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Analysis of Digital Technology Implementation in Enhancing Financial Management Effectiveness

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ABSTRACT

This descriptive qualitative study analyzes the implementation of the Regional Government Information System (SIPD) at BPKD Gowa Regency, its contribution to effective financial management, and the factors that support and hinder it through interviews and observations. The findings show that SIPD has been implemented comprehensively since 2025, covering everything from financial planning to reporting, and is further supported by features such as Electronic Signatures (TTE) and QRIS. The system is proven to enhance time efficiency, data accuracy, transparency, accountability, and real-time oversight. Primary supporting factors include strong leadership commitment, clear regulatory frameworks, routine technical guidance, and close coordination with central authorities. However, the implementation still faces notable obstacles, including heavy dependency on central server stability, a lack of formal training for system operators, data integration hurdles, and application feature limitations. Overall, SIPD plays a crucial role in optimizing regional financial management, though its ultimate success remains heavily dependent on infrastructure readiness and the competence of human resources.

Kata Kunci:
Teknologi Digital; SIPD; Efektivitas Pengelolaan Keuangan; Transparansi; Akuntabilitas

ABSTRAK

Penelitian kualitatif deskriptif ini menganalisis implementasi Sistem Informasi Pemerintahan Daerah (SIPD) di BPKD Kabupaten Gowa, kontribusinya terhadap efektivitas pengelolaan keuangan, serta faktor pendukung dan penghambatnya melalui wawancara dan observasi. Temuan penelitian menunjukkan bahwa SIPD telah diimplementasikan secara komprehensif sejak tahun 2025, mencakup rentang dari perencanaan keuangan hingga pelaporan, serta didukung lebih lanjut oleh fitur-fitur seperti Tanda Tangan Elektronik (TTE) dan QRIS. Sistem ini terbukti meningkatkan efisiensi waktu, keakuratan data, transparansi, akuntabilitas, serta pengawasan secara real-time. Faktor pendukung utamanya meliputi komitmen kepemimpinan yang kuat, kerangka regulasi yang jelas, bimbingan teknis yang rutin, serta koordinasi yang erat dengan pemerintah pusat. Kendati demikian, implementasi ini masih menghadapi hambatan yang signifikan, di antaranya ketergantungan yang tinggi pada stabilitas server pusat, minimnya pelatihan formal bagi operator sistem, kendala integrasi data, serta keterbatasan fitur aplikasi. Secara keseluruhan, SIPD memegang peranan krusial dalam mengoptimalkan pengelolaan keuangan daerah, meskipun pada akhirnya kesuksesan tetap sangat bergantung pada kesiapan infrastruktur dan kompetensi sumber daya manusia.

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INTRODUCTION

The implementation of digital technology has become an essential pillar in bureaucratic reform that prioritizes government transparency, efficiency, and accountability. Advances in information technology are shifting governance from manual methods to integrated, data- and application-based systems (Azanil & Rezza, 2024; Citra, 2023). Far beyond the mere use of technological tools, digitalization is a targeted step to boost the quality of public services and the performance of government agencies (Andhayani & Eltivia, 2024). Particularly in the public finance sector, digital systems ensure that every stage from budgeting and administration to reporting runs more effectively, efficiently, and transparently (Marthen et al., 2025).

The development of digital technology in government agencies is part of bureaucratic reform aimed at making public services faster, more responsive, and better targeted. Digitalization transforms how bureaucracy works through automation systems and interconnected data, making decision-making far more accurate (Jaya et al., 2025; Putri et al., 2025). For this reason, digital transformation is crucial for improving the quality of governance (Manik et al., 2025). As a primary benchmark of good governance, regional financial management must be managed effectively. Its assessment includes the timeliness of reporting, data accuracy, budget transparency, and full accountability for the use of public funds (Lisrohmatin et al., 2025).

The implementation of digital technology serves as a strategic element to improve administrative efficiency, reduce recording errors, and strengthen integrated internal control systems (Rizky Setiawan, 2024; Yulia, 2022). Along with the rapid advancement of digital technology, regional governments are required to be ready to adapt. This adaptation includes the utilization of technology, shifts in working patterns, enhancement of human resource capacity, and adjustments to digital-based work systems (Fitriasari, 2024; Restu Erik Santoso, 2024). These steps align with the principles of good governance outlined by the United Nations Development Programme (UNDP), which encompass transparency, accountability, effectiveness, and public participation. Therefore, the integration of digital technology in regional financial management is a crucial strategy for achieving clean, efficient, and accountable governance (Pinontoan et al., 2025).

Various studies highlight both the positive impacts and challenges of technology adoption in the public sector. Santoso (2025) and Makatara et al. (2025) note that technology has enhanced transparency, accountability, and public participation, despite ongoing infrastructure and digital literacy obstacles. Madina (2025) also identified similar challenges related to the digital divide and skills gaps. In contrast, Darma & Darma (2025) show that digitalization accelerates reporting and improves data accuracy. From a human resources perspective, Kamela (2025) emphasizes that increasing employee knowledge can boost performance, with technology strengthening organizational relationships and coordination.

The Regional Financial Management Agency (BPKD) of Gowa Regency plays a crucial role in managing regional finances and has now adopted various digital technologies to support its performance. Based on preliminary information, BPKD Gowa Regency utilizes the Regional Government Information System (SIPD) as the central hub for financial management. In addition, they also employ supporting technologies such as QRIS for non-cash payments, Electronic Signatures (TTE) for document authorization, and an e-disposition system for official correspondence.

The adoption of these various technologies demonstrates a strong commitment to transforming financial governance into a more modern and integrated framework. Nevertheless, the success of this digitalization is measured not only by the completeness of the system, but also by how effectively these technologies simplify workflows, expedite bureaucracy, provide accurate financial data, and assist leadership in making prompt and accountable decisions (Farhan et al., 2025; Parlindungan & Surbakti, 2025).

Based on the literature presented above, various previous studies consistently confirm that the implementation of digital technology contributes significantly to increasing transparency, accountability, reporting speed, and the expansion of public participation in the government sector. Nevertheless, the effectiveness of this digital transformation is inseparable from various classic obstacles, such as infrastructure limitations, the digital divide, low literacy, and challenges in adjusting human resource competencies. Furthermore, most prior research tends to focus on macro-evaluations or system effectiveness in general, while specific, in-depth studies on the extent to which the implementation of complex technologies such as the integration of financial systems, non-cash transactions, and electronic administration directly contributes to the effectiveness of governance in specific regional financial management agencies, particularly at BPKD Gowa Regency, still leave room for a more comprehensive study. Therefore, this study aims to bridge this gap by examining in depth how the implementation of digital technology, its supporting and inhibiting factors, and its contribution affect the effectiveness of financial management at BPKD Gowa Regency.

METHOD

This study uses a descriptive qualitative method to examine in depth the phenomenon of digital technology implementation and its impact on the effectiveness of regional financial management at the Regional Financial Management Agency (BPKD) of Gowa Regency, located at Jalan Mesjid Raya No. 26, Sungguminasa, Somba Opu. This approach was selected to enable the researcher to systematically and comprehensively explore real conditions, organizational behavior, and the direct experiences of personnel in operating digital systems. This location was determined because BPKD Gowa Regency holds strategic authority in financial administration and has implemented various digital innovations, such as the Regional Government Information System (SIPD), QRIS, Electronic Signatures (TTE), and e-disposition. This study is planned to take place over approximately two months, from data collection to the preparation of the final report.

Data sources in this study are divided into primary data, obtained directly through interviews and field observations to gather actual information, and secondary data consisting of literature, journals, regulations, and official document archives to strengthen the analysis. The selection of informants used purposive sampling to select parties directly involved and with a deep understanding of the financial digitalization process. Key informants in this study include structural officials and technical operators at BPKD Gowa Regency to understand the digitally based financial recording and administration processes. If the collected data still requires further elaboration, informant sampling may be expanded using the snowball sampling technique.

Data collection used three main techniques: in-depth interviews with key informants, direct observation of digital-based financial management activities within the institution, and documentation studies to examine official archives and reports. The validity of all collected data was tested through data triangulation, namely by comparing information from interview results, observations, and supporting documents. Furthermore, data analysis used the Miles and Huberman interactive model, which consists of three stages: data reduction to filter relevant information, data display in the form of systematic narratives and tables, and drawing conclusions alongside periodic verification to ensure the validity of the research findings.

RESULT AND DISCUSSION

RESEARCH RESULTS

The implementation of digital technology, particularly through the utilization of the Regional Government Information System (SIPD), represents a strategic step for the public sector to realize effective, efficient, transparent, and accountable financial governance. At BPKD Gowa Regency, the adoption of this integrated system plays a crucial role in supporting all stages of financial management, from planning to accountability. Based on interview results of interviews, observations, and documentation, the findings of this study develops three main research questions that examine SIPD implementation and the level of user acceptance using the Technology Acceptance Model (TAM).

Table 1. Research Findings on the Implementation of Digital Technology at BPKD Gowa Regency

No	Findings Aspect	Focus / Scope	Main Findings
1	Implementation Process & System Scope	SIPD Modules & Usage	• SIPD is implemented through three main modules: Planning & Budgeting, Administration, and Accounting & Reporting. • Implemented progressively starting from budgeting in 2023 and fully utilized across all modules in 2025. • Completely replaces manual systems and optimizes time, effort, and resources.
2	Use of Supporting Digital Features	E-Signature (TTE) & QRIS	• The use of Electronic Signatures (TTE) cuts down document validation time without requiring physical meetings. • The use of QRIS facilitates flexible non-cash transactions from anywhere.
3	Digital-Based Coordination Patterns	Inter-departmental Integration & Communication	• Financial management workflows from planning to reporting are connected within a single unified system, preventing data discrepancies between departments. • Operational coordination is reinforced through system integration and digital communication groups (WhatsApp) involving operators, treasurers, and planning teams.

Source: Data processed by the author (2026)

The implementation of the Regional Government Information System (SIPD) at BPKD Gowa Regency has been carried out comprehensively, ranging from the integration of planning modules to financial reporting. The adoption of this technology has not only successfully replaced inefficient manual systems, but is also supported by the utilization of complementary digital features such as Electronic Signatures (TTE) and QRIS, which enhance mobility and work flexibility. Furthermore, this digital transformation has significantly restructured internal coordination patterns through cross-departmental data system connectivity and the use of digital communication media, creating a more synergistic, transparent, and integrated workflow within BPKD Gowa Regency.

Table 2. Research Findings on the Contribution of SIPD to the Effectiveness of Regional Financial Management at BPKD Gowa Regency

No	Aspect of Findings	Focus	Main Findings
1	Time Efficiency and Workflow	Workflow & System Discipline	• SIPD accelerates manual work stages into more concise and structured processes while minimizing human error. • The system operates in real-time, demands high discipline, and eliminates backdating practices.
2	Data Accuracy and Validation	Verification Mechanism & Cross-Check	• Data validation is conducted hierarchically, starting from regional agencies (SKPD) up to advanced verification within the finance division. • Ensures consistent data flow alignment across modules. • Maintains manual record-keeping as an additional precaution for cross-checking.
3	Budget Management Transparency	Automatic Transaction Tracking	• All digital transactions are automatically recorded within the system with a neat audit trail. • Facilitates instant retrieval of historical data whenever needed, minimizing the risk of lost data.
4	Accountability through Standardized Reporting	Format Compliance & Accounting Standards	• The system strictly mandates that reporting follows established formats, account codes, and applicable regulations. • Generated financial reports must be reliable, error-free, timely, and compliant with Government Accounting Standards (SAP).
5	Budget Supervision and Control	Real-Time Monitoring & User Activity	• Enables leadership to easily supervise and control budgets in real-time without manual one-by-one inspections. • Each staff member has a dedicated account based on their job duties, with the system automatically tracking user activity and engagement.

Source: Data processed by the author (2026)

The implementation of the Regional Government Information System (SIPD) significantly contributes to the effectiveness of financial management at BPKD Gowa Regency. The shift from a manual to a digital system has not only improved time efficiency, accuracy, and budget transparency, but also strengthened accountability through the application of standardized reporting protocols and a real-time monitoring system. With tiered verification, automated transaction trails, and structured user activity tracking, SIPD ensures that the entire regional financial management cycle runs orderly, reliably, and in full compliance with the provisions of Government Accounting Standards (SAP).

Table 3. Supporting Factors for SIPD Implementation

No	Aspect	Main Findings
1	Leadership Commitment & Support	Strong leadership backing is the primary driver of smooth decision-making, budget allocation, and infrastructure provision.
2	Clear Regulations & Policies	Regulations from the Ministry of Home Affairs provide a clear and independent legal foundation without requiring external system integrations.
3	Staff Disposition & Commitment	BPKD personnel have high awareness and a positive attitude that digitalization is an absolute necessity to enhance their skills.
4	Infrastructure Optimization Efforts	BPKD proactively conducts regular technical guidance (Bimtek), improves office internet networks, and maintains active coordination with the central government.

Source: Data processed by the author (2026)

Based on the supporting factors outlined in the table above, the successful implementation of SIPD at BPKD Gowa Regency is driven by a combination of strong leadership commitment, clear regulatory foundations from the central government, and a positive disposition among staff. Furthermore, proactive internal measures such as regular technical training, network enhancements, and continuous coordination with the Ministry of Home Affairs serve as vital enablers in bridging technical gaps and ensuring operational continuity.

Table 4. Inhibiting Factors for SIPD Implementation

No	Aspect	Main Findings
1	Technical Disruptions & Central Server	High dependence on the central server causes work to halt completely during maintenance or traffic spikes at the end of the fiscal year.
2	Limited HR Training	A lack of formal training for operators forces most system operations to be learned independently.
3	Data Integration & Feature Issues	Limitations in SIPD features for specific reporting compel the agency to retain manual record-keeping as a supplementary measure.
4	Network Infrastructure Limitations	Unstable internet quality and device constraints in accommodating multiple simultaneous account accesses.

Source: Data processed by the author (2026)

Conversely, the inhibiting factors detailed in the table highlight the critical challenges faced during the digital transformation process. High dependency on central servers, especially during peak year-end reporting periods, alongside limited formal training for operators, feature constraints in data integration, and network infrastructure bottlenecks, pose significant hurdles. These obstacles show that while the system offers extensive capabilities, successful execution depends on resolving technical vulnerabilities and strengthening local infrastructural readiness.

The Implementation of SIPD Reviewed from Policy Implementation Theory and TAM

The research findings reveal that the implementation of the Regional Government Information System (SIPD) in the Regional Financial and Asset Management Agency (BPKD) of Gowa Regency was carried out gradually, starting with the budgeting module in 2023 and reaching full operation by 2025. Based on George C. Edwards III's (1980) policy implementation theory, the communication variable is clearly evident through system-based coordination supported by cross-sectional WhatsApp groups among operators, treasurers, and planners. In addition, the dimension of bureaucratic structure is manifested through the integration of three main modules, namely planning, administration, and reporting, into a single standardized workflow.

The aspect of user acceptance, which is not accommodated in Edwards III's model, was explained through the Technology Acceptance Model (TAM) approach. Statements from informants regarding savings in time and effort, as well as transaction ease using Electronic Signatures (TTE) and QRIS, respectively, reflect the concepts of perceived usefulness and perceived ease of use. These findings prove the appropriateness of combining the two theories within the conceptual framework of this research, where Edwards III's theory maps organizational readiness, while TAM measures the psychological readiness of individual users.

Nevertheless, the resource variable in Edwards III's theory creates a paradoxical phenomenon. On the one hand, employees display a high disposition or positive attitude toward the new system; on the other hand, the portion of formal training they receive remains very limited. This situation indicates that enthusiasm and a good attitude of acceptance alone are not enough to produce maximum implementation without the support of facilities and the enhancement of resource capacity, primarily through adequate training.

Contribution of SIPD to the Effectiveness of Financial Management

In the context of regional financial governance, effectiveness is essentially evaluated through four main dimensions: reporting timeliness, data validity, openness, and accountability. On the timeliness dimension, the study's findings show a contrasting dynamic. On one hand, the real-time nature of the SIPD system, accompanied by automated date-locking features, successfully instills strict temporal discipline while eradicating the practice of backdating that was common in the manual era. On the other hand, the degradation of central server performance due to a surge in simultaneous nationwide access toward the end of the fiscal year degrades central server performance and poses a serious obstacle. This situation forces personnel to work late into the night to meet reporting deadlines, indicating that time efficiency is heavily influenced by external factors beyond the control of local governments.

Meanwhile, on the data accuracy dimension, the multi-layered validation procedure implemented by BPKD Gowa Regency serves as a highly effective safeguard. The verification process, starting at the regional device unit (SKPD) level, moving to the finance division, and further reinforced by cross-checking against manual records, creates a dual safety barrier to minimize potential data errors. This field finding aligns with the view of Andine Sekar

Kinanti et al. (2024), who emphasize that the adoption of digital systems is proven to boost data precision and reliability in government financial administration.

Shifting to the transparency dimension, SIPD makes a significant contribution through its automated recording features, which enable comprehensive data tracking. Because the entire transaction history is permanently stored in the database, loopholes related of information loss or document manipulation are tightly sealed. This finding resonates with research by (Darma & Darma 2025), which highlights that the integration of digital technology in regional financial agencies is proven to successfully escalate the level of precision, reporting speed, transparency, and accountability in a comprehensive manner.

Meanwhile, regarding the accountability dimension, the architecture of SIPD inherently mandates that the entire reporting cycle complies fully with Government Accounting Standards (SAP). The system standardizes everything from report formats and input mechanisms to account code classifications, leaving no room for deviations from applicable regulations. Through this approach, accountability enforcement no longer relies solely on the moral compass or individual integrity of each official; it is structurally locked and constructed by the system's operational design itself.

Analysis of Supporting and Inhibiting Factors Based on the Institutional Context

Overall, the primary pillar supporting the success of this implementation rests on strong leadership commitment, regulatory certainty from the Ministry of Home Affairs (Kemendagri), personnel responsiveness of the personnel, and proactive steps in optimize local infrastructure through routine technical guidance and intensive coordination. This foundation aligns with Madina (2025) findings, which emphasize that the effectiveness of regional financial governance is heavily determined by the significance of institutional support. On the other hand, the most severe challenge stems from the high degree of dependency on the central server, which lies beyond local control, thereby triggering systemic vulnerability whenever disruptions occur at the national level as a consequence of a centralized architectural design.

In addition to the central server constraint, the lack of formal training also serves as a crucial stumbling block with long-term impacts. Although self-directed learning methods have kept operations running, they do not guarantee even and comprehensive mastery of all system features, which risks creating fatal error loopholes toward the end of the reporting period. Furthermore, these findings enrich the literature on public sector digitalization by asserting that the success of technological transformation is not merely measured by device sophistication, but depends heavily on the harmonization of its surrounding organizational ecosystem, including human resource capacity building, infrastructure resilience, regulatory compliance, and overall institutional commitment synergy.

CONCLUSION AND RECOMMENDATION

Implementation of the SIPD system at BPKD Gowa Regency from 2023 to 2025 has comprehensively transformed the regional financial management cycle—spanning planning, budgeting, administration, accounting, and reporting. Backed by modern features such as Electronic Signatures (TTE) and QRIS, the system has successfully driven key improvements in operational effectiveness, namely through heightened time discipline, enhanced data validity via multi-tiered verification, real-time transaction transparency, and structured budget oversight. Nevertheless, complete operational success remains conditional due to persistent systemic challenges, including heavy central server overloads during fiscal year-end closeouts, local internet infrastructure bottlenecks, data integration issues, and a lack of formal training that forces personnel to rely on self-directed learning. To navigate these obstacles, BPKD has proactively adopted adaptive measures, such as local network optimization, routine technical guidance, close coordination with central authorities, and retaining manual cross-validation procedures to maintain data integrity.

To build upon these achievements and resolve remaining bottlenecks, several strategic recommendations should be implemented across different levels of governance. First, the Ministry of Home Affairs must expand its central server capacity to accommodate nationwide access surges during peak fiscal reporting periods while transparently scheduling system maintenance to avoid workflow disruptions. Second, BPKD Gowa Regency needs to establish structured formal training programs for all system operators to minimize early input errors, upgrade local office internet infrastructure, and draft clear Standard Operating Procedures (SOPs) for emergency technical troubleshooting. Finally, the Regional Government of Gowa Regency should begin exploring the integration of Artificial Intelligence (AI) and Big Data analytics into its financial ecosystem, while institutionalizing routine periodic evaluations to ensure continuous, sustainable enhancements in digital public governance.

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