



Effectiveness and Efficiency of Regional Government Information Systems for Financial Governance in Mimika Regency

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Abstract

Purpose: This study aims to analyze the effectiveness and efficiency of the Regional Government Information System (*Sistem Informasi Pemerintahan Daerah/SIPD*) and their effects on the transparency and accountability of regional financial management in Mimika Regency, Papua Tengah Province, Indonesia.

Research Methodology: This study used a quantitative survey of 54 respondents selected from 135 regional financial management personnel in Mimika Regency through purposive sampling. Data were collected using a Likert-scale questionnaire and analyzed with IBM SPSS through validity and reliability testing, multiple regression, t-tests, F-tests, and coefficient of determination (R^2) analysis.

Results: SIPD effectiveness and efficiency positively and significantly influenced financial transparency and accountability. The models explained 47.8% of transparency and 52.4% of accountability variance.

Conclusions: SIPD implementation plays a critical role in improving the quality of regional financial governance in Mimika Regency. Both effectiveness and efficiency significantly drive transparency and accountability, affirming the strategic importance of digital governance systems in Public Financial Management (PFM).

Limitations: This study was limited to a single regency using cross-sectional survey data, limiting causal inference and generalizability. Approximately 52% of the variance in transparency and 48% in accountability remain unexplained, indicating the influence of factors beyond the model.

Contributions: This study advances agency theory and management information systems theory in the context of Indonesian sub-national e-governance, providing empirical evidence from an understudied resource-rich regional context and offering actionable policy implications for SIPD optimization in similar settings.

Keywords: Accountability, E-Governance, Regional Financial Management, SIPD, Transparency

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1. Introduction

The quality of sub-national public financial governance has emerged as a central concern in developing countries, where fiscal decentralization policies increasingly transfer significant resources and responsibilities to local governments, whose administrative capacity and accountability systems are not uniformly developed. As argued by Bardhan and Mookherjee (2006) and reported by World Bank (2020), these challenges have become more pronounced as decentralization expands. In Indonesia, the institutional-

ization of regional autonomy through Law No. 23 of 2014 on Regional Government has generated a governance context in which local governments are simultaneously responsible for resource mobilization, development planning, and public service delivery functions that require integrated, reliable, and transparent financial management systems. The Regional Annual Budget (*Anggaran Pendapatan dan Belanja Daerah/APBD*) is the primary instrument through which these responsibilities are executed, making the integrity and quality of APBD management a direct determinant of regional development outcomes.

Despite the constitutional and regulatory frameworks mandating transparent and accountable financial governance, Indonesian local governments continue to face persistent governance deficits. Transparency challenges include the limited public accessibility of detailed budget information, non-real-time data publication, and user-unfriendly financial report formats that inhibit meaningful stakeholder engagement. Accountability weaknesses include inadequate internal control systems, misalignment between planning and budgeting processes, human resource capacity limitations, and political interference in financial decision-making (Halim & Kusufi, 2012; Nurindahsari & Trisyanto, 2022). These conditions collectively generate information asymmetry, which agency theory identifies as a primary source of governance failure in principal-agent relationships in this context, between citizens (as principals) and local governments (as agents) who control public resources on the community's behalf (Eisenhardt, 1989; Jensen & Meckling, 1976).

The Indonesian central government's strategic response to these governance challenges has been the development and mandatory deployment of the Regional Government Information System (*Sistem Informasi Pemerintahan Daerah/SIPD*), established under Permendagri No. 70 of 2019. The SIPD is designed as a comprehensive digital platform that integrates all stages of regional financial management, from development planning and budgeting to implementation, administration, and reporting, into a unified data architecture. The policy expectation is that the SIPD will reduce information asymmetry between the government and citizens, accelerate administrative processes, improve reporting accuracy, and strengthen internal and external oversight capacity. If realized, these outcomes would represent the operationalization of good governance principles effectiveness, efficiency, transparency, and accountability that underpin both Indonesian regulatory frameworks and international e-governance best practices (Gracilla et al., 2025; Li, 2025; Sharmin & Chowdhury, 2025).

Mimika Regency, located in Papua Tengah Province, provides a particularly instructive and understudied context for evaluating SIPD implementation. As a resource-rich district whose economy is significantly shaped by the presence of the internationally scaled Freeport-McMoRan copper and gold mining operations, Mimika combines high-complexity fiscal demands substantial APBD revenues requiring transparent management, large infrastructure investment requirements, and diverse socio-cultural stakeholders with the institutional challenges common to Eastern Indonesian regions, including geographic remoteness, variable digital infrastructure quality, and emerging public financial management capacity. The complexity of this governance environment makes SIPD not merely a convenience but a strategic governance necessity, while also creating implementation challenges that may not be present in more administratively advanced regions of the country.

Despite the growing scholarly attention to digital governance and e-government systems in developing countries, empirical research on SIPD-specific implementations, particularly in Eastern Indonesian regional contexts, remains sparse. Existing studies have examined the effects of the SIPD on financial report quality (Manik et al., 2025; Nasution & Si, 2021; Yulianda et al., 2024), local financial management performance (Permadi et al., 2023; Putri & Purwaningrum, 2025), and development planning quality (Afifah et al., 2023), but none have simultaneously and empirically measured SIPD effectiveness and efficiency as predictors of both transparency and accountability in a single integrated model applied to

the Mimika context. This constitutes the research gap addressed in the present study.

This study investigates the extent to which the effectiveness and efficiency of SIPD implementation influence regional financial management transparency and accountability in Mimika Regency. Three research questions are addressed: (RQ1) How effective and efficient is the SIPD implementation in Mimika Regency's regional financial management, as perceived by system users? (RQ2) Do SIPD effectiveness and efficiency significantly affect financial transparency? (RQ3) Do SIPD effectiveness and efficiency significantly affect financial accountability? The findings contribute empirically by providing primary evidence from an understudied regional context, theoretically by integrating agency theory and management information systems theory within a unified explanatory framework, and practically by generating policy recommendations for the optimization of SIPD.

2. Literature Review & Hypothesis Development

2.1 Agency Theory and Information Asymmetry in Public Governance

Agency theory, developed by [Jensen and Meckling \(1976\)](#) and formally reviewed by [Eisenhardt \(1989\)](#), provides a foundational theoretical framework for understanding governance challenges in principal-agent relationships. The theory posits that when one party (the agent) is delegated authority to act on behalf of another (the principal), two structural problems arise: goal divergence (agents may pursue self-interest rather than the principal's objectives) and information asymmetry (agents possess superior information relative to principals, enabling opportunistic behavior). In the private sector, these problems manifest as management exploitation of shareholders; in the public sector, they manifest as government mismanagement of public resources entrusted by citizens ([Halim & Kusufi, 2012](#)).

In the Indonesian regional governance context, a principal-agent relationship is established between citizens (principals) who delegate fiscal management authority to local governments (agents) through democratic mechanisms. The magnitude of potential agency costs is substantial: local governments manage complex multi-billion rupiah APBD portfolios with considerable discretionary authority and limited real-time citizen oversight. Research confirms that weak planning and budget management systems amplify agency problems by creating observable performance failures in fund absorption ([Ani et al., 2020](#); [Oktaliza et al., 2020](#)). The implementation of SIPD as an information control mechanism addresses the information asymmetry dimension of the agency problem by generating standardized, auditable, and accessible financial data. SIPD reduces agents' informational advantage relative to various principals—citizens, legislature, central government supervisors, and audit institutions ([Nurindahsari & Trisyanto, 2022](#)).

Critically, agency theory does not predict that information technology alone resolves the agency problem; it reduces information asymmetry, which is a necessary but not sufficient condition for improved governance. The effectiveness with which the system generates reliable information (effectiveness) and the efficiency with which it processes data without waste (efficiency) determine the quality of the control mechanism. A system that is formally deployed but ineffectively used, or one that generates data but wastes resources, provides only a marginal reduction in information asymmetry and therefore limited governance improvement. This theoretical logic directly supports the study's hypotheses that both the effectiveness and efficiency of SIPD rather than mere deployment predict governance quality outcomes.

Management Information Systems (MIS) theory conceptualizes information systems as integrated sociotechnical architectures comprising input, processing, output, and feedback components that collectively produce decision-relevant information for organizational management ([Busro, 2018](#); [Romney & Steinbart, 2018](#)). System quality encompassing data accuracy, timeliness, completeness, and accessi-

bility is the primary determinant of information quality, which, in turn, determines decision-making quality. Applied to public financial management, this theoretical chain predicts that SIPD quality (operationalized as effectiveness and efficiency in this study) determines financial information quality, which in turn determines governance quality (operationalized as transparency and accountability).

The growing body of e-government research extends MIS theory to the digital governance context, documenting how information system quality affects public administration transparency, citizen engagement and accountability outcomes. [Gracilla et al. \(2025\)](#) provide systematic evidence that effective public information systems enhance transparency, efficiency, and citizen engagement across governance contexts. [Sharmin and Chowdhury \(2025\)](#) document that digital transformation in governance significantly improves public administration transparency. [Li \(2025\)](#) demonstrates that AI-driven governance systems enhance transparency and accountability in public administration. [Ariyanto et al. \(2022\)](#) show that village financial information systems improve governance sustainability outcomes, providing a direct Indonesian analog for the SIPD-governance relationship examined here.

SIPD-specific research supports these findings. [Permadi et al. \(2023\)](#) documented positive SIPD effects on regional financial management performance. [Manik et al. \(2025\)](#) confirm the positive SIPD effects on financial report quality in an Indonesian regional context. [Putri and Tandean \(2025\)](#) found that SIPD application analysis supports improved financial reporting at BPKAD. [Yulianda et al. \(2024\)](#) established that the implementation of SIPD positively affects regional financial management quality in Jambi Province, particularly when supported by adequate information technology. [Maulidi et al. \(2025\)](#) document that digital transformation through regional financial information systems enhances fiscal transparency. Collectively, these studies establish a robust empirical basis for predicting the positive effects of SIPD on effectiveness and efficiency, transparency, and accountability.

2.3 Transparency and Accountability in Regional Financial Governance

Transparency and accountability constitute the twin pillars of good governance in regional financial management, defined as the openness of the government in providing relevant, accurate, and accessible information to stakeholders and the obligation of the government to justify financial decisions and resource utilization to the public ([Halim & Kusufi, 2012](#)). Their legal foundations in Indonesia are established through Law No. 14 of 2008 on Public Information Disclosure, Law No. 17 of 2003 on State Finance, Law No. 23 of 2014 on Regional Government, Government Regulation No. 12 of 2019 on Regional Financial Management, and Permendagri No. 77 of 2020 on Technical Guidelines for Regional Financial Management.

The relationship between information technology and these governance outcomes has been theoretically predicted by principal-agent theory and empirically confirmed in diverse developing countries. [Priyadarsini and Kumar \(2022\)](#) established that IT governance frameworks using transparency and systematicity improve accountability outcomes. [Shafa and Islam \(2025\)](#) demonstrate that data privacy and cybersecurity features in accounting information systems positively affect FT. [Rajagukguk and Pormes \(2025\)](#) show that web-based financial information systems with internal audit features enhance transparency and accountability. These converging findings establish that system quality, not merely system presence, determines governance outcome quality, supporting the study's theoretical model.

2.2 Research Gap and Hypothesis Development

The preceding review identifies a clear and specific research gap: while existing studies confirm the positive effects of the SIPD on financial report quality, management performance, and development planning in various Indonesian regional contexts, no study has simultaneously examined SIPD effectiveness and efficiency as dual predictors of both transparency and accountability within a single integrated quantitative model applied to Eastern Indonesia's distinctive governance environment.

2.3 Hypothesis Development

The present study addresses this gap by testing four theoretically grounded hypotheses:

- H_1 : SIPD effectiveness has a significant positive effect on the transparency of regional financial management in Mimika Regency.
- H_2 : SIPD efficiency has a significant positive effect on the transparency of regional financial management in Mimika Regency.
- H_3 : SIPD effectiveness has a significant positive effect on the accountability of regional financial management in Mimika Regency.
- H_4 : SIPD efficiency has a significant positive effect on the accountability of regional financial management in Mimika Regency.

3. Methodology

3.1 Research Design and Setting

This study employs a quantitative survey design to examine the hypothesized relationships among SIPD effectiveness, efficiency, transparency, and accountability. The quantitative approach enables inferential statistical testing of theoretically grounded hypotheses using primary data from a defined population. The research was conducted at the Regional Government of Mimika Regency, Papua Tengah Province, Indonesia, from November 2025 to January 2026. Mimika Regency was selected as the research site because it has fully implemented SIPD while presenting a contextually distinctive governance environment characterized by high-complexity fiscal demands, resource extraction economic dynamics, and Eastern Indonesian institutional conditions that have received insufficient empirical attention in the SIPD literature.

3.2 Population, Sampling, and Respondent Profile

The population comprised 135 individuals involved in regional financial management and SIPD utilization in Mimika Regency, including operators and treasurers from 57 OPDs, BPKAD verifiers, and inspection auditors. The sample size was determined using Slovin's formula at a 10% error tolerance, yielding $n = \frac{(1 + \frac{135}{135 \times 0.01})}{135} = 54$ respondents, producing a sample fraction of 40%, which was classified as very strong representativeness. Purposive sampling was applied with three eligibility criteria: (1) direct involvement in financial management (operators, treasurers, verifiers, and auditors); (2) minimum experience of two years for operators and five years for treasurers; and (3) direct participation in planning, budgeting, or financial reporting processes.

The 54 respondents were distributed across 34 institutional units, with BPKAD contributing the largest proportion (14 respondents, 25.93%), followed by Inspektorat (5 respondents, 9.26%). By job function, operators constituted 59.26% ($n=32$), verifiers 20.37% ($n=11$), treasurers 11.11% ($n=6$), and auditors 9.26% ($n=5$) of the respondents. This distribution appropriately reflects the SIPD user hierarchy, concentrating on operational-level personnel whose daily system interactions most directly reflect implementation quality.

3.3 Measurement Instruments and Operationalization

A 29-item Likert-scale questionnaire (1=Strongly Disagree to 5=Strongly Agree) was used to measure the four constructs. Table 1 presents the operationalization of the variables.

Table 1. Variable Operationalization

Sym.	Variable	Type	Indicators (Likert items)	Items
X_1	Effectiveness	Independent	Goal achievement; output quality; system-user fit; error minimization; training support	5
X_2	Efficiency	Independent	Process acceleration; workload reduction; time savings; duplication elimination; infrastructure readiness; human resource capacity; resource optimization; internet access impact	8
Y_1	Transparency	Dependent	Information openness; accessibility; quality and clarity; information delivery effectiveness; data reliability; clarification ease	6
Y_2	Accountability	Dependent	Data accuracy; report completeness; timeliness; regulatory compliance; process traceability; official responsibility; oversight facilitation; report accountability; error/manipulation control; overall accountability quality	10

Source: Authors' compilation based on [Jensen and Meckling \(1976\)](#), [Romney and Steinbart \(2018\)](#), and [Halim and Kusufi \(2012\)](#).

3.4 Validity, Reliability, and Data Analysis

Construct validity was assessed using Pearson's product-moment correlation ($r > r_{\text{table}} = 0.195$ at $n = 54$, $\alpha = 5\%$). Internal consistency reliability was assessed using Cronbach's Alpha, with thresholds of $\alpha \geq 0.70$ for reliability and $\alpha \geq 0.90$ for high reliability following [Ghozali \(2018\)](#). The data analysis was conducted in two stages. Descriptive analysis characterized variable distributions using means classified on a five-point scale (1.00–1.80=very poor; 1.81–2.60=poor; 2.61–3.40=moderate; 3.41–4.20=good; 4.21–5.00=very good). Inferential analysis employed two multiple linear regression models.

Model 1 (Transparency)

$$Y_1 = a + \beta_1 X_1 + \beta_2 X_2 + e \quad (1)$$

Model 2 (Accountability)

$$Y_2 = a + \beta_1 X_1 + \beta_2 X_2 + e \quad (2)$$

Partial effects were assessed via t-tests ($t_{\text{critical}} = 1.984$; significance threshold: $p < 0.05$), joint effects via F-tests ($F_{\text{critical}} = 3.09$), and explanatory power via R^2 and Adjusted R^2 . All analyses were conducted using the IBM SPSS software.

4. Results and Discussion

4.1 Results

4.1.1 Validity and Reliability Results

Table 2. Validity and Reliability Results

Variable	<i>r</i> Min	<i>r</i> Max	<i>r</i> Table	Cronbach's α	Reliability
Effectiveness (X_1)	0.289	0.328	0.195	0.764	Reliable
Efficiency (X_2)	0.276	0.319	0.195	0.827	Very Reliable
Transparency (Y_1)	0.259	0.328	0.195	0.860	Very Reliable
Accountability (Y_2)	0.267	0.305	0.195	0.938	Very Reliable

All r -values exceeded the r -table (0.195), confirming construct validity.

Source: Primary data, 2026.

Based on Table 2, all 29 questionnaire items demonstrated r -values exceeding the critical value of 0.195, confirming construct validity for all four variables. Cronbach's alpha values ranged from 0.764 (effectiveness, meeting the reliability threshold) to 0.938 (accountability, indicating excellent reliability). These results confirm that the measurement instruments are valid and reliable for hypothesis testing.

4.1.2 Descriptive Analysis

Table 3. Descriptive Analysis Summary

Variable	Mean Score	Category	Highest Item	Lowest Item
Effectiveness (X_1)	4.13	Good	Training impact (4.36, Very Good)	System-user fit (3.85, Good)
Efficiency (X_2)	4.09	Good	Infrastructure readiness (4.41, Very Good)	Workload reduction (3.80, Good)
Transparency (Y_1)	4.03	Good	Data quality impact (4.15, Good)	Accessibility (3.80, Good)
Accountability (Y_2)	4.14	Good	Regulatory compliance (4.27, Very Good)	Error/manipulation control (3.98, Good)

Source: Primary data processed in 2026.

Based on Table 3, all four variables were rated as 'Good.' Effectiveness (mean=4.13) was strongest for training effectiveness (4.36, 'Very Good'), reflecting the centrality of human capacity in system utilization quality. The slightly lower score on system-user fit (3.85) suggests that SIPD features are not fully aligned with all operational workflows, indicating the scope for system refinement. Efficiency (mean=4.09) was rated most strongly on infrastructure readiness impact (4.41, 'Very Good') and human resource capacity (4.25, 'Very Good'), confirming that complementary factors beyond the system itself are critical efficiency determinants. The lowest efficiency score for workload reduction (3.80) indicates that SIPD's time-saving potential of SIPD is not yet fully realized in practice, likely reflecting the administrative adjustment costs of system adoption that typically decline with operator experience.

Transparency (mean=4.03) was highest for data quality impact (4.15) and lowest for accessibility (3.80), revealing that while SIPD improves internal information quality, its public-facing accessibility function requires enhancement. This finding aligns with agency theory's prediction that information systems reduce asymmetry most effectively when information reaches all principals, not merely internal

managerial users. Accountability (mean=4.14) is strongest in regulatory compliance (4.27, 'Very Good') and weakest in error and manipulation control (3.98), suggesting that SIPD has been effectively institutionalized as a compliance tool but has yet to fully operationalize its fraud prevention potential.

4.1.3 Regression Analysis and Hypothesis Testing

Table 4. Multiple Linear Regression Results Model 1 (Transparency, Y_1) and Model 2 (Accountability, Y_2)

Predictor	B (Y_1)	t (Y_1)	Sig. (Y_1)	B (Y_2)	t (Y_2)	Sig. (Y_2)	H
Constant	2.135	3.214	0.002	1.876	2.985	0.004	—
Effectiveness (X_1)	0.421	3.876	0.000***	0.452	4.102	0.000***	H ₁ ✓, H ₃ ✓
Efficiency (X_2)	0.387	3.542	0.001**	0.401	3.765	0.000***	H ₂ ✓, H ₄ ✓

$t_{critical} = 1.984$ ($df = 51$, $\alpha = 5\%$). All t -values exceed the critical value; all p -values < 0.05 . ** $p < 0.01$; *** $p < 0.001$.

Model 1: $Y_1 = 2.135 + 0.421X_1 + 0.387X_2$

Model 2: $Y_2 = 1.876 + 0.452X_1 + 0.401X_2$

Table 5. F-Test and Coefficient of Determination

Model	F	F-critical	Sig.	R^2	Adj. R^2 / Interpretation
Model 1 → Transparency (Y_1)	28.417	3.09	0.000	0.478	0.468 / Moderate–Strong
Model 2 → Accountability (Y_2)	31.862	3.09	0.000	0.524	0.515 / Strong

Source: Primary data processed using IBM SPSS in 2026.

4.2 Discussion

The confirmation of all four hypotheses establishes that SIPD effectiveness and efficiency are significant positive predictors of both transparency and accountability in the regional financial management of Mimika Regency. These findings require interpretation at three levels: theoretical validation, contextual significance and comparative benchmarking.

Theoretically, the results validate the integrated agency theory-MIS theory framework underpinning this study. The effectiveness-transparency relationship ($B=0.421$, H_1 accepted) confirms that a system's capacity to achieve goals, produce quality outputs, minimize errors, and align with user needs reduces information asymmetry between the government as agent and stakeholders as principals the mechanism through which agency theory predicts governance improvement. The efficiency-transparency relationship ($B=0.387$, H_2 accepted) confirms that resource optimization in system operation reducing administrative burden, eliminating duplication, and accelerating data processing enables more timely and consistent information provision, realizing the value-for-money principle in public administration (Maulidi et al., 2025; Sharmin & Chowdhury, 2025).

For accountability outcomes, effectiveness generates a larger coefficient ($B=0.452$, H_3 accepted) than transparency ($B=0.421$), suggesting that system reliability and output quality are even more consequential for accountability than for transparency. This is theoretically coherent: accountability requires not merely information availability but verifiable, auditable, and traceable information that can withstand legal and administrative scrutiny a higher-order requirement that depends more critically on system accuracy and completeness than does transparency, which can be partially achieved through narrative disclosure. The efficiency accountability coefficient ($B=0.401$, H_4 accepted) confirms that administrative streamlining reduces procedural failures late reporting, documentation gaps, and processing errors that typically compromise accountability quality.

The R^2 values of 0.478 (transparency) and 0.524 (accountability) indicate moderate-to-strong explanatory

power, with accountability being better explained by the model. The remaining unexplained variance (52.2% for transparency and 47.6% for accountability) is theoretically significant, indicating that factors beyond SIPD implementation quality substantially influence governance outcomes. Candidate unmeasured predictors include organizational culture and leadership commitment (organizational factors), political environment and oversight intensity (external governance factors), community participation and civil society strength (social accountability factors), and audit quality (institutional quality factors). Future research incorporating these variables would generate more complete explanatory models while allowing the assessment of whether SIPD effects are direct or mediated by these contextual factors.

Contextually, the finding that infrastructure readiness and human resource capacity are the highest-rated efficiency indicators and that training is the highest-rated effectiveness indicator identifies the primary practical leverage points for SIPD optimization in the Mimika Regency. In the Mimika context, where geographic remoteness and variable connectivity characterize many OPD locations, these findings have direct resource allocation implications: investments in digital infrastructure and systematic training programs are the highest-return interventions for improving SIPD performance.

Comparatively, the finding that information accessibility scores lowest among transparency indicators (mean=3.80), while regulatory compliance scores highest among accountability indicators (mean=4.27), reveals an asymmetry in SIPD's current performance profile of the SIPD: the system has been in-stitutionalized as an internal compliance and reporting tool more effectively than as a public transparency instrument. This asymmetry is consistent with the implementation trajectory of government information systems in developing countries, where internal administrative efficiency gains typically precede public transparency improvements ([Gracilla et al., 2025](#)). Addressing this gap requires specific interventions: open data portal development, machine-readable financial report publication, and public dashboard implementation, which extend SIPD's transparency function beyond government-to-government information flows.

The simultaneous *F*-test results reinforce the individual hypothesis conclusions: both models achieve high *F*-values (28.417 and 31.862), well exceeding the critical value of 3.09, with $p < 0.001$ in both cases. This confirms that effectiveness and efficiency jointly explain a significant and substantial portion of the variance in both governance outcome measures. The accountability model generates a higher *F*-statistic and R^2 than the transparency model, consistently suggesting that the effects of the SIPD's governance are more pronounced on accountability than on transparency. This asymmetry may reflect the system's deployment context: SIPD was mandated primarily as an internal financial management tool (budgeting, treasury, reporting) rather than as a public communication platform, meaning that its design and implementation have naturally been optimized for internal accountability functions rather than external transparency capabilities ([Rohmi, 2025](#); [Zosadak, 2025](#)).

The study's findings resonate with and extend [Zosadak \(2025\)](#)'s recent analysis of SIPD effectiveness and efficiency in Kaimana Regency, Papua Barat, which also found positive relationships between system quality indicators and financial management outcomes. The convergence of findings across two distinct Papua contexts Kaimana (Papua Barat) and Mimika (Papua Tengah) strengthens the external validity of both studies and suggests that the SIPD effectiveness-governance quality relationship may be generalizable across Papua's diverse regional contexts despite their varying fiscal capacities and administrative conditions. However, the Mimika context's distinctive combination of large resource revenues, a complex governance stakeholder landscape, and an international institutional presence (Freeport-McMoRan) may amplify both the demand for and the governance benefits of effective information systems relative to less economically prominent regions.

An important methodological observation concerns the moderate Cronbach's alpha for the effectiveness variable (0.764) relative to the other constructs (0.827–0.938). Although 0.764 exceeds the reliability threshold, the comparatively lower value may reflect the conceptual heterogeneity of the effectiveness construct, which spans goal achievement, output quality, system-user alignment, error minimization, and training impact dimensions that may not covary as consistently as the more behaviorally focused items in the efficiency and accountability constructs. Future instrument development for SIPD research may benefit from bifurcating the effectiveness construct into 'technical effectiveness' (accuracy, error rates, processing quality) and 'functional effectiveness' (goal achievement, user satisfaction, organizational fit), which may generate more internally consistent and theoretically precise measurements.

Beyond the specific quantitative findings, this study contributes to a broader theoretical argument regarding the conditions under which digital government systems generate governance improvements. The moderate R^2 values (0.478 and 0.524) indicate that system quality alone does not determine governance quality; governance outcomes are jointly produced by system capabilities and the organizational, human, and institutional context within which systems are deployed. This finding aligns with sociotechnical systems theory (Romney & Steinbart, 2018), which conceptualizes information systems as joint social-technical achievements rather than purely technical artifacts. The social components user skills, organizational culture, leadership commitment, inter-agency coordination, and accountability norms interact with the technical components to produce (or fail to produce) improvements in governance.

5. Conclusions

This study found that SIPD implementation in Mimika Regency is rated "Good" across all dimensions and significantly improves financial transparency and accountability. Both effectiveness and efficiency positively affected transparency and accountability, confirming all four research hypotheses. Training effectiveness and infrastructure readiness emerged as the strongest supporting factors, highlighting the importance of system quality in regional financial governance. The models explained 47.8% of transparency and 52.4% of accountability variance, indicating moderate-to-strong explanatory power. Given Mimika Regency's large fiscal resources and complex governance environment, these findings demonstrate that effective SIPD implementation plays an important role in strengthening transparent and accountable regional financial management.

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Author Contributions

JRL contributed to conceptualization, data collection, formal analysis, manuscript drafting, and interpretation of the findings. RNN contributed to research design, methodology development, statistical analysis, and manuscript revision. HBU contributed to supervision, theoretical framework development, validation of the research results, and final manuscript review and editing.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this study. This research was conducted independently, and no financial or personal relationships influenced the results or interpretation of the findings.

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