Innovation Adoption of The Regional Government Administration Information System (SIPD) in Supporting The Planning and Budgeting Process
Adopsi Inovasi Sistem Informasi Pemerintahan Daerah (SIPD) dalam Mendukung Proses Perencanaan dan Penganggaran



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ABSTRACT
Digital transformation has positioned the Regional Government Information System (SIPD) as a strategic instrument for integrating regional planning and budgeting. However, its implementation continues to face technical challenges, limited bureaucratic capacity, and organizational adaptation. This study aims to examine the adoption of SIPD in supporting regional planning and budgeting at the Regional Development Planning, Research, and Innovation Agency (Bapperida) of East Nusa Tenggara Province through the perspective of Rogers' Innovation Adoption Theory. A qualitative phenomenological approach was employed. Data were collected through in-depth interviews, observation, and document analysis involving five purposively selected informants and analyzed using the interactive model of Miles, Huberman, and Saldaña based on Rogers' five stages of innovation adoption. The findings indicate that SIPD adoption progressed through the stages of knowledge, persuasion, decision, implementation, and confirmation. Initial knowledge was developed through formal policy communication, whereas favorable perceptions, organizational commitment, and sustained utilization evolved through practical experience, organizational learning, and institutional adaptation. Although SIPD strengthened the integration of planning and budgeting, its effectiveness remained constrained by technical challenges, data quality issues, and variations in users' capabilities. This study concludes that successful SIPD adoption depends not only on technological capability but also on organizational learning, institutional support, and continuous coordination that institutionalize digital innovation within regional planning and budgeting.

Kata Kunci
Adopsi Inovasi;
SIPD;
Perencanaan Daerah;
Penganggaran Daerah

ABSTRAK
Transformasi digital dalam tata kelola pemerintahan daerah telah menempatkan Sistem Informasi Pemerintahan Daerah (SIPD) sebagai instrumen penting untuk mengintegrasikan proses perencanaan dan penganggaran. Namun, implementasinya masih menghadapi berbagai tantangan, termasuk kendala teknis, keterbatasan kapasitas birokrasi, dan adaptasi organisasi. Penelitian ini bertujuan menganalisis proses adopsi SIPD dalam mendukung perencanaan dan penganggaran pada Badan Perencanaan Pembangunan, Riset, dan Inovasi Daerah (Bapperida) Provinsi Nusa Tenggara Timur menggunakan perspektif Teori Adopsi Inovasi Rogers. Penelitian ini menggunakan metode kualitatif dengan desain fenomenologi. Data dikumpulkan melalui wawancara mendalam, observasi, dan analisis dokumen terhadap lima informan yang dipilih secara purposif, kemudian dianalisis menggunakan model interaktif Miles, Huberman, dan Saldaña berdasarkan lima tahap adopsi inovasi Rogers. Hasil penelitian menunjukkan bahwa adopsi SIPD berlangsung secara bertahap melalui tahapan pengetahuan, persuasi, keputusan, implementasi, dan konfirmasi. Pengetahuan awal berkembang melalui komunikasi kebijakan formal,

sedangkan persepsi positif, komitmen organisasi, dan pemanfaatan berkelanjutan terbentuk melalui pengalaman praktis, pembelajaran organisasi, dan adaptasi kelembagaan. Meskipun SIPD meningkatkan integrasi perencanaan dan penganggaran, efektivitas pemanfaatannya masih dipengaruhi oleh kendala teknis, kualitas data, dan variasi kapasitas pengguna. Penelitian ini menyimpulkan bahwa keberhasilan adopsi SIPD ditentukan tidak hanya oleh kualitas teknologi, tetapi juga oleh pembelajaran organisasi, dukungan kelembagaan, dan koordinasi berkelanjutan dalam menginstitusionalisasikan inovasi digital pada proses perencanaan dan penganggaran daerah.

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Introduction

Digital transformation has become one of the central agendas of public governance reform, requiring governments to redesign administrative processes that are more efficient, transparent, accountable, and integrated. Beyond the adoption of digital technologies, digital transformation represents a fundamental organizational change in how public institutions manage information, coordinate administrative activities, and support evidence-based decision-making. Consequently, digital government initiatives have increasingly become strategic instruments for improving organizational performance, strengthening intergovernmental coordination, and enhancing public service delivery (Klievink et al., 2017; United Nations Department of Economic and Social Affairs, 2020; Zhou et al., 2025). The success of this transformation, however, depends not only on technological capability but also on the ability of public organizations to integrate digital innovations into routine organizational practices.

Within local government, digital transformation is particularly important in regional planning and budgeting because these processes require strong consistency among planning priorities, budget allocations, performance indicators, and implementation outcomes throughout successive stages of the development cycle. Fragmented information systems frequently generate inconsistencies between planning and budgeting documents, reduce administrative efficiency, and limit the availability of reliable information for policy formulation, performance evaluation, and strategic decision-making. To address these challenges, governments have increasingly adopted integrated information systems that support organizational coordination, improve data quality, and strengthen evidence-based governance through more effective management of planning and budgeting information.

In Indonesia, these objectives have been operationalized through the implementation of the Regional Government Information System (SIPD), introduced under Minister of Home Affairs Regulation Number 70 of 2019 and further reinforced through Circular Letter Number 137/736/SJ of 2020. SIPD was designed as an integrated digital platform connecting regional planning, budgeting, financial administration, implementation, reporting, and evaluation within a single information system. Accordingly, SIPD functions not only as an administrative application but also as a governance instrument intended to strengthen consistency among planning and budgeting documents, improve administrative accountability, and support evidence-based regional development (Permendagri, 2019; Andrew et al., 2022; Wurara et al., 2024). Nevertheless, the successful implementation of SIPD depends not only on the availability of digital technology but also on how

organizational actors understand, adopt, and integrate the system into everyday planning and budgeting practices.

Despite its strategic role in supporting digital government, SIPD implementation continues to face substantial organizational and technical challenges. Previous evidence indicates that local governments frequently encounter system instability, infrastructure limitations, changing regulatory requirements, uneven human resource capacity, and difficulties in adapting to increasingly digital administrative processes (Vitriana & Ahyaruddin, 2022; Wurara et al., 2024). These challenges suggest that the effectiveness of SIPD cannot be explained solely by the availability of digital technology. Instead, successful implementation depends on how organizational actors understand the system, develop the capacity to use it effectively, and continuously adapt their work practices to increasingly integrated planning and budgeting processes.

Previous studies have examined SIPD from multiple perspectives. Several studies have shown that SIPD contributes to improving transparency, administrative accountability, planning and budgeting integration, and data consistency within local government administration (Andrew et al., 2022; Balqis and Fadhly, 2021; Nasution and Nurwani, 2021; Vitriana and Ahyaruddin, 2022; Wurara et al., 2024). Other studies have highlighted persistent implementation challenges, including system instability, infrastructure limitations, changing regulatory requirements, uneven human resource capacity, and organizational readiness, all of which influence the effectiveness of SIPD utilization (Lumbantobing et al., 2022; Tanan et al., 2025). Taken together, these studies demonstrate that SIPD has become an important instrument for strengthening regional governance while emphasizing that its effectiveness depends on organizational and technical readiness.

A parallel body of literature has applied Rogers' Innovation Adoption Theory to explain the adoption of digital innovations in the public sector. Previous studies have shown that innovation adoption is shaped by institutional trust, perceived benefits, leadership support, digital literacy, compatibility, and perceived complexity (Frei-Landau et al., 2022; Menzli et al., 2022; Zhou et al., 2025). Likewise, studies conducted in the Indonesian public sector have highlighted the importance of individual, organizational, and institutional factors in influencing innovation adoption across various public service settings (Adawiali et al., 2022; Badri, 2020; Imania et al., 2020; Mabruri, 2022; Muhana et al., 2022; Prima, 2023; Ratnaningsih et al., 2022). Collectively, these studies provide important insights into the determinants of innovation adoption but focus primarily on public service delivery,

administrative innovation, or operational information systems rather than strategic governmental functions such as regional planning and budgeting.

Taken together, the existing literature demonstrates substantial progress in understanding both SIPD implementation and innovation adoption in the public sector. Nevertheless, these two streams of research have largely evolved independently. SIPD studies predominantly evaluate implementation outcomes, administrative performance, and technical barriers, whereas innovation adoption studies generally examine digital innovations in broader public service contexts. Consequently, limited empirical attention has been devoted to explaining how SIPD adoption evolves throughout the complete innovation adoption process and becomes institutionalized within routine regional planning and budgeting practices. This limitation provides an important opportunity to examine SIPD not merely as a digital information system but as an organizational innovation requiring continuous organizational learning, institutional adaptation, and sustained institutional commitment before becoming fully embedded within everyday governmental practice.

The preceding review indicates that important progress has been made in understanding both SIPD implementation and innovation adoption in the public sector. Nevertheless, important gaps remain. Existing SIPD studies have primarily focused on implementation outcomes, including transparency, accountability, administrative efficiency, system performance, and technical constraints, while providing limited explanation of how organizational actors progressively adopt and institutionalize the system. Likewise, studies applying Rogers' Innovation Adoption Theory have mainly examined public service innovations, digital service delivery, and operational information systems, with relatively limited attention to strategic governmental functions such as regional planning and budgeting. Consequently, the organizational processes through which SIPD becomes embedded within routine planning and budgeting practices remain insufficiently understood. Unlike previous studies that primarily evaluate implementation outcomes or examine isolated dimensions of innovation adoption, this study conceptualizes SIPD adoption as a continuous organizational process through which digital innovation becomes institutionalized within regional planning and budgeting practices. By integrating the digital government literature with Rogers' Innovation Adoption Theory, this study demonstrates that successful SIPD adoption depends not only on technological capability but also on organizational learning, institutional adaptation, organizational support, and collaborative coordination. In doing so, it extends existing knowledge by explaining how mandatory

digital government policies are translated into routine organizational practices and sustained over time.

Based on this perspective, this study investigates how SIPD adoption evolves through the stages of knowledge, persuasion, decision, implementation, and confirmation at the Regional Development Planning, Research, and Innovation Agency (Bapperida) of East Nusa Tenggara Province. Specifically, it examines how organizational actors acquire knowledge of SIPD, develop favorable perceptions toward the system, translate mandatory policy into organizational commitment, operationalize SIPD within planning and budgeting activities, and reinforce its continued utilization through organizational learning and institutional adaptation. By examining the complete innovation adoption process, this study contributes to a more comprehensive understanding of how digital innovations become institutionalized within regional planning and budgeting.

Method

This study employed a qualitative method with a phenomenological design to examine the adoption of the Regional Government Information System (SIPD) in supporting regional planning and budgeting at the Regional Development Planning, Research, and Innovation Agency (Bapperida) of East Nusa Tenggara Province. A phenomenological approach was adopted to explore the experiences, perceptions, and interpretations of organizational actors involved in the adoption of SIPD within the context of regional governance. The analysis was guided by Rogers' Innovation Adoption Theory, which conceptualizes innovation adoption through five sequential stages: knowledge, persuasion, decision, implementation, and confirmation (Rogers, 2003).

Data were collected through in-depth interviews, direct observation, and document analysis. Informants were identified by mapping organizational roles related to SIPD implementation and selected using purposive sampling (Creswell, 2014). Five informants participated in the study, comprising the Secretary of Bapperida, the Head of the Program, Data, and Evaluation Subdivision, and three SIPD operators. Informants were selected based on three criteria: (1) direct involvement in SIPD implementation within planning and budgeting processes; (2) responsibility for planning, budgeting, data management, or decision-making related to SIPD; and (3) sufficient experience and knowledge to explain the SIPD adoption process. Observations focused on SIPD utilization, organizational coordination, and responses to technical and administrative challenges, while documentary evidence included planning and budgeting documents, SIPD technical guidelines, meeting

minutes, performance reports, and relevant policy documents (Creswell, 2014; Moleong, 2017).

The data, comprising primary and secondary sources, were analyzed using the interactive model of Miles et al. (2014), including data collection, condensation, display, and conclusion drawing and verification. Trustworthiness was established through credibility, transferability, dependability, and confirmability using triangulation, prolonged engagement, referential adequacy, and member checking (Sugiono, 2019).

Result and Discusion

Knowledge Stage

According to Rogers (2003), the knowledge stage refers to the phase in which potential adopters become aware of an innovation and develop an initial understanding of its purpose and operational mechanisms. In this study, the knowledge stage reflects how organizational actors in Bapperida of East Nusa Tenggara Province developed their understanding of the Regional Government Information System (SIPD) through formal institutional communication and practical experience in regional planning and budgeting.

Findings from the interviews indicate that organizational awareness of SIPD emerged following its mandatory implementation by the Ministry of Home Affairs. The Head of the Program, Data, and Evaluation Subdivision explained that the transition from the previous Regional Financial Management Information System (SIPKD) to SIPD was initiated through circular letters, socialization programs, technical guidance, and coordination meetings, enabling organizational actors to gradually understand the new regulatory framework and planning procedures. As the informant stated, *"the transition began after the Ministry required regional governments to adopt SIPD, and we gradually understood the new regulations through technical guidance and coordination meetings."* Similarly, a SIPD operator explained that users initially perceived SIPD primarily as a mandatory system, whereas technical understanding developed progressively through repeated system utilization and continuous adaptation during routine planning and budgeting activities.

These accounts were corroborated by field observations showing that users continued to rely on technical assistance from the Program, Data, and Evaluation Subdivision when operating SIPD. Users frequently consulted experienced staff to resolve technical issues, validate planning and budgeting information, and complete operational procedures within the system. Documentary analysis further confirmed these findings.

Minister of Home Affairs Regulation No. 70 of 2019, the Circular Letter on SIPD implementation, technical guidance materials, and organizational records demonstrate that SIPD was introduced through structured institutional communication and formal capacity-building activities. Collectively, these primary and secondary data indicate that users initially understood SIPD as a mandatory innovation introduced through organizational and regulatory mechanisms.

Further interview evidence revealed that users' knowledge continued to develop as they became more actively involved in planning and budgeting activities. The Secretary of Bapperida explained that SIPD was initially perceived as a regulatory obligation; however, continuous system utilization enabled users to recognize its broader role in integrating planning and budgeting documents. Likewise, the Head of the Program, Data, and Evaluation Subdivision emphasized that although technical guidance provided an initial foundation, users primarily strengthened their procedural understanding through direct experience, discussions among operators, and continuous technical assistance during routine system utilization.

These findings were reinforced by field observations indicating that technical understanding developed unevenly across the organization. Users who were more directly involved in planning and budgeting activities demonstrated greater familiarity with system workflows than those with more limited operational responsibilities. Documentary evidence also showed that SIPD requires consistency among planning and budgeting documents, performance indicators, expenditure structures, and budgeting procedures, making continuous interaction with the system essential for developing operational knowledge. Consequently, users' understanding progressed from basic regulatory awareness to a more comprehensive understanding of the operational relationships underpinning integrated planning and budgeting.

Taken together, the combined interview, observational, and documentary evidence demonstrates that knowledge acquisition occurred through two complementary processes. Formal institutional communication established users' awareness of SIPD and its regulatory foundation, whereas practical experience gradually strengthened technical understanding through continuous interaction with system procedures and collaborative problem-solving in everyday organizational practice.

The findings further indicate that differences in users' technical understanding were closely associated with their level of involvement in the planning and budgeting process. Users who routinely prepared planning and budgeting documents interacted more

intensively with SIPD and consequently accumulated greater procedural knowledge than those with more limited operational responsibilities. Through repeated interaction with planning procedures, organizational coordination, and routine problem-solving, users gradually expanded their technical understanding beyond regulatory compliance toward practical system utilization.

These findings are consistent with Andrew et al. (2022), Lumbantobing et al. (2022), and Nasution and Nurwani (2021), who emphasize that socialization, technical guidance, organizational coordination, and users' understanding of system procedures are fundamental to successful SIPD implementation. However, the present study extends previous research by demonstrating that formal capacity-building activities alone were insufficient to establish comprehensive technical knowledge. Instead, users progressively strengthened their understanding through continuous interaction with planning and budgeting documents, collaborative learning among operators, technical consultation with the Program, Data, and Evaluation Subdivision, and repeated problem-solving during routine system utilization. Unlike previous studies that primarily attribute knowledge development to formal socialization and technical guidance, this study demonstrates that organizational knowledge is progressively constructed through experiential learning embedded within routine planning and budgeting practices. This finding extends the digital government literature by highlighting the role of everyday organizational practice in institutionalizing innovation within public sector organizations.

According to Rogers (2003), successful completion of the knowledge stage requires not only awareness of an innovation but also sufficient understanding of its operational principles to support effective adoption. The findings indicate that organizational actors recognize SIPD as a mandatory innovation, understand its regulatory foundation, and acknowledge its role in supporting integrated planning and budgeting. Nevertheless, technical competence remained uneven, particularly regarding system workflows, activity nomenclature, performance indicators, budget structures, and document synchronization. The continued reliance on technical assistance during routine system utilization therefore indicates that knowledge has not yet been fully institutionalized across the organization.

Overall, these findings indicate that organizational awareness of SIPD has been successfully established and has gradually progressed toward practical operational understanding through continuous organizational learning. However, disparities in technical competence continue to limit the institutionalization of knowledge across the organization. Consequently, although organizational actors have developed a clear understanding of

SIPD's objectives and functions, the knowledge stage has not yet been fully maximized, indicating that continuous capacity development and organizational learning remain essential to strengthen the effective utilization of SIPD in supporting integrated regional planning and budgeting.

Persuasion Stage

According to Rogers (2003), the persuasion stage occurs after individuals acquire initial knowledge of an innovation and begin to develop either favorable or unfavorable attitudes toward its adoption. In this study, the persuasion stage reflects how organizational actors in Bapperida of East Nusa Tenggara Province formed their perceptions of the Regional Government Information System (SIPD) through direct experience in supporting regional planning and budgeting activities.

Findings from the interviews indicate that users gradually developed positive perceptions of SIPD as they experienced its ability to integrate planning and budgeting processes within a single digital platform. The Head of the Program, Data, and Evaluation Subdivision explained that SIPD improved the consistency between planning and budgeting documents by enabling organizational units to work within one integrated system rather than using separate applications. Likewise, several informants emphasized that SIPD reduced repetitive administrative work, enhanced document traceability, and simplified the monitoring of planning and budgeting activities. These benefits, however, became more apparent only after users had gained practical experience with routine system utilization.

These accounts were corroborated by field observations showing that planning and budgeting activities were increasingly conducted through a single integrated platform, strengthening consistency among planning and budgeting documents, performance indicators, and budget allocations. Documentary analysis of planning documents, budgeting records, and SIPD implementation guidelines further confirmed that the system was designed to improve planning and budgeting integration while enhancing administrative accountability and data consistency. Collectively, these primary and secondary data demonstrate that users developed favorable perceptions of SIPD because they experienced tangible operational benefits and recognized that the system aligned well with existing regulatory requirements and organizational workflows.

Further empirical evidence revealed that positive perceptions toward SIPD coexisted with significant operational and technical challenges. Users frequently encountered difficulties related to changing activity nomenclature, performance indicators, expenditure

account structures, server instability, network disruptions, and limited supporting facilities. In addition, opportunities to familiarize themselves with SIPD-RI were relatively limited because organizational actors were required to adapt to the new system while simultaneously completing official planning and budgeting documents within strict administrative deadlines. Nevertheless, field observations and documentary evidence indicated that the benefits of SIPD became increasingly evident through improved document traceability, stronger linkages between planning and budgeting documents, integrated monitoring processes, and easier access to performance information. These findings suggest that users continuously evaluated both the operational advantages and the practical challenges associated with routine system utilization.

Taken together, the combined interview, observational, and documentary evidence indicates that users' attitudes toward SIPD evolved progressively through direct organizational experience rather than through initial expectations alone. Although technical constraints occasionally reduced users' confidence, repeated system utilization enabled them to recognize the practical value of SIPD in supporting integrated planning and budgeting. Consequently, positive perceptions were shaped not only by the technological characteristics of the system but also by the interaction between system functionality, organizational support, users' competencies, data readiness, technical infrastructure, and the practical realities of regional planning and budgeting.

These findings are consistent with Andrew et al. (2022), Lumbantobing et al. (2022), Nasution and Nurwani (2021), and Aisah (2025), who reported that SIPD contributes to improving planning and budgeting integration, administrative accountability, data consistency, and organizational performance. However, the present study extends previous research by demonstrating that favorable perceptions toward SIPD are not determined solely by its technical capabilities. Instead, users continuously evaluated the innovation through their day-to-day experiences in managing planning and budgeting activities, adapting to regulatory changes, coordinating across organizational units, and resolving operational challenges. Unlike previous studies that primarily emphasize the technological advantages of SIPD, this study demonstrates that positive perceptions are progressively constructed through the interaction between technological characteristics and the organizational realities of regional planning and budgeting. This finding extends the digital government literature by demonstrating that successful innovation adoption depends not only on system quality but also on the organizational context in which the innovation is implemented.

According to Rogers (2003), successful completion of the persuasion stage requires individuals to develop favorable attitudes toward an innovation based on their evaluation of its perceived advantages and limitations. The findings indicate that organizational actors generally perceive SIPD as an innovation that provides clear relative advantages, aligns with organizational and regulatory requirements, and produces observable improvements in planning and budgeting practices. Nevertheless, users continued to experience operational challenges arising from system complexity, evolving planning and budgeting requirements, and technical limitations. The persistence of these constraints indicates that positive perceptions have not yet been fully institutionalized across the organization, despite increasing confidence in the value of SIPD.

Overall, these findings demonstrate that the persuasion stage of SIPD adoption in Bapperida of East Nusa Tenggara Province has progressed from initial acceptance toward stronger organizational confidence as users increasingly recognize the benefits of integrating planning and budgeting processes within a single digital platform. However, favorable perceptions remain influenced by users' ability to adapt to technical complexity, organizational change, and operational demands. Consequently, although confidence in the value of SIPD has strengthened through practical experience, the persuasion stage has not yet been fully maximized, indicating that continuous organizational support, technical assistance, and system reliability remain essential to sustain users' confidence and strengthen the long-term adoption of SIPD.

Decision Stage

According to Rogers (2003), the decision stage refers to the process through which individuals or organizations engage in activities that lead to the adoption or rejection of an innovation. In this study, the decision stage reflects how Bapperida of East Nusa Tenggara Province translated the mandatory adoption of the Regional Government Information System (SIPD) into organizational commitments and operational arrangements supporting integrated regional planning and budgeting.

Findings from the interviews indicate that the decision to adopt SIPD was primarily driven by national regulatory requirements rather than voluntary organizational choice. The Secretary of Bapperida explained that SIPD had become a mandatory system established by the Ministry of Home Affairs, leaving local governments with no alternative but to implement it throughout the regional planning and budgeting process. Likewise, the Head of the Program, Data, and Evaluation Subdivision emphasized that SIPD serves as the official

platform through which the Ministry of Home Affairs oversees regional planning, budgeting, and financial administration. Consequently, organizational actors perceived SIPD adoption as a regulatory obligation that ensured planning and budgeting activities remained aligned with national policy.

These accounts were reinforced by field observations showing that organizational discussions no longer focused on whether SIPD should be adopted but rather on how planning and budgeting activities could be effectively completed within the system. Users concentrated on data entry, document verification, budget validation, and procedural adjustments in accordance with the implementation schedule established by the Ministry of Home Affairs. Documentary analysis of official circular letters, SIPD implementation regulations, and institutional correspondence further confirmed that SIPD implementation was formally mandated for all regional governments. Collectively, these primary and secondary data indicate that the decision to adopt SIPD was institutional rather than discretionary, reflecting organizational compliance with national policy while establishing the foundation for integrated planning and budgeting practices.

Further interview evidence revealed that mandatory adoption was subsequently translated into organizational commitments that enabled SIPD to function effectively in routine planning and budgeting activities. The Secretary of Bapperida explained that this commitment was reflected in the formal appointment of SIPD operators, the annual renewal of assignment decrees, and the clear allocation of responsibilities for planning, budgeting, and financial administration. Similarly, the Head of the Program, Data, and Evaluation Subdivision emphasized that all planning and budgeting documents were processed through SIPD, demonstrating that organizational commitment extended beyond formal acceptance toward the institutionalization of system utilization within routine administrative practice. However, an IT administrator noted that regional regulations governing SIPD management, user authority, and institutional governance remained limited, indicating that formal legal reinforcement at the regional level had not yet fully supported system implementation.

These findings were corroborated by field observations indicating that organizational commitment was reflected in the continued implementation of SIPD despite recurring technical constraints, including server disruptions, system adjustments, and changes in implementation schedules. Organizational actors continued to coordinate across units, assign operational responsibilities, and complete planning and budgeting activities through SIPD to ensure that administrative processes remained consistent with national requirements. Documentary evidence further strengthened these findings. Organizational decrees

appointing SIPD operators, internal coordination records, and planning documents demonstrate that the decision to adopt SIPD had been translated into structured organizational arrangements, providing administrative legitimacy for system operators while clarifying operational responsibilities throughout the planning and budgeting cycle.

Further empirical evidence indicates that organizational acceptance of SIPD was characterized by continuous adaptation rather than voluntary acceptance of the innovation itself. Interview data consistently revealed that organizational actors recognized SIPD as a mandatory system and therefore focused on adjusting to new workflows, planning procedures, budget structures, and verification mechanisms instead of questioning whether the system should be adopted. Although users frequently encountered operational challenges arising from changing nomenclature, account structures, implementation schedules, and technical disruptions, these challenges did not result in organizational resistance. Instead, users responded through continuous coordination, informal knowledge sharing, and procedural adjustments to ensure that planning and budgeting activities continued according to the implementation schedule established by the Ministry of Home Affairs. Field observations and documentation of coordination meetings further confirmed that organizational adaptation became an integral component of decision-making throughout SIPD implementation.

Taken together, the combined interview, observational, and documentary evidence demonstrates that the decision stage extended beyond formal compliance with national regulations. Organizational decisions were progressively institutionalized through the establishment of operational responsibilities, coordination mechanisms, internal commitments, and adaptive organizational practices that enabled SIPD to function effectively within the regional planning and budgeting process. Consequently, decision-making should be understood not as a single administrative event but as a continuous organizational process through which regulatory mandates were translated into everyday institutional practice.

These findings are consistent with Lumbantobing et al. (2022), Andrew et al. (2022), Nasution and Nurwani (2021), and Madany and Maryani (2025), who reported that SIPD implementation is strongly influenced by regulatory frameworks, organizational readiness, and institutional coordination. However, the present study extends previous research by demonstrating that decision-making in SIPD adoption involves more than formal compliance with mandatory regulations. Unlike previous studies that primarily explain SIPD adoption as a direct consequence of regulatory obligations, this study demonstrates that

organizational decisions become meaningful only when regulatory mandates are translated into operational commitments, adaptive work arrangements, and institutional practices that sustain integrated planning and budgeting processes**.** This finding extends the digital government literature by highlighting that mandatory innovation adoption requires continuous organizational adaptation in addition to regulatory enforcement.

According to Rogers (2003), successful completion of the decision stage requires organizations not only to accept an innovation but also to establish organizational arrangements that support its sustained implementation. The findings indicate that Bapperida has formally adopted SIPD and incorporated it into regional planning and budgeting through organizational commitments, role allocation, and operational coordination. Nevertheless, institutional support mechanisms, regional regulatory reinforcement, governance arrangements, and technical support remain insufficient in several areas. The continued reliance on informal coordination and operational adjustments therefore indicates that the decision stage has not yet been fully institutionalized across the organization.

Overall, these findings demonstrate that the decision stage of SIPD adoption in Bapperida of East Nusa Tenggara Province has progressed beyond mandatory regulatory compliance toward the institutionalization of integrated planning and budgeting practices. However, the sustainability of this decision remains dependent on strengthening organizational governance, institutional support, technical assistance, and regional regulatory frameworks. Consequently, although SIPD has been formally adopted and operationalized throughout the organization, the decision stage has not yet been fully maximized, indicating that continued institutional strengthening remains essential to ensure the long-term sustainability of integrated regional planning and budgeting through SIPD.

Implementation Stage

According to Rogers (2003), the implementation stage refers to the phase in which an innovation is put into actual use within organizational activities. In this study, the implementation stage reflects how the Regional Government Information System (SIPD) became embedded in the daily planning and budgeting processes of Bapperida of East Nusa Tenggara Province through the integration of planning and budgeting documents, operational coordination, and administrative procedures.

Findings from the interviews indicate that SIPD has transformed regional planning and budgeting by integrating planning documents, budgeting documents, and performance information within a single digital platform. The Secretary of Bapperida explained that

planning documents prepared during the Regional Government Work Plan (Renja) subsequently became the basis for budgeting documents, enabling organizational actors to generate official documents directly from the system while reducing inconsistencies between document versions. Likewise, the Head of the Program, Data, and Evaluation Subdivision emphasized that SIPD strengthened procedural control by linking programs, activities, sub-activities, performance indicators, and budget allocations within one integrated system, thereby facilitating document verification and improving consistency throughout the planning and budgeting cycle.

These accounts were corroborated by field observations showing that SIPD no longer functioned merely as a data-entry application but had become an operational platform supporting document preparation, verification, budget validation, and document retrieval throughout successive planning and budgeting stages. Documentary analysis further confirmed these findings. Planning documents, budgeting outputs generated through SIPD, and organizational records demonstrate that the system strengthened traceability between planning and budgeting documents while reducing administrative duplication. Collectively, these primary and secondary data indicate that SIPD has substantially enhanced the integration of regional planning and budgeting by embedding interconnected administrative procedures within a single digital platform.

Further interview evidence revealed that SIPD implementation also transformed organizational work patterns and coordination mechanisms. Informants consistently explained that implementation schedules, data preparation, verification processes, and inter-unit coordination increasingly followed the operational timetable established within the system. Organizational units became responsible for preparing planning data, operators managed system input, authorized officials verified document consistency, and the Program, Data, and Evaluation Subdivision coordinated document integration throughout the budgeting process. As a result, SIPD not only digitalized administrative procedures but also reshaped organizational responsibilities and collaborative workflows.

These findings were reinforced by field observations indicating that planning and budgeting activities frequently extended beyond regular working hours because users were required to adjust to system access periods, limited input windows, and administrative deadlines established by the Ministry of Home Affairs. Documentary evidence, including planning schedules and organizational records, further demonstrated that successful implementation required continuous coordination among organizational units to ensure the timely completion of planning and budgeting documents. Taken together, the interview,

observational, and documentary evidence demonstrates that SIPD has become embedded within routine organizational practice rather than functioning solely as a digital application. Its implementation has strengthened document integration, improved procedural control, and restructured organizational workflows by connecting planning, budgeting, verification, and document management within a unified administrative process.

Further empirical evidence indicates that, despite these operational benefits, SIPD implementation continued to face significant technical and administrative challenges. Informants consistently reported that repeated budget revisions, limited input periods, prolonged verification processes, server instability, and changes in account codes, expenditure classifications, and activity nomenclature frequently affected planning and budgeting activities. The Secretary of Bapperida explained that delays in document verification and the issuance of the Budget Implementation Document (DPA) often postponed program implementation, while repeated budget adjustments required users to revise planning and budgeting documents several times within a single fiscal year. Similarly, the SIPD administrator emphasized that many users continued to experience difficulties in classifying expenditure components, selecting appropriate account codes, and understanding standard cost structures, resulting in recurring corrections during the budgeting process.

These accounts were supported by field observations showing that users repeatedly verified planning documents, revised budget allocations, and adjusted expenditure classifications to maintain consistency with planning objectives and regulatory requirements. Documentary analysis of annual planning schedules, budget revision timelines, and organizational performance reports further demonstrated that SIPD implementation extended beyond the preparation of the initial budget and continued through multiple budget revisions within the same fiscal year. Consequently, implementation became a continuous organizational process requiring repeated technical adjustments, inter-unit coordination, and administrative verification to maintain consistency among planning documents, budget structures, and performance indicators.

Taken together, the empirical evidence indicates that the effectiveness of SIPD implementation was influenced not only by the technical functionality of the system but also by organizational readiness to manage increasingly complex planning and budgeting processes. Although SIPD successfully integrated planning and budgeting documents within a single platform, organizational actors remained responsible for ensuring data accuracy, document consistency, and compliance with evolving regulatory requirements. Consequently, successful implementation depended not only on technological capability but

also on organizational coordination, technical assistance, and users' operational competencies.

These findings are consistent with Andrew et al. (2022), Wurara et al. (2024), and Tanan et al. (2025), who found that SIPD supports the integration of planning and budgeting through interconnected digital processes. Likewise, Nasution and Nurwani (2021), Lumbantobing et al. (2022), Vitriana and Ahyaruddin (2022), and Septiani & Isnawaty (2024) reported that SIPD implementation is frequently constrained by technical limitations, data quality issues, organizational readiness, and users' technical capacity. However, the present study extends previous research by demonstrating that implementation challenges should not be understood solely as technical problems. Unlike previous studies that primarily focus on system performance or implementation barriers, this study demonstrates that implementation represents a continuous organizational adaptation process in which technical constraints, administrative procedures, organizational coordination, and users' competencies collectively shape the effectiveness of integrated planning and budgeting. This finding extends the digital government literature by highlighting that successful implementation depends as much on organizational capability as on technological capability.

According to Rogers (2003), successful completion of the implementation stage requires an innovation to become consistently embedded within routine organizational practice. The findings indicate that SIPD has become an integral component of planning and budgeting activities by strengthening document integration, procedural control, and inter-unit coordination. Nevertheless, persistent technical constraints, repeated budget revisions, limited operational flexibility, and variations in users' technical competencies continue to affect the consistency of system utilization. The continued need for organizational adaptation therefore indicates that the implementation stage has not yet been fully institutionalized across the organization.

Overall, these findings demonstrate that the implementation stage of SIPD adoption in Bapperida of East Nusa Tenggara Province has progressed beyond the introduction of a digital platform toward the institutionalization of integrated planning and budgeting practices. However, sustaining this stage requires continuous improvements in organizational capacity, technical support, data quality management, and inter-unit coordination. Consequently, although SIPD has become an integral part of organizational routines, the implementation stage has not yet been fully maximized, indicating that continued organizational strengthening remains essential to ensure effective, integrated, and sustainable regional planning and budgeting.

Confirmation

According to Rogers (2003), the confirmation stage refers to the phase in which individuals or organizations reinforce their decision to continue adopting an innovation after evaluating its benefits through practical experience. In this study, the confirmation stage reflects how organizational actors in Bapperida of East Nusa Tenggara Province strengthened their acceptance of the Regional Government Information System (SIPD) through its continued use in regional planning and budgeting activities.

Findings from the interviews indicate that organizational acceptance of SIPD strengthened progressively after several planning and budgeting cycles. Informants explained that SIPD was no longer perceived merely as a regulatory requirement but had become an integral component of routine organizational activities. Repeated experience in preparing planning and budgeting documents, monitoring budget ceilings, reviewing performance indicators, and managing planning and budgeting data enabled users to develop greater familiarity with the system and increased confidence in its utilization. Consequently, organizational actors no longer focused on whether SIPD should be adopted but instead concentrated on improving the effectiveness and efficiency of planning and budgeting activities through the system.

These accounts were corroborated by field observations showing that SIPD had become embedded within routine organizational practice. Users consistently relied on the system to prepare planning and budgeting documents, verify budget allocations, monitor expenditure components, and manage administrative reporting. Documentary analysis further confirmed these findings. Planning documents, budgeting records, and organizational documentation demonstrate that SIPD had become the primary platform linking planning and budgeting documents while strengthening administrative control and document traceability. Collectively, these primary and secondary data indicate that organizational acceptance evolved beyond regulatory compliance toward practical acceptance based on users' direct experience with the operational benefits of the system.

Further interview evidence revealed that strengthened organizational acceptance was accompanied by continuous efforts to improve the quality of SIPD utilization. Informants explained that Bapperida regularly conducted technical coordination with the Regional Financial and Asset Management Agency (BKEUDA), organized internal coordination meetings, participated in technical guidance programs, and encouraged younger civil servants with stronger digital competencies to support system implementation.

In addition, the Program, Data, and Evaluation Subdivision initiated the development of an internal supporting application to facilitate data preparation and strengthen analytical processes before information was entered into SIPD. These initiatives demonstrate that organizational actors were not only committed to maintaining system utilization but also sought to continuously improve its effectiveness in supporting planning and budgeting activities.

These findings were reinforced by field observations indicating that organizational improvement extended beyond technical system operation. Users increasingly emphasized data readiness, inter-unit coordination, document verification, and analytical preparation to improve the quality of planning and budgeting information. Documentary evidence, including internal coordination records, technical guidance documentation, and records of supporting application development, further demonstrated that organizational efforts were directed toward strengthening analytical capacity and improving the overall quality of SIPD utilization. At the same time, observations revealed that although SIPD effectively supported administrative processes, additional analysis was still required to relate expenditure components, development priorities, activity outputs, and performance outcomes. Consequently, organizational learning continued beyond routine system utilization as users increasingly recognized opportunities to strengthen the analytical use of the system.

Taken together, the combined interview, observational, and documentary evidence demonstrates that confirmation should not be understood merely as the continued use of SIPD. Rather, it represents the gradual institutionalization of digital practices through sustained organizational learning, continuous adaptation, and ongoing efforts to improve the quality of planning and budgeting processes. Repeated interaction with the system enabled organizational actors to recognize both its operational benefits and its remaining limitations, encouraging continuous refinement of work practices and institutional coordination.

These findings are consistent with Aisah (2025), Prima (2023), and Wurara et al. (2024), who found that acceptance of digital government innovations becomes stronger as users repeatedly experience the practical benefits of system utilization. Likewise, Napu (2025), Wejak and Huseno (2025), Tanan et al. (2025), and Abdillah et al. (2019) emphasized the importance of organizational coordination, user capacity, and continuous improvement in sustaining innovation adoption. Andrew et al. (2022), further argued that the long-term success of SIPD depends on an organization's ability to transform available data into meaningful information for planning and decision-making. Unlike previous studies that primarily associate confirmation with continued system utilization, this study

demonstrates that confirmation represents a process of organizational learning in which users continuously strengthen technical practices, institutional coordination, and complementary innovations to maximize the value of SIPD for integrated planning and budgeting. This finding extends the digital government literature by highlighting that sustainable innovation adoption depends not only on maintaining system use but also on continuously developing organizational capabilities.

According to Rogers (2003), successful completion of the confirmation stage requires continued innovation use to be reinforced through positive organizational outcomes that sustain long-term commitment. The findings indicate that SIPD has become embedded within routine planning and budgeting activities through strengthened organizational acceptance, continuous utilization, and ongoing organizational improvement. Nevertheless, the system continues to function predominantly as an administrative and procedural platform, while its analytical potential for supporting performance evaluation, evidence-based planning, and strategic decision-making remains underutilized. The continued need to strengthen analytical capacity and organizational learning therefore indicates that the confirmation stage has not yet been fully institutionalized across the organization. Overall, these findings demonstrate that the confirmation stage of SIPD adoption in Bapperida of East Nusa Tenggara Province has progressed beyond continued system utilization toward the institutionalization of digital planning and budgeting practices. However, sustaining this stage requires ongoing organizational learning, stronger analytical capabilities, improved data management, and continuous institutional support. Consequently, although SIPD has become an integral part of organizational routines, the confirmation stage has not yet been fully maximized, indicating that continued organizational capability development remains essential to fully realize the potential of SIPD in supporting evidence-based planning, performance evaluation, and strategic decision-making.

Conclusion

This study examined the adoption of the Regional Government Information System (SIPD) in supporting regional planning and budgeting through the lens of Rogers' Innovation Adoption Theory. The findings demonstrate that SIPD adoption has progressed through the stages of knowledge, persuasion, decision, implementation, and confirmation. Across these stages, SIPD has strengthened the integration of planning and budgeting documents, enhanced administrative control, improved document traceability, and gradually become embedded within organizational routines. Nevertheless, the adoption process has not yet

been fully maximized because persistent technical constraints, repeated budget revisions, data quality issues, and uneven user capabilities continue to affect the effectiveness of system utilization. As a result, SIPD remains predominantly oriented toward administrative and procedural functions rather than fully supporting performance analysis and evidence-based decision-making.

This study has several limitations. First, the research was conducted within a single provincial government institution, limiting the transferability of the findings to other organizational settings. Second, the qualitative approach focused primarily on the experiences and perceptions of organizational actors directly involved in SIPD implementation and therefore did not incorporate perspectives from other stakeholders engaged in regional digital governance. Third, the study did not quantitatively examine the effects of SIPD adoption on planning quality, budgeting effectiveness, organizational performance, or public service outcomes. Accordingly, the findings should be interpreted within the specific organizational context in which the study was undertaken.

Future research should investigate SIPD adoption across multiple regional governments using comparative, quantitative, or mixed-method approaches to enhance the generalizability of findings. Longitudinal research is also recommended to examine how organizational learning, institutional adaptation, and digital governance capacity evolve throughout the innovation adoption process. Furthermore, future studies should explore the relationships between SIPD utilization, organizational learning, evidence-based decision-making, planning quality, organizational performance, and public service outcomes to provide a more comprehensive understanding of the long-term contribution of digital government systems to public sector transformation.

Overall, this study demonstrates that the successful adoption of digital government innovations extends beyond the implementation of digital systems and depends on continuous organizational learning, institutional adaptation, and sustained capacity development. By examining SIPD adoption through the five stages of Rogers' Innovation Adoption Theory, this study provides a more comprehensive understanding of how digital innovations are adopted, institutionalized, and sustained within regional planning and budgeting processes. These findings offer both theoretical insights into digital government adoption and practical implications for strengthening the implementation of SIPD and advancing evidence-based governance in the public sector.

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Author Contributions

Penina Lambai, as the first author, was responsible for conducting the research, collecting and analyzing the data, interpreting the findings, and preparing the initial manuscript. Djunaidi, as the first supervisor, provided academic guidance and supervision throughout the research process, particularly in developing the research framework, reviewing the analysis, and providing critical feedback on the manuscript. Katriza Imania, as the second supervisor, provided guidance and supervision, particularly in refining the research methodology, reviewing the research findings, and improving the manuscript. All authors reviewed and approved the final version of the manuscript.

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