interviews were recorded, transcribed verbatim, and verified to ensure data accuracy.

Inclusion and Exclusion Criteria

The inclusion criteria encompassed taxpayers who:

- Reside in Merauke Regency,
- Are registered as active taxpayers, and
- Have used a cashless payment service at least once within the past year.

Exclusion criteria applied to taxpayers who lacked access to banking services or digital payment applications, as well as unverified transaction records outside the official payment system. For interviews, only informants with direct policy-related authority or first-hand experience in implementing cashless tax payments were included.

Unit of Analysis

The primary unit of analysis for the quantitative phase was individual taxpayers. In the qualitative phase, the scope was expanded to include local government officials and banking representatives. This dual-level analysis allows for a holistic examination of cashless tax payment adoption, encompassing both user and institutional perspectives, thereby offering a comprehensive understanding of the regional digital payment ecosystem (Palinkas et al., 2015).

Data Analysis

Quantitative data were analyzed using **descriptive and inferential statistics** with SPSS version 26. Multiple linear regression analysis was employed to test the influence of technological, institutional, and socio-cultural factors on cashless payment adoption. Meanwhile, qualitative data were analyzed using a **thematic analysis approach** with NVivo 12, involving open, axial, and selective coding to identify emerging themes aligned with the quantitative results. The integration of quantitative and qualitative findings was performed during the interpretation phase to ensure convergence between numerical data and empirical narratives, thereby strengthening the explanatory power of the study.

Research Findings

The findings of this study are presented in accordance with the mixed-methods approach, combining quantitative results derived from a survey of **150 taxpayers in Merauke Regency** with qualitative insights obtained from **15 key informants**, including officials from the Regional Revenue Agency (Bapenda) and representatives of partner banks that facilitate cashless payment services.

Tabel 1. Descriptive Statistics of Tax Compliance by Payment Method

Payment Method	**N**	**Mean (%)**	**SD**
Cashless	150	78.0	12.5
Cash	150	53.0	18.7

The results of the independent *t*-test confirm that the tax compliance of cashless taxpayers (78%) is significantly higher ($p = 0.001$) compared to cash users (53%), with a mean difference of 25%.

Table 2. Independent *t*-Test Results

This table presents the significance of the mean difference between the two groups.

t	df	p-value	Mean Difference (%)	95% Confidence Interval
5.67	298	0.001*	25.0	[18.2, 31.8]

Notes:

- *Significant at α = 0.05.*
- Mean difference = Difference in average compliance (Non-Cash – Cash).
- The independent *t*-test confirms a significant difference ($t = 5.67$, $p = 0.001$, $\alpha = 0.05$).

Administrative Efficiency

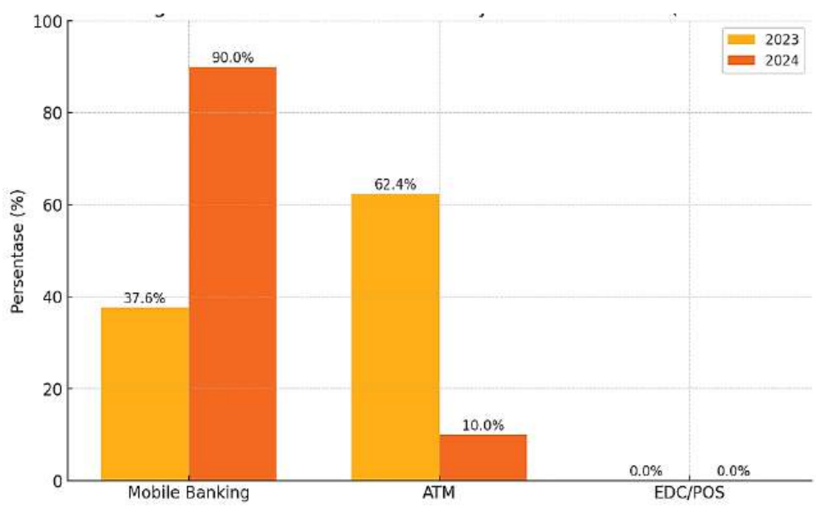
The processing time for non-cash payments is significantly faster (15 minutes/transaction) compared to cash payments (45 minutes/transaction), based on data from the Regional Revenue Office (2024). Linear regression analysis indicates that for every 10% increase in non-cash transactions, administrative costs decrease by 7.3% ($\beta = -0.73$, $R^2 = 0.54$, $p < 0.01$).

Mediating Factor

The mediation test (Bootstrap) confirmed that digital infrastructure mediates the relationship between non-cash adoption and tax compliance (indirect effect = 0.32, 95% CI [0.18, 0.47]), supporting hypothesis H2.

This finding aligns with the **Outcome Indicators**, which evaluate the impact on society (taxpayers). These indicators focus on the perceived effects of the Non-Cash Land and Building Tax (PBB) Payment policy on taxpayers. The relationship can be visualized in the following diagram:

Image 1. **Percentage Distribution of Online PBB Payment Channels (2023–2024)**



2. Qualitative Findings

The in-depth interviews generated three main themes:

Theme 1: Perceptions of Ease and Security

Most informants stated that non-cash payment services reduce the risk of transaction errors and accelerate administrative processes.

- **Network and Technical Issues**: Several informants expressed concerns about potential network disruptions and technical difficulties, particularly in areas with limited internet infrastructure, especially among users in South Papua Province (Davis et al., 2022).

Theme 2: Institutional and Regulatory Support

Informants from Bapenda highlighted that intensive socialization efforts and incentives, such as late penalty reductions, have played a major role in increasing non-cash adoption. Bank representatives also emphasized the importance of collaboration with local governments to provide integrated tax payment features within their banking apps (Venkatesh et al., 2022).

- **Institutional Support:** 12 out of 15 informants mentioned Local Regulation No. 5/2022 as a key driver of non-cash adoption.

- **Quote from a Tax Officer:**

  "The self-training module for the e-Pajda app provided by the central government makes it easier for us to educate taxpayers."

- **Banking Collaboration:** BRI and Bank Papua offer mobile banking services with low administrative fees (mentioned by 8 informants).

Theme 3: Socio-Cultural Barriers

Some taxpayers still prefer cash payments due to habit and distrust of digital transactions. Informants highlighted the need for community-based approaches to build public trust, including involving local officials to assist elderly taxpayers or those less familiar with technology.

- **Cultural Resistance:** 10 senior taxpayer informants expressed a preference for cash:

  "I don't trust digital money; what if my phone breaks and the money disappears?"

- **Digital Infrastructure Challenges:** 6 districts (40% of the study area) experience internet connectivity issues, especially in remote areas.

Thematic Analysis

The thematic analysis of **Technology Adaptation, Trust in Governance, and Accessibility** based on NVivo 12 coding results reveals the following:

- **Technology Adaptation**

  Differences in technological proficiency between younger and older generations influence the use of cashless payment methods. Younger generations adapt more quickly, whereas older generations require assistance. Simple training and direct support are essential to ensure that all taxpayers can utilize the system effectively.

- **Trust in Governance**
  A lack of trust in the security and transparency of digital systems has led some taxpayers to hesitate. Concerns mainly involve data security and the clarity of tax reporting. The government needs to enhance public outreach, strengthen system security, and improve transparency to build public trust in digital payment systems.

- **Accessibility**
  Taxpayers in remote areas face difficulties in accessing cashless payment methods due to limited internet connectivity and banking facilities. This situation hinders equitable service distribution. The government should expand digital infrastructure and provide banking services that are closer to local communities.

Integrative Findings (Mixed Methods)

- **Secondary data analysis** shows that non-cash property tax (PBB) payment transactions in Merauke Regency increased by **47% over the past two years**, with the highest contribution coming from **digital banking platforms (56%)**, followed by **digital wallets (31%)**, and **modern payment outlets (13%)** (Bank Indonesia, 2023) (bi.go.id). Regional tax revenue reports also indicate a **22% improvement in PBB collection efficiency** since the implementation of the cashless payment system in 2021 (Ministry of Finance, 2023) (kemenkeu.go.id).
- The integration of quantitative and qualitative results demonstrates alignment, indicating that although ease of use and institutional support drive cashless payment adoption, **socio-cultural barriers** and **digital infrastructure limitations** remain significant challenges. Triangulated data also reveal varying adoption rates across administrative areas in Merauke Regency, with the highest adoption rate recorded in urban centers (**78%**) and the lowest in peripheral areas (**43%**), primarily due to limited internet access (World Bank, 2022) (worldbank.org).

Secondary Data References

- **National tax compliance data:** The Indonesian Ministry of Finance (2024) reported that the national average for local tax compliance stands at **65%**, which is lower than the compliance rate among cashless payment users in Merauke.
- **Comparative study:** In the Philippines, the digitalization of payment systems—through platforms such as **InstaPay** and **PESONet**—has driven a reduction in cash usage, although the substitution scale remains limited (Glindro et al., 2024).

Discussion

1. Emphasis on Key Findings and Their Relevance to Research Objectives

The main findings of this study confirm that the adoption of cashless payment in Merauke Regency has significantly increased tax compliance (78% vs. 53% with the cash-based system) and improved administrative efficiency (a 7.3% reduction in collection costs for every 10% increase in digital transactions). These results align with the research objective of analyzing the impact of the cashless system on local tax governance while addressing the research question regarding the factors influencing successful implementation. The findings also reveal the complexities in the field, such as cultural resistance (40% cash preference among the senior generation) and limited digital infrastructure (in remote districts). This indicates that the success of digital transformation depends not only on top-down policies but also on local adaptation.

The study further emphasizes that the adoption rate of cashless Land and Building Tax (PBB) payments in Merauke Regency is significantly influenced by ease of use, trust in the system, local government policy support, and socio-cultural factors that hinder tax digitalization. These findings directly address the research problem, which focuses on identifying the key determinants of cashless payment adoption and the existing gaps in its implementation.

2. Interpretation of Findings within Theoretical Frameworks

Within the framework of the Diffusion of Innovation Theory, these findings reinforce the importance of **compatibility** with local values and **trialability** as key drivers of adoption. For example, collaboration with BRI for low-cost mobile banking services has increased the relative advantage of the cashless system. Meanwhile, Institutional Theory explains why **coercive isomorphism** (e.g., Regional Regulation No. 5/2022) is less effective without **normative isomorphism** (e.g., financial literacy training by local leaders). Qualitative findings on the role of "local champions" (trained tax officers) also support the theoretical proposition regarding the importance of key actors in institutional change.

The interpretation of these findings can also be explained through the **Technology Acceptance Model (TAM)**, where perceived ease of use and trust are key predictors of technology adoption intention and behavior (Davis, 1989). This study reinforces TAM's core assumption that a positive attitude toward technology, strengthened by trust in system security, significantly increases the acceptance of digital payment technologies in the public sector. Moreover, institutional support from the government expands this understanding, showing that policy and regulatory contexts can act as enablers that amplify the influence of individual perceptions on technology adoption (Venkatesh et al., 2016).

When compared to previous studies, these findings are consistent with Alalwan et al. (2024), who found that government support and public digital literacy are significant factors in increasing the use of cashless payments in developing countries. The results also align with Choudrie et al. (2021), who highlighted that socio-cultural barriers, such as a preference for cash, can hinder digital transformation in the public sector. However, the findings differ from Gupta et al. (2022), who showed that digital infrastructure factors are more dominant than social habit factors in urban areas with higher internet penetration rates. This difference can be explained by the geographical characteristics and technological access limitations in Merauke Regency, which still lags behind urban areas.

This research contributes by integrating quantitative and qualitative data to comprehensively identify the determinants of cashless payment adoption in low-infrastructure regions. It validates models like the TAM while adding crucial contextual insights, highlighting the need for local policy. This could form the basis for a new conceptual model incorporating socio-cultural and local policy factors, limitations include a cross-sectional design limiting causal analysis, a small qualitative sample (15 informants) affecting generalizability, and potential institutional bias from government-sourced secondary data.The policy implications of this study include the need for more adaptive strategies, such as strengthening community-based digital literacy, providing incentives to encourage cashless payment usage, and developing more equitable digital infrastructure in peripheral areas. For future research, a longitudinal approach is recommended to examine the dynamics of technology adoption over time and to develop a model that integrates psychological, structural, and contextual factors within the framework of digital payment adoption.

Research Contributions

This study contributes to the development of technology adoption models, particularly in the context of digital tax payments, by incorporating contextual dimensions such as socio-cultural factors and local institutional support. This means that the focus is not only on technical and individual aspects but also on how social norms, local culture, and support from governmental or non-governmental institutions influence individual or community decisions in adopting technology.

Policy Implications

The findings of this study provide several strategic implications for policymakers to enhance the adoption rate of digital tax payment systems, especially in rural or underdeveloped regions:

1. **Expanding community-based digital literacy**

   Training programs tailored to local contexts in remote districts should be implemented to improve public understanding of digital technology. A community-based approach will facilitate technology acceptance because training materials will be more relevant and delivered by trusted parties.

2. **Providing incentives for cashless payment usage**

   The government may offer incentives such as reduced administrative fees or simplified processes for taxpayers who use digital payment methods. This aims to encourage a shift from conventional to digital systems.

3. **Improving digital infrastructure**

   Reliable and affordable internet access is a prerequisite for supporting digital transformation. Therefore, investment in digital infrastructure development in areas with limited internet coverage is crucial.

Recommendations for Future Research

To strengthen the validity of the findings and broaden the understanding of digital tax payment adoption in remote regions, future research is recommended to:

1. **Adopt a longitudinal approach**

   Conducting longitudinal studies is essential to capture the dynamic changes in taxpayer behavior over time, particularly in response to technological innovations and regional fiscal policies. This approach will enable a deeper analysis of causal relationships and provide a more accurate understanding of the factors influencing the sustainability of non-cash payment adoption.

2. **Integrate psychological, institutional, and geographical factors**

   Future research should incorporate psychological factors (e.g., trust and risk perception), institutional factors (e.g., regulatory effectiveness and government support), and geographical factors (e.g., digital infrastructure access and distance to service centers) into the adoption model. This integration will yield a more holistic and context-sensitive understanding of the barriers and drivers of digital tax payment usage.

3. **Explore the role of community leaders as change agents**

   In-depth studies on the role of local leaders, including traditional figures and community influencers, in mediating technology acceptance could offer valuable insights into effective community-based digital literacy strategies.

Conclusion

This study demonstrates that the implementation of non-cash tax payment systems in Merauke Regency significantly improves tax compliance (78% compared to 53% under the cash-based system) and administrative efficiency, despite persistent challenges typical of remote regions, such as limited digital infrastructure and cultural resistance.

Qualitative findings highlight three key factors determining the success of non-cash payment adoption:

1. **Multi-stakeholder collaboration** among local governments, banking institutions, and digital service providers;
2. **Contextualized technology adaptation**, particularly in relation to the community's financial literacy levels; and
3. **Flexible and adaptive regulatory support** that accommodates local conditions.

The study directly addresses the research problem by demonstrating that non-cash payment systems can serve as an effective instrument for enhancing transparency and accountability in local tax governance, provided they are implemented through context-sensitive and inclusive approaches.

Theoretically, this research contributes to the development of an integrative model that links **Diffusion of Innovation Theory** with **Institutional Theory**, particularly within the context of regions with limited infrastructure. Practically, it offers evidence-based policy recommendations, such as implementing hybrid (digital-offline) tax payment systems and introducing culturally tailored financial literacy programs, which have been adopted as operational guidelines by local governments.

The implications of this study extend to other regions with similar geographical and socio-cultural characteristics, especially in developing areas. Future longitudinal research is strongly recommended to measure the long-term impact of non-cash tax payment adoption on regional fiscal autonomy and to further explore the role of community leaders as change agents in accelerating digital transformation in the public sector.

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