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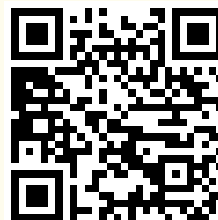
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Optimizing Regional Financial Management through the Transformation of the Digital Financial Information System in the Bekasi City Government

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Abstract

This research adopts an applied research approach conducted in November 2023 at the Bekasi City Government. Data were collected through observation, interviews, and literature study. The system development methodology follows the System Development Life Cycle (SDLC), including system analysis, system design, implementation, and maintenance. The proposed digital financial information system is developed in Java and integrated with a MySQL database to manage financial data, including revenue and expenditure, SPP (Payment Request Letters), and SPJ (Accountability Reports). The system design incorporates tools such as Context Diagram (CD), Data Flow Diagram (DFD), Entity Relationship Diagram (ERD), and flowcharts to ensure systematic and structured development. The implementation of the digital system is expected to improve the accuracy, timeliness, and relevance of financial information, facilitate faster report generation, and enhance financial transparency and accountability in regional governance. The findings indicate that the transformation of a digital financial information system significantly supports the optimization of regional financial management processes, minimizes reporting errors, accelerates data processing, and strengthens decision-making processes within the Bekasi City Government. Therefore, the digital transformation of financial systems is essential in supporting good governance and sustainable regional development.

Keywords: Digital Transformation, Financial Information System, Regional Financial Management, Java Programming, Local Government.

I. INTRODUCTION

The acceleration of digital transformation in the public sector has significantly reshaped governance models, particularly in financial management systems (Anggono & Supriyanto, 2025; Nayme & Taybi, 2025; Nugroho & Wibowo, 2025). In Indonesia, the implementation of regional autonomy has expanded the authority and responsibility of local governments in managing public finances. Consequently, local governments are required to implement accountable, transparent, and technology-driven financial management systems. The Pemerintah Kota Bekasi, as one of the fastest-growing metropolitan cities in West Java Province, faces increasing complexity in financial administration due to rapid urbanization, economic expansion, and growing public service demands. Bekasi City's financial management processes include revenue management, expenditure administration, preparation of SPP (Surat Permintaan Pembayaran), SPJ (Surat Pertanggungjawaban), budgeting (APB), and financial reporting. Despite the use of computerized tools such as Microsoft Excel, the current system remains semi-manual, fragmented, and

insufficiently integrated across organizational units. This condition leads to inefficiencies in data processing, duplication of records, increased risk of human error, delays in financial reporting, and limited real-time monitoring capability. Previous studies on public sector financial information systems generally focus on the adoption of e-government platforms, enterprise resource planning (ERP), or web-based financial reporting systems. Many of these studies emphasize implementation outcomes such as transparency, accountability, and improvements in service quality. However, several limitations can be identified in the existing literature.

First, most prior research examines large-scale national or provincial financial management systems, while limited studies explore localized, customized digital transformation models tailored to specific municipal governments (Atar et al., 2025; Hao & Wen, 2026; van der Hoogen et al., 2024). Second, previous works often emphasize system implementation outcomes without providing a structured, engineering-based system design model that uses formal system development methodologies such as the System Development Life Cycle (SDLC) (Fahmideh et al., 2023; Guerrero-Ulloa et al., 2023). Third, there is limited integration of detailed system modeling tools, such as Context Diagram (CD), Data Flow Diagram (DFD), and Entity Relationship Diagram (ERD), for comprehensive analysis and redesign of regional financial information systems.

Moreover, research on digital transformation in regional financial management frequently focuses on policy or governance aspects rather than on technical architecture and database-driven application development (Jonathan et al., 2024; Taheri Hosseinkhani, 2025; Wimelius et al., 2021). There remains a gap in demonstrating how structured system engineering approaches, combined with relational database integration, can directly optimize financial data-processing workflows at the municipal level. Therefore, this study addresses these gaps by proposing a structured transformation model for a Digital Financial Information System developed in the Java programming language and integrated with the MySQL database. The system is designed in accordance with the SDLC methodology and supported by comprehensive system modeling tools to ensure scalability, data integrity, and operational efficiency.

Based on the identified literature gap, this study formulates the following research questions:

1. RQ1: How can a structured SDLC-based approach be applied to design a digital financial information system for optimizing regional financial management processes?
2. RQ2: How does the integration of a relational database system (MySQL) improve the accuracy, consistency, and reliability of financial data processing compared to semi-manual spreadsheet-based systems?

3. RQ3: What is the impact of the proposed digital financial information system on efficiency, reporting speed, and internal financial control within the Bekasi City Government?
4. RQ4: How can system modeling tools such as Context Diagram, Data Flow Diagram, and Entity Relationship Diagram support effective digital transformation in municipal financial governance?

Accordingly, the primary objective of this study is to analyze, design, and implement a Digital Financial Information System to optimize regional financial management within the Bekasi City Government using a structured systems engineering approach. This research contributes to the field of Technology and Information Engineering by bridging governance needs with technical system architecture design, providing a replicable framework for digital transformation in local government financial management.

II. LITERATURE REVIEW

A. Digital Transformation in Public Sector Financial Management

Digital transformation in the public sector refers to the integration of information and communication technologies (ICT) into governmental processes to enhance efficiency, transparency, accountability, and service quality. In the context of regional financial management, digitalization enables automated data processing, centralized database management, and real-time reporting mechanisms (Karim et al., 2023; Lastanti & Djasuli, 2024; Paul & Malachy, 2025). Studies on public sector digital transformation indicate that financial information systems play a critical role in strengthening internal control systems and supporting evidence-based decision-making (C. et al., 2025; Jamaluddin et al., 2020). The implementation of digital financial systems has been associated with improved governance performance, reduced administrative inefficiencies, and a minimized risk of financial misreporting (Rachmad et al., 2024). However, successful transformation depends not only on technology adoption but also on structured system design, integration architecture, and data management strategies. At the municipal level, challenges often include fragmented financial workflows, manual verification processes, and inconsistent data recording practices. Therefore, a structured digital system is necessary to ensure data integrity, interoperability among units, and compliance with public financial regulations.

B. Regional Financial Management Systems

Regional financial management encompasses planning, budgeting, revenue administration, expenditure control, accountability reporting, and auditing. In Indonesia, local governments are required to implement accountable financial systems aligned with regional autonomy regulations.

Effective financial management requires accurate recording of revenue (pendapatan), expenditure (belanja), SPP (Payment Request Letters), and SPJ (Accountability Reports), as well as systematic monitoring of budget realization. Research by (Dasni et al., 2025; Naida et al., 2024; Siregar et al., 2025) shows that spreadsheet-based systems, although practical for small-scale operations, are prone to data redundancy, version control issues, and limited multi-user integration. These weaknesses can reduce reporting reliability and slow decision-making processes. Consequently, database-driven financial information systems are considered more suitable for large-scale municipal financial management. A digital financial management system must ensure:

1. Data consistency across departments
2. Structured approval workflows
3. Automated financial report generation
4. Secure data storage and access control
5. Audit trail functionality

C. Financial Information Systems Architecture

A Financial Information System (FIS) is an integrated system designed to collect, process, store, and distribute financial data for managerial and operational purposes. The core components of an FIS include input modules, processing logic, database management systems (DBMS), and output/reporting modules. Relational database management systems (RDBMS), such as MySQL, provide structured data storage through table relationships defined by primary and foreign keys. The use of relational databases enhances data normalization, reduces redundancy, and supports scalable data operations. In the context of municipal governance, system architecture should support:

1. Multi-level user access (e.g., administrator, secretary, treasurer, mayor)
2. Transaction recording and verification processes
3. Integration between budgeting and expenditure modules
4. Real-time report generation

Engineering-based system design ensures that financial workflows are embedded into structured application logic, reducing dependency on manual data manipulation.

D. System Development Life Cycle (SDLC)

The System Development Life Cycle (SDLC) is a structured methodology used to design, develop, implement, and maintain information systems. SDLC typically includes the following stages:

1. System Planning
2. System Analysis
3. System Design
4. System Implementation
5. System Testing
6. System Operation and Maintenance

Research emphasizes that structured methodologies, such as the SDLC, improve system reliability, reduce development risk, and enhance alignment between organizational needs and technical solutions. In public sector projects, the SDLC is particularly relevant because it ensures clarity in documentation, traceability, and systematic evaluation. Applying SDLC to regional financial system development ensures that the proposed digital transformation is not merely technological replacement but a comprehensive workflow redesign.

E. System Modeling Tools in Financial System Design

System modeling tools are essential in designing complex information systems. Several key tools include:

1. Context Diagram (CD)

A Context Diagram illustrates the system boundary and interaction between external entities and the system. It provides a high-level overview of data exchange between actors such as secretaries, treasurers, activity executors, and decision-makers.

2. Data Flow Diagram (DFD)

DFD describes how data moves through processes within the system. It supports identification of data sources, transformation processes, storage locations, and output flows. DFD is particularly useful in financial systems involving multiple verification and approval stages.

3. Entity Relationship Diagram (ERD)

ERD models the logical structure of the database by defining entities, attributes, and relationships. In financial management systems, entities typically include revenue, expenditure, SPP, SPJ, budget, accounts, and organizational units. Studies in information engineering confirm that integrating CD, DFD, and ERD enhances system clarity, reduces logical inconsistencies, and strengthens the quality of database design.

F. Java-Based Application Development for Public Systems

Java is a widely used object-oriented programming language known for its platform independence, scalability, and robust security features. In public-sector applications, Java

supports modular system development, user authentication, database connectivity via JDBC (Java Database Connectivity), and integration with relational databases such as MySQL. Research indicates that Java-based applications are suitable for structured financial systems due to:

1. Strong typing and error handling
2. Secure authentication frameworks
3. Database transaction management
4. Maintainable object-oriented architecture

By integrating Java with MySQL, financial data can be processed using structured SQL queries, stored securely, and retrieved efficiently for reporting.

G. Research Synthesis

Based on the reviewed literature, several important insights emerge:

1. Digital transformation in municipal financial management requires more than basic computerization—it demands integrated database-driven systems.
2. Structured engineering methodologies such as SDLC enhance system reliability and alignment with organizational workflows.
3. Database integration improves data accuracy, reduces redundancy, and strengthens financial accountability.
4. System modeling tools (CD, DFD, ERD) are essential to ensure logical consistency and process clarity.

There is limited research focusing on localized, technically structured digital transformation models for municipal governments. Therefore, this study contributes by integrating system engineering principles, relational database architecture, and object-oriented programming into a comprehensive digital financial management framework for municipal governance.

III. RESEARCH METHOD

A. Conceptual Framework

This study is grounded in three complementary theoretical perspectives: Digital Transformation Theory, Financial Information System (FIS) Theory, and the System Development Life Cycle (SDLC). Digital Transformation Theory emphasizes the role of technology integration in redesigning organizational workflows to improve efficiency and governance. FIS Theory provides the foundation for structured data processing through an input–process–output (IPO) mechanism, while SDLC offers a systematic engineering approach for developing reliable information systems.

Within the context of the Bekasi City Government, financial management activities—covering revenue recording, expenditure management, SPP (Payment Request Letters), SPJ (Accountability Reports), and financial reporting—are currently executed using semi-manual spreadsheet-based workflows. This study conceptualizes digital transformation as the transition from fragmented spreadsheet processing to an integrated database-driven financial information system.

The conceptual model adopts an Input–Process–Output (IPO) structure enhanced by database integration and workflow automation. The system inputs consist of financial transaction data and user authorization data. These inputs are processed through validation mechanisms, transaction processing, database normalization, and workflow-based approval procedures. The outputs include financial reports, budget realization summaries, and decision-support information. The structure of this model is summarized in Table 1.

Table 1. Input–Process–Output Structure of the System

Component	Description
Input	Revenue data, expenditure data, SPP data, SPJ data, budget data (APB), and user authorization data
Process	Data validation and verification, database storage and normalization, transaction processing, automated reporting, approval workflow integration, access control management
Output	Financial statements, budget realization reports, SPP reports, SPJ reports, and decision-support summaries

The transformation mechanism is operationalized through the integration of a relational database (MySQL), a Java-based application interface, and structured approval workflows. This transformation is expected to improve data accuracy, reduce redundancy, accelerate reporting processes, and strengthen internal control reliability.

Based on this framework, the study formulates four conceptual propositions: (P1) SDLC implementation improves system reliability; (P2) database integration reduces redundancy and processing errors; (P3) workflow automation increases reporting efficiency; and (P4) integrated systems enhance governance transparency.

B. Research Design

This study adopts an applied engineering research design with an emphasis on system development and performance evaluation. Unlike purely descriptive system development studies, this research integrates a comparative evaluation approach to assess the effectiveness of the proposed system relative to the existing manual system. The research was conducted at the Bekasi City Government in November 2023. The unit of analysis focuses on financial data processing workflows within administrative and treasury functions.

C. Data Collection

Data were collected using three complementary techniques to ensure methodological triangulation. First, direct observation was conducted to analyze existing financial workflows, identify inefficiencies, and document system limitations. Second, structured interviews were carried out with key stakeholders, including financial administrators, secretariat staff, treasurers, and activity implementers, to capture system requirements and validate workflow processes. Third, a documentation study was performed on financial records, including revenue data, expenditure data, SPP/SPJ documents, and budget realization reports. This combination of methods ensures alignment between actual operational practices and the requirements embedded in the proposed system design.

D. System Development Approach

The system was developed using the System Development Life Cycle (SDLC), consisting of five main stages: analysis, design, development, testing, and implementation. However, in this study, SDLC is not treated merely as a procedural framework but as a structured engineering approach that supports system validation at each stage. The system was developed using the SDLC approach, consisting of analysis, design, development, testing, and implementation stages, as summarized in Table 2.

Table 2. System Development Life Cycle (SDLC) Stages

Stage	Activities
Analysis	Identification of system weaknesses, workflow mapping, requirement specification
Design	Context Diagram (CD), Data Flow Diagram (DFD), Entity Relationship Diagram (ERD), database schema and interface design
Development	Java programming, MySQL database implementation, JDBC connectivity
Testing	Functional testing, user validation, data accuracy testing
Implementation	System deployment, user training, operational monitoring

During the analysis stage, system weaknesses and workflow inefficiencies were identified. The design stage employed modeling tools, including Context Diagram (CD), Data Flow Diagram (DFD), and Entity Relationship Diagram (ERD), to ensure logical consistency and completeness of the system structure. The development stage involved implementing the system using Java programming language with MySQL as the relational database, supported by JDBC connectivity. The testing stage included functional testing, user validation, and data accuracy verification. Finally, the implementation stage involved system deployment, user training, and operational monitoring.

E. System Architecture

The system adopts a three-tier architecture consisting of presentation, application, and data layers. The presentation layer is implemented using a Java-based graphical user interface (GUI), enabling user interaction. The application layer handles business logic, transaction processing, validation rules, and workflow management. The data layer utilizes a MySQL relational database to ensure structured data storage and integrity.

In addition, the system incorporates authentication and authorization mechanisms to support role-based access control. User roles include administrator, secretary, treasurer, activity executor, and mayor as the approval authority. This architecture ensures scalability, data security, and operational consistency.

F. Data Analysis Technique

To evaluate system effectiveness, this study employs a comparative performance analysis between the existing manual system and the proposed digital system. Four key performance indicators (KPIs) are defined: report processing time, error rate, data duplication frequency, and data retrieval time.

Data analysis combines qualitative and quantitative approaches. Qualitative analysis is used to compare workflow structures before and after system implementation, while quantitative analysis measures efficiency improvements using percentage-based comparisons. This approach allows the study to capture both operational improvements and measurable system performance gains.

IV. RESULT

This section presents the results in three stages: (1) baseline system analysis, (2) system design and implementation outcomes, and (3) quantitative performance evaluation. This structure ensures that the findings are not merely descriptive but analytically demonstrate system improvements.

A. Baseline System Analysis

The analysis of the existing financial management system reveals several structural inefficiencies primarily caused by the reliance on spreadsheet-based workflows. As summarized in Table 1, key issues include data duplication, manual verification processes, and the absence of a centralized database. These limitations lead to inconsistent reporting, delayed processing, and a high risk of input errors. Furthermore, the lack of system integration restricts real-time monitoring and reduces overall operational control. This baseline condition establishes the necessity for a structured digital transformation.

B. System Design and Implementation Results

The proposed digital financial information system was successfully developed and implemented to address the identified inefficiencies. The system integrates financial processes, including revenue, expenditure, SPP, and reporting, into a centralized database environment with structured workflow control.

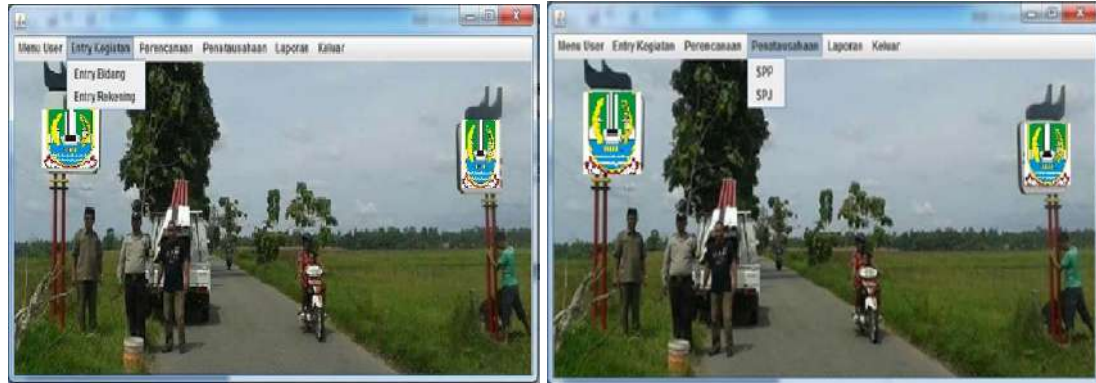


Figure 1. Planning Menu Form

The main system interface, as illustrated in Figure 1, presents the primary navigation menu that integrates core modules such as data entry, planning, administration, and reporting. This unified interface replaces fragmented spreadsheet operations with a structured system workflow.

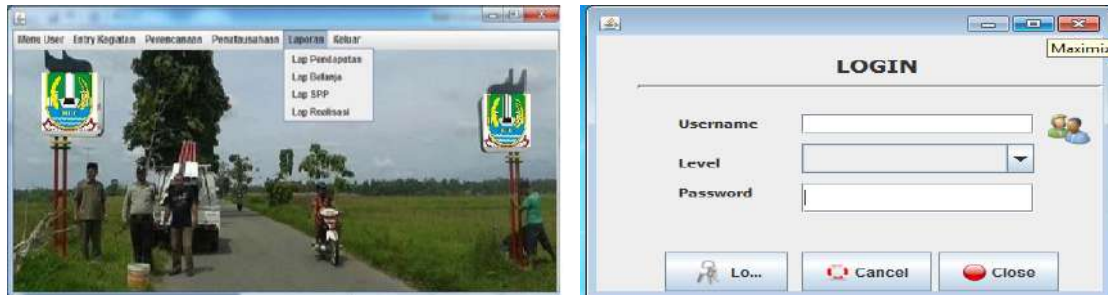


Figure 2. Form Menu Reports



Figure 3. Form Login



Figure 4. Form Input User



Figure 5. Form Input Account Data

The reporting module, shown in Figure 2, enables automated generation of financial reports, including revenue, expenditure, and realization reports. This feature significantly reduces manual report preparation time and ensures consistency across outputs.

No	NO pengeluaran	KODE BIDANG	KODE BELANJA	JUMLAH
1	1	1	2.1	500000000
2	2	1	2.2	2000000
3	3	1	2.3	5000000
4	4	2	2.4	2000000

Figure 6. Form Expenses

No	NO SPP	TANGGAL	KODE BIDA	KODE BELA	JUMLAH
1	1	2017-03-01	1	2.1	2000000
2	1	2017-03-02	1	2.1	2000000
3	1	2017-03-02	1	2.2	500000
4	2	2017-03-01	2	2.2	100000
5	3	2017-03-03	3	4.5	4000000

Figure 7. Form SPP

User authentication and access control are implemented through the login interface in Figure 3, which restricts system access based on user roles. The user management interface in Figure 4 allows administrators to define access levels, ensuring role-based system control and enhancing data security.

No	NO SPP	TANGGAL	KODE BIDA	KODE BELA	JUMLAH
1	1	2017-03-01	1	2.1	2000000
2	1	2017-03-02	1	2.1	2000000
3	1	2017-03-02	1	2.2	500000
4	2	2017-03-01	2	2.2	100000
5	3	2017-03-03	3	4.5	4000000

Figure 8. Form Entry Data SPP

The financial data management process is supported by structured input forms. The account data input module (Figure 5) standardizes financial coding and classification, while the expenditure input module (Figure 6) ensures that transaction data are recorded in a consistent and validated format. Transaction processing for SPP is handled through the interfaces shown in Figure 7 and Figure 8, which enable systematic recording, editing, and verification of payment request data. These modules enforce structured workflows and reduce the likelihood of data inconsistencies.



Kode Rekening	Uraian Pendapatan	Anggaran
1.1	Pendapatan Asli Nagari	1.800.000.000
1.2	Alokasi Dana Desa	800.000.000.00
1.3	Alokasi Dana Nagari	500.000.000.00
1.4	Bantuan Program	12.000.000.00
Jumlah :		1.813.000.000.00

Periode Maksimal: 03-Maret-2017
Diketik Oleh: Nagari

Figure 9. Income Statement

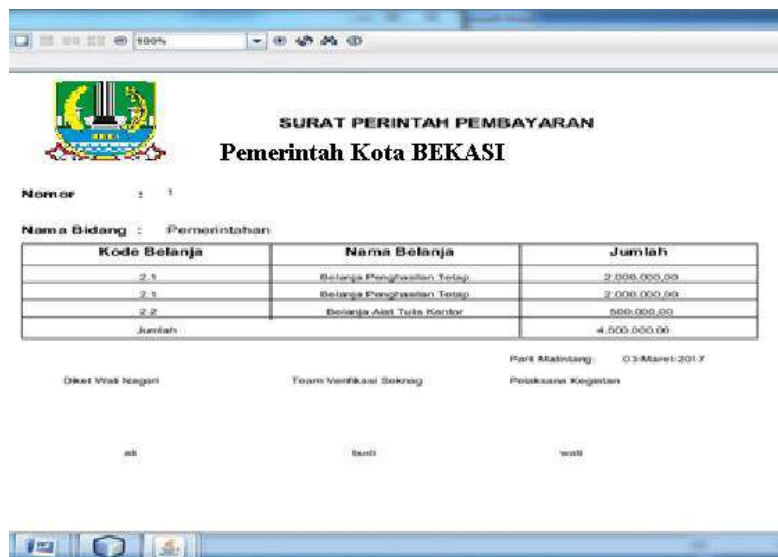


Kode Belanja	Uraian Belanja	Anggaran
2.1	Belanja Penghasilan Tetap	500.000.000.00
2.2	Belanja Alat Tulis Kantor	2.000.000.00
2.3	Belanja Perjalanan Dinas Dalam daerah	5.000.000.00
Jumlah :		501.000.000.00

Periode Maksimal: 03-Maret-2017
Diketik Oleh: Nagari

Figure 10. Expenditure Budget Report

The system also provides automated financial reporting outputs. The income statement, illustrated in Figure 9, demonstrates how financial data are aggregated and presented in a structured format. Similarly, the expenditure budget report (Figure 10) provides a clear overview of budget allocation and utilization.



SURAT PERINTAH PEMBAYARAN
Pemerintah Kota BEKASI

Nama : _____

Nama Bidang : Pemerintahan

Kode Belanja	Nama Belanja	Jumlah
2.1	Belanja Penghasilan Tetap	2.000.000.00
2.2	Belanja Penghasilan Tetap	2.000.000.00
2.3	Belanja Alat Tulis Kantor	500.000.00
Jumlah :		4.500.000.00

Periode Maksimal: 03-Maret-2017

Diketik Oleh: Nagari Form Verifikasi Belanja Pelaksanaan Kegiatan

Figure 11. Form Payment

Payment processing and reporting are supported through the modules shown in Figure 11, while budget realization reporting is presented in Figure 12, enabling real-time monitoring of financial performance. Importantly, beyond the interface level, the system's use of relational database design (ERD-based) ensures data normalization and significantly reduces redundancy.

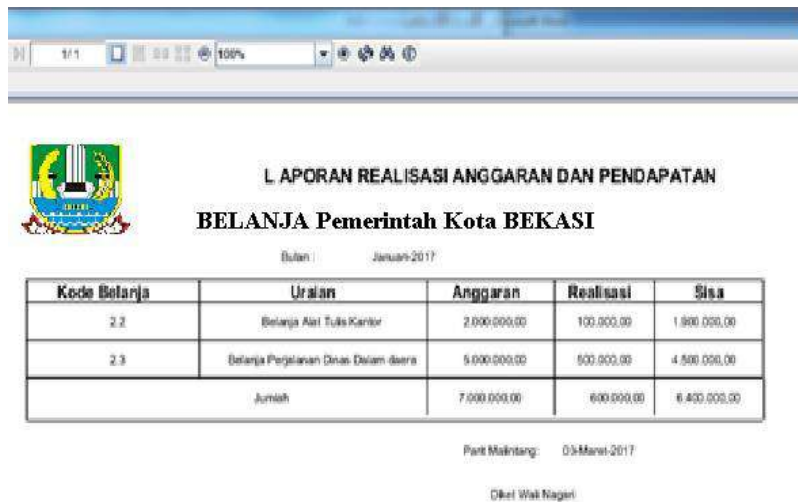


Figure 12. Form Realization

C. System Performance Evaluation

To assess system effectiveness, a comparative analysis was conducted between the existing manual system and the proposed digital system using four key performance indicators (KPIs): report processing time, error rate, data duplication frequency, and data retrieval time. As presented in Table 3, the implementation of the digital system resulted in substantial performance improvements across all indicators.

Table 3. System Analysis

Problem Identified	Impact
Spreadsheet dependency	High risk of input error
Data duplication	Inconsistent reporting
Manual verification	Delayed reporting
No centralized database	Limited monitoring capability

Source: Researcher, 2026

Report processing time decreased from 120 minutes to 15 minutes, representing an 87.5% improvement. The error rate was reduced from 18% to 4%, indicating a 78% reduction in data inaccuracies. Data duplication decreased significantly from 25 cases per month to only 2 cases per month, while data retrieval time improved from 10 minutes to 2 minutes.

Table 4. System Perform Comparison

Indicator	Before System	After System	Improvement
Report Processing Time	120 minutes	15 minutes	↓ 87.5%
Error Rate	18%	4%	↓ 78%
Duplicate Data	25 cases/month	2 cases/month	↓ 92%
Data Retrieval Time	10 minutes	2 minutes	↓ 80%

Source: Researcher, 2026

These results confirm that the adoption of a database-driven system effectively addresses the structural limitations of spreadsheet-based workflows. The improvements are not incremental but

systemic, indicating that the primary inefficiencies in the previous system were rooted in its architecture rather than user practices.

V. DISCUSSION

The findings of this study provide empirical support for the argument that digital transformation in public financial management is not merely a technological shift but a structural reconfiguration of data-processing architecture. The significant reduction in processing time, error rates, and data duplication indicates that inefficiencies in the previous system were primarily due to its fragmented, semi-manual design rather than to user performance. This aligns with prior studies suggesting that system architecture plays a more decisive role in operational efficiency than procedural improvements alone (Gamasan et al., 2026; Li et al., 2026).

From the perspective of Financial Information System (FIS) theory, the results confirm that the transition from spreadsheet-based processing to a relational database system enhances data integrity through normalization and centralized storage. The drastic reduction in duplicate data cases and error rates demonstrates that redundancy and inconsistency are effectively mitigated when data relationships are formally structured within a database environment. This supports the view that database-driven systems inherently enforce consistency constraints that are difficult to achieve in decentralized spreadsheet workflows (Jadon et al., 2026).

Furthermore, implementing workflow automation significantly improves process efficiency. The reduction in report processing time suggests that delays in the previous system were largely due to manual verification and fragmented data consolidation. By embedding validation rules and approval workflows into the system logic, the proposed model eliminates repetitive manual interventions and ensures process standardization. This finding reinforces the argument that automation not only accelerates operations but also enhances process reliability and control (Hong et al., 2026; Rahman et al., 2026).

From an SDLC perspective, the study demonstrates that a structured system development methodology contributes to system robustness and alignment with organizational requirements. The integration of system modeling tools, such as Context Diagram, Data Flow Diagram, and Entity Relationship Diagram, ensures logical consistency and reduces design ambiguity. The successful implementation of the system indicates that engineering-based design approaches are critical in translating organizational workflows into functional system architecture (Hölldobler et al., 2019; Kulvatunyou & Wysk, 2000; Ntanos et al., 2018).

In the broader context of digital transformation theory, the findings highlight that meaningful transformation occurs when technology is integrated at the workflow and data-structure level,

rather than merely at the interface level. The observed improvements are not superficial but systemic, indicating that digital transformation must address underlying process architecture to produce measurable impact. This supports the notion that effective digital transformation in the public sector requires alignment between technological infrastructure, data governance, and operational workflows (Nookala Jp, 2024; Sarwar et al., 2023; Simamora & Marbun, 2025).

However, it is important to note that the study's findings are limited to operational efficiency and data reliability improvements. While the system demonstrates potential to support broader governance outcomes such as transparency and accountability, these aspects are not directly measured in this study. Therefore, claims regarding governance transformation should be interpreted cautiously and require further empirical validation.

Practical Implications

The results of this study provide practical insights for municipal governments seeking to implement digital transformation in financial management systems. The findings indicate that the primary source of inefficiency in financial administration lies not in human resource limitations, but in the structural design of the system itself. Therefore, improvement efforts should prioritize system architecture redesign rather than solely focusing on procedural or administrative adjustments.

The successful implementation of a centralized, database-driven system demonstrates that integrating financial data into a unified platform significantly enhances operational control and data consistency. In practice, this suggests that local governments should move beyond fragmented, spreadsheet-based solutions and adopt integrated systems that enforce standardized data structures and validation mechanisms. Such systems reduce dependency on manual data handling and minimize the risk of inconsistency across organizational units.

In addition, the incorporation of workflow-based approval mechanisms highlights the importance of embedding governance processes directly into system logic. Rather than treating verification and approval as external administrative steps, integrating them within the system ensures traceability, accountability, and process transparency. This approach is particularly relevant for public sector institutions where financial accountability is a critical requirement.

The findings also suggest that the adoption of structured system development methodologies, such as SDLC, is essential for ensuring that technological solutions are aligned with organizational needs. The use of formal system modeling tools facilitates clearer communication between technical developers and administrative stakeholders, reducing the risk of system mismatch and improving implementation outcomes. This indicates that digital transformation

initiatives should not be approached as ad-hoc technological upgrades, but as structured engineering processes.

Finally, while the system demonstrates significant improvements in efficiency and data reliability, its broader applicability depends on organizational readiness, including user training, institutional support, and policy alignment. Therefore, successful replication in other municipal contexts requires not only technological implementation but also organizational adaptation to ensure sustained system utilization and impact.

VI. CONCLUSION AND RECOMMENDATION

This study demonstrates that the transformation of a spreadsheet-based financial management system into a structured, database-driven financial information system significantly improves operational efficiency and data reliability within the Bekasi City Government. The implementation of a relational database integrated with workflow automation and role-based access control effectively reduces processing time, minimizes data errors, and eliminates redundancy. These findings indicate that inefficiencies in the previous system were primarily structural, and can be addressed through systematic system redesign rather than procedural adjustments alone.

From an engineering perspective, the study confirms that the application of the System Development Life Cycle (SDLC), supported by system modeling tools and relational database architecture, provides a reliable framework for developing scalable and consistent financial information systems. The integration of validation mechanisms and automated reporting further strengthens internal control processes and supports more accurate and timely decision-making. However, the study limits its claims to measurable improvements in system performance and does not directly evaluate broader governance outcomes such as transparency or accountability.

Based on these findings, it is recommended that municipal governments prioritize the adoption of integrated, database-driven financial systems to replace fragmented spreadsheet-based practices. Future research should extend this work by incorporating additional variables such as organizational readiness, user adoption, and policy alignment, as well as by evaluating long-term impacts on governance performance and public accountability.

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