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Optimization Of Regional Development Planning Through The Integration Of SIPD Data In Tebing Tinggi City

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Abstract

Effective and efficient regional development planning is key to achieving sustainable development goals. In Tebing Tinggi City, the implementation of the Regional Government Information System (SIPD) is the main framework in the management of development data. However, the main challenge faced is the lack of optimal data integration between SIPD modules, which impacts data incompatibility, data duplication, and inaccurate planning decisions. This study aims to analyze and formulate a model for optimizing regional development planning through the integration of SIPD data in Tebing Tinggi City. The research method used is qualitative descriptive with data collection through journals/articles. The results of the study show that data integration is not optimal due to technical factors, lack of coordination between OPDs, and limited operator competencies. The proposed optimization model emphasizes three main pillars, namely Data Governance Alignment through the formation of an integrated data coordination team and the establishment of Standard Operating Procedures (SOPs) for data integration across OPDs, Data Quality Improvement and Standardization by implementing single metadata and validating periodic data, and Strengthening HR Capacity through technical and functional training. Optimal data integration is expected to produce more consistent, accurate, and evidence-based planning documents (RKPD and Renja), thereby supporting better decision-making and more targeted budget allocation in Tebing Tinggi City.

Keywords*: Optimization, Regional Development Planning, Data Integration, SIPD, Tebing Tinggi*

I. INTRODUCTION

Regional development is a planned and sustainable process of change to improve the welfare of the people in a region. In the era of regional autonomy, local governments are given broad authority to manage resources and plan their own future. However, the main challenge that is often faced is how to develop a precise, efficient, and targeted planning. In the midst of the complexity of socio-economic dynamics, the conventional development paradigm that is intuitive or based on mere assumptions is no longer relevant. A strong data-driven approach is needed to ensure that every rupiah of the state budget has a real impact. Regions have the authority to manage these resources tend to be unplanned and unsustainable in the implementation of development in the era of Regional Autonomy (N. Siregar & Irawan, 2021).

Digital transformation in governance (E-Government) has become a national mandate to create a lean and transparent bureaucracy. One of the crucial instruments launched by the Central Government through the Ministry of Home Affairs is the Regional Government Information System (SIPD). SIPD is designed as a single platform that integrates all stages of regional development, from planning, budgeting, implementation, to administration and reporting. The presence of SIPD is not just a change in technical applications, but a fundamental effort to unite development data that has been fragmented in the sectoral egos of various Regional Apparatus Organizations (OPDs). The role of eGovernment in administrative transformation by reducing bureaucracy and the time required crucial aspects of e-Government are the foundation (Sembiring et al., 2023).

The city of Tebing Tinggi, as one of the important nodes in North Sumatra Province, has great ambitions to become a center for superior services and trade. However, planning optimization in this city still faces a classic obstacle: data inconsistency. Often, the data owned by one agency is different from the data in another, causing development programs to overlap or not touch the root of the community's problems. For example, poverty data or infrastructure data that is not up to date will result in inefficient budget allocation. Tebing Tinggi was developed into superior tourism as a solution to face problems that are one of the forms of transportation network nodes (Chrisna et al., 2024)

The implementation of SIPD in Tebing Tinggi City is expected to be a solution to these obstacles. Through the integration of data in SIPD, the entire planning process can be monitored in real-time,

ensuring synchronization between the Regional Medium-Term Development Plan (RPJMD) document and the Regional Government Work Plan (RKPD). However, the transition to this fully integrated system has not been easy. There are various obstacles ranging from the readiness of Human Resources (HR), uneven information technology infrastructure, to resistance to changes in work patterns that have been manual or semi-digital. Real-time regional financial management, which is properly monitored and managed, and facilitates SIPD RI is designed for national data integration (M. Siregar et al., n.d.).

Why is data integration through SIPD so crucial? First, data integration guarantees accountability. Every development proposal, both from the results of the Musrenbang and the main points of thought of the DPRD, is digitally documented and traceable. Second, this integration supports fiscal efficiency. With integrated data, the Tebing Tinggi City Government can cut programs that are not priorities and divert resources to superior sectors that support local economic growth. Third, data integration simplifies the monitoring and evaluation process. Regional leaders can see the progress of performance achievements only through the system dashboard without having to wait for time-consuming physical reports. One of the crucial aspects that has an impact on SIPD that is centered on one operator is the irregularity in the mechanism of the main points of mind of the DPRD (M. Siregar & Syahputra, 2022).

Although SIPD has been formally implemented, the effectiveness of its use as a planning optimization tool in Tebing Tinggi City needs to be studied more deeply. Is the data input of good quality? Has the integration really affected the quality of decision-making, or is it just the fulfillment of administrative obligations? These questions underlie the importance of this research being conducted.

This research focuses on how to optimize development planning strategies in Tebing Tinggi City through the use of data integration on the SIPD platform. The main focus will be directed to the identification of technical and non-technical barriers, as well as the formulation of an ideal integration model so that the SIPD is not only a data warehouse, but also an intelligent analytical instrument for development planners (Irawan et al., 2022).

Overall, this research is expected to make a theoretical contribution to the development of public management science, especially in terms of government digitalization. Practically, the results of this research are expected to be policy recommendations for the Tebing Tinggi City Government in strengthening a more transparent, accountable, and data-based regional planning system in order to realize the vision of sustainable development for all city residents. Starting from introduction to practical implementation, this book covers the development of online portals, digitization of theoretical concepts, this book is expected to be a reference (Nasution et al., 2023)

II. RESEARCH METHODOLOGY

A. Regional Development Planning

Regional development planning is a continuous process carried out by local governments to formulate development policies, programs, and activities based on community needs and regional potential. This planning aims to realize community welfare through the use of resources effectively, efficiently, transparently, and accountably. In the government system in Indonesia, regional development planning is carried out in stages and integrated, starting from long-term, medium-term, to annual planning. The main documents produced include the Regional Long-Term Development Plan (RPJPD), the Regional Medium-Term Development Plan (RPJMD), the Regional Government Work Plan (RKPD), and the Regional Apparatus Organization (OPD) Work Plan (Renja). Consistency and integration between these documents are important indicators of the quality of regional development planning. In order to formulate real planning and policies. When the development paradigm is sustainable, in general, development goals (Kuncoro et al., 2024).

Quality development planning demands the availability of valid, up-to-date, and integrated data. Without adequate data support, planning tends to be normative, less on target, and has the potential to cause incompatibility between planning and development realization.

B. Local Government Information System (SIPD)

The Regional Government Information System (SIPD) is an electronic system developed by the Ministry of Home Affairs as a national platform in the management of local government information. SIPD is designed to integrate the entire process of planning, budgeting, implementing, and reporting regional development in one standardized system. The existence of SIPD is based on the mandate of Law Number 23 of 2014 concerning Regional Government and Regulation of the Minister of Home Affairs Number 70 of 2019 concerning Regional Government Information Systems. Through SIPD, local governments are required to use the same data system in the preparation of planning and budgeting documents to realize the principle of one local government data. The Regional Government Information System (SIPD) is a quality integration of planning and budgeting systems based on designing how to design the architecture of each SIPD (Umar et al., 2020).

The SIPD consists of several main modules, including the planning module, the finance module, and the development module. Each module is interconnected and designed to ensure that the data

entered at one stage will be the basis for the next. Thus, SIPD is expected to be able to improve the efficiency of the planning process, reduce data duplication, and improve the quality of regional development decision-making.

C. Data Integration in Government Information Systems

Data integration in government information systems is a process of unifying and aligning data from various sources so that it can be used consistently and sustainably. In the context of SIPD, data integration includes data connectivity between system modules and data synchronization between Regional Apparatus Organizations (OPD). Data integration has a strategic role in supporting evidence-based development planning. Integrated data allows local governments to see the relationship between program planning, budget allocation, and development performance achievements comprehensively. On the other hand, a low level of data integration can lead to information mismatches, duplication of data input, and weak accountability of planning and budgeting. The literature on public information systems shows that data integration depends not only on technological aspects, but also on uniformity of data standards, clarity of business process flows, and coordination across organizations. Therefore, the integration of SIPD data must be understood as a technical process as well as an institutional process.

D. Data Governance in the Public Sector

Data governance is a set of policies, procedures, and organizational structures that govern how data is managed, used, and secured. In local government, data governance is the main foundation for the success of SIPD data integration. Good data governance includes the establishment of the roles and responsibilities of data managers, the standardization of data formats and definitions, data validation and verification mechanisms, and the regulation of data access and security. Without clear data governance, information system integration tends to result in inconsistent and difficult-to-use data as a basis for planning. The foundation for transparent and accountable governance. The success of this integration model depends on being collected and stored by local governments (Purba, 2019).

In the context of SIPD, data governance requires coordination across OPDs, considering that each OPD plays a role as a producer as well as a data user. The establishment of an integrated data coordination team and the establishment of Standard Operating Procedures (SOPs) for data integration are important strategies to ensure the quality and consistency of regional development planning data.

E. Human Resources and Information Systems Implementation

Human resources (HR) are a key factor in the successful implementation of SIPD and data integration. The operator's technical competence, understanding of the system, and the commitment of local government apparatus greatly determine whether or not the optimal use of SIPD in development planning is optimal. Various studies on the implementation of e-government show that the limitations of human resources are often the main obstacle in the optimal use of information systems. Common problems include low technical understanding of operators, high personnel turnover rates, and lack of continuous training. The success of SIPD implementation is greatly influenced by the smooth integration of SIPD into the planning system (Umar et al., 2019)

Therefore, strengthening human resource capacity through technical training, mentoring, and improving data literacy is an urgent need in order to support the integration of SIPD data and improve the quality of regional development planning.

F. Optimizing Regional Development Planning through SIPD Data Integration

Optimizing regional development planning through the integration of SIPD data can be understood as a systematic effort to improve the quality of planning by utilizing integrated, accurate, and sustainable data. The integration of SIPD data allows for integration between program planning, budgeting, and development performance evaluation. SIPD RI facilitates the integration of documents that are systematic, transparent, and integrated between regional apparatus (Wahyuni et al., 2022).

Integrated data-driven planning will result in planning documents that are more consistent, realistic, and aligned with the fiscal capacity of the region. In addition, data integration also supports increasing transparency and accountability in local government implementation. Thus, the optimization of SIPD data integration not only has an impact on the technical aspects of planning, but also contributes to improving the quality of overall local governance.

G. Previous Research

Examined the effect of the use of planning information systems on the quality of regional development planning. The results of the study show that the use of an integrated information system has a significant effect on the consistency of planning documents and the accuracy of budget allocation. However, this study also notes that the resistance to change from the apparatus and the limitations of information technology infrastructure are still the main challenges (Handoko et al., 2024).

Based on the results of the previous research, it can be concluded that the implementation of SIPD has great potential in improving the quality of regional development planning. However, most studies confirm that the main challenges lie in the

aspects of data integration, institutional governance, and human resource capacity. Therefore, this study has a strategic position to complement previous research by formulating a model for optimizing regional development planning through the integration of SIPD data, especially in the context of the Tebing Tinggi City Government.

H. Conceptual Framework of Research.

Based on the literature review, it can be concluded that the quality of regional development planning is greatly influenced by the level of integration of SIPD data. The integration of data is influenced by system technical factors, data governance, institutional coordination, and human resource capacity. Integration between RPJMD and RKPD documents into SIPD (Noviani et al., 2024).

The framework of this research places the integration of SIPD data as a strategic variable that plays a role in producing effective, efficient, and accountable regional development planning. The findings of the research are expected to provide policy recommendations in order to strengthen data governance and optimize the use of SIPD in local governments.

In this paper, the author uses a qualitative-descriptive type of research. A qualitative approach is chosen to gain a deep understanding of the process, perception, and dynamics of the institutions related to the implementation of SIPD and data integration in Tebing Tinggi City. Descriptive-analytical research aims to systematically describe the facts in the field and analyze the cause-and-effect relationship of the data integration problems found. Data collection techniques based on literature review.

Table 1. Paper font size

No	Research Variables	Variable Type	Operational Definition	Analysis Indicators
1	SIPD Data Integration	Independent Variables	The level of integration and data connectivity between SIPD modules (planning, finance, development) and between OPDs in the regional development planning process	-Data synchronization between SIPD modules- Consistency of RKPD and Renja data- Minimal data duplication
2	Data Governance	Independent Variables	SIPD data management system that includes policies, procedures, and coordination across OPDs in planning data management	- Clarity of SOPs for data management - Coordination across OPDs- Data standardization and validation
3	Human Resources (HR)	Independent Variables	Capacity and competence of local government apparatus in managing and utilizing SIPD	- Technical competence of SIPD operators- Training and mentoring- Understanding of the planning process
4	SIPD Optimization	Intervening Variable	Efforts to increase the maximum use of SIPD in supporting the regional development planning process	- Utilization of SIPD features- Compliance with the use of SIPD- Leadership policy support
5	Quality of Regional Development	Dependent Variable	The level of consistency, accuracy, and integration of regional	- Consistency of RKPD and OPD Renja - Accuracy of performance indicators - Suitability of

Planning	development planning documents	planning and realization

III. RESULTS AND DISCUSSION

Based on regulations and literature studies related to the implementation of SIPD in local governments, including Tebing Tinggi City, it is according to the schedule set by the central government. In general, the use of this system has succeeded in replacing the manual/conventional planning and budgeting process, so that the planning documents have been uniform in the system format.

SIPD is designed as an integrated system for local governments, which functions to eliminate data silos. The data integration function in SIPD ensures that the data entered in one module will automatically flow and become input for the other modules. The level of compliance of the Regional Apparatus Organization (OPD) in using the Regional Government Information System (SIPD) as the only planning system in Tebing Tinggi City can be analyzed based on several key indicators, which generally show high procedural compliance but substantial compliance that still needs to be improved. (PCN Putri, IGA Purnamawati - Journal of Professional Accounting, 2025)

SIPD is required under central regulations, which legally force OPDs to comply. However, compliance is substantially affected by the technical, institutional, and HR challenges found in the research. The implementation of SIPD in Tebing Tinggi City fundamentally aims to improve the harmonization and harmony of planning documents, both horizontally (inter-OPD) and vertically (regional-to-central). The development of SIPD is not only limited to internal synchronization, but it can also be expanded into the realm of advanced data analysis and increased public transparency.

A. Implementation of SIPD in Regional Development Planning in Tebing Tinggi City

The results of the study show that the Tebing Tinggi City Government has implemented the Regional Government Information System (SIPD) in accordance with the provisions set by the central government. All Regional Apparatus Organizations (OPD) have used the SIPD module, especially the planning and finance module, in the preparation of regional development planning documents such as RKPD and Renja OPD. This implementation has generally succeeded in replacing the planning and budgeting mechanism that was previously carried out manually or using separate applications (T Tumija, PA Erlambang - Journal of Bureaucratic Media, 2023).

From a procedural perspective, the use of SIPD shows a relatively high level of compliance because it is mandatory and normatively regulated in laws and regulations. SIPD has provided a uniform document format, making the resulting planning documents more standardized and easy to compile. This is in line with the main goal of SIPD, which is to create uniformity and integration of the regional development planning system. However, the implementation of SIPD in Tebing Tinggi City still faces a number of challenges at a substantial level. Although the system has been used, the quality of SIPD utilization has not been fully optimal, especially in the aspect of data integration between modules and between OPDs. This condition shows that the success of the implementation of SIPD is not only determined by the administrative use of the system, but also by the extent to which the system can be used optimally to support regional development decision-making.

B. Level of Integration of SIPD Data in the Planning Process

Data integration is a key element in the use of SIPD as a one-data-based development planning system. The results of the analysis show that the integration of SIPD data in Tebing Tinggi City has not been running optimally. Although technically the system has been designed to be integrated, in practice there is still a data insynchronization between the SIPD modules, especially between the planning module and the finance module. Districts are crucial elements (A Kahfi, Z Naufal, AW Johannes, 2025)

The inconsistency can be seen from the difference between the performance indicator data listed in the planning document and the physical and financial realization data at the reporting stage. In addition, there is still a practice of repeated data input by OPDs due to a lack of understanding of the system integration flow. This condition has an impact on the emergence of duplicate data and a decrease in the accuracy of planning information.

This low level of data integration shows that the use of SIPD still tends to be administrative, that is, limited to fulfilling the obligation to fill in the system, and has not been fully used as a tool for analysis and decision-making for regional development. This reinforces the findings of previous research that data integration in government information systems is often hampered by non-technical factors.

C. Technical Factors as Barriers to SIPD Data Integration

Technical factors are one of the main obstacles in optimizing SIPD data integration in Tebing Tinggi City. The technical problems identified include limited operator understanding of SIPD features, system constraints that are still undergoing changes or updates, and limitations of supporting

infrastructure such as internet networks that are not fully stable. (KCDVL Wejak, T Huseno, 2025)

In addition, the complexity of a SIPD system that includes multiple modules and planning stages often makes it difficult for operators to understand the correct data input flow. As a result, the data entered is not always consistent and not fully connected between modules. This condition shows that the technical aspects of SIPD still need improvement, both in terms of the system and in terms of technical assistance to users.

D. Institutional Factors and Coordination Between OPDs

In addition to technical factors, institutional factors also play a significant role in hindering the integration of SIPD data. The results of the study show that coordination between OPDs in the management of planning data is still not optimal. Each OPD tends to focus on meeting their own internal needs without paying attention to the relationship between data and other OPDs. (KCDVL Wejak, T Huseno, 2025)

This condition reflects the still strong sectoral ego in data management, so that the principle of one local government data has not been fully realized. The absence of a formal and ongoing data coordination mechanism, such as an integrated data management team, has led to partial integration of SIPD data. This has an impact on the weak consistency of data across OPDs and the decline in the quality of regional development planning documents.

E. Human Resources Factors in the Utilization of SIPD

Human resources (HR) are a key factor in the success of SIPD data integration. The results of the discussion showed that the limited competence of SIPD operators is one of the main causes of the lack of optimal use of the system. Not all apparatus involved in the planning process have adequate technical background or capabilities in operating information systems. (KCDVL Wejak, T Huseno, 2025).

In addition, the limited frequency of training and mentoring causes the operator's understanding of the features and functions of SIPD to not develop optimally. The high turnover rate also has an impact on the sustainability of data management, as new operators often do not have a sufficient understanding of SIPD-based planning systems and flows. This condition has direct implications for the quality of the data generated and the level of data integration in the system.

F. Development Planning Optimization Model through SIPD Data Integration

Based on the results of the discussion, the optimization of regional development planning through the integration of SIPD data in Tebing Tinggi City can be carried out through three main pillars. The first pillar is the alignment of data governance through the formation of an integrated data coordination team and the establishment of Standard Operating Procedures (SOP) for data integration across OPDs. This step aims to clarify the role and responsibilities of each OPD in the management of planning data. Institutional coordination in the implementation of integration (MY Fadhilah, AS Yahya, 2025)

The second pillar is to improve the quality and standardization of data by implementing a single metadata and conducting periodic data validation and verification. This effort is expected to improve the consistency and accuracy of the data used in development planning. The third pillar is to strengthen the capacity of human resources through continuous technical and functional training for SIPD management apparatus.

With the implementation of these three pillars, the integration of SIPD data is expected to run more optimally and produce more consistent, accurate, and evidence-based development planning documents. This will ultimately support more targeted regional development decision-making and increase the effectiveness and accountability of local government implementation in Tebing Tinggi City.

IV. CONCLUSION

Based on the results of the discussion on optimizing regional development planning through the integration of Regional Government Information System (SIPD) data in Tebing Tinggi City, it can be concluded that the implementation of SIPD has been carried out procedurally in accordance with the provisions set by the central government. All Regional Apparatus Organizations (OPD) have used SIPD in the planning and budgeting process, so that administratively it is able to create uniformity in the format of regional development planning documents.

However, the level of integration of SIPD data in regional development planning practices has not been fully optimal. Data insynchronization between SIPD modules and between OPDs is still found which has an impact on the emergence of data duplication and differences between planning and development realization. This condition shows that the use of SIPD is still administrative and does not fully support evidence-based development planning.

The main factors that hinder the optimization of SIPD data integration in Tebing Tinggi City include technical system factors, weak institutional coordination between OPDs, and limited human resource capacity in managing and utilizing SIPD. These three factors are interrelated and simultaneously affect the quality of data and the effectiveness of regional development planning.

Therefore, optimizing regional development planning through SIPD requires a comprehensive approach, not only focusing on technological aspects,

but also on strengthening data governance and increasing the capacity of local government apparatus. Optimal integration of SIPD data is expected to be able to produce more consistent, accurate, and accountable planning documents, as well as support more targeted regional development decision-making.

V. RECOMMENDATIONS

Based on the conclusions of the study, some suggestions that can be submitted are as follows:

1. For the Tebing Tinggi City Government, it is recommended to strengthen SIPD data governance through the establishment of an integrated data coordination team across OPDs as well as the preparation and implementation of clear and consistent Standard Operating Procedures (SOPs) for data integration. This step is important to improve coordination and reduce sectoral egos in planning data management.
2. For Regional Apparatus Organizations (OPD), it is hoped that it can increase its commitment to utilizing SIPD optimally, not only as an administrative tool, but also as a basis for analysis and decision-making for development planning. OPDs need to ensure that the data inputted into the system has gone through an adequate validation and verification process.
3. For SIPD managers and local government officials, it is necessary to increase the capacity of human resources through continuous technical and functional training. This training aims to improve understanding of SIPD features, data integration flows, and data-based development planning principles.
4. For future researchers, it is recommended to conduct further research with an empirical approach, such as field case studies or quantitative methods, in order to measure more deeply the influence of SIPD data integration on the quality of regional development planning and performance.

With the implementation of these suggestions, it is hoped that the optimization of SIPD data integration can be achieved in a sustainable manner and make a real contribution to improving the quality of regional development planning in Tebing Tinggi City

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