

INTEGRATION OF INNOVATION IN REGIONAL POTENTIAL-BASED DEVELOPMENT PLANNING IN ACCORDANCE WITH RPJMD IN REALIZING SUSTAINABLE DEVELOPMENT IN THE DISTRICT NORTH LABUHANBATU

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ABSTRACT

This study aim to analyze the integration of innovation in development planning based on regional potential according to the RPJMD in North Sumatra Province, as well as to identify the obstacles and strategies to improve it. The research uses a qualitative approach with a case study, involving regional planning officials, academics, and the community as informants. Data was collected through in-depth interviews, participatory observation, and documentation, then analyzed thematically. The research results show that the level of innovation integration has developed, particularly in the use of information technology and electronic planning systems, but its implementation is still uneven. The main challenges include limitations in human resources, budget, regulations, social resistance, and limited infrastructure. The recommended strategies to improve planning effectiveness include strengthening HR capacity, utilizing technology, regulations that support innovation, participatory planning, synergy among stakeholders, as well as continuous monitoring and evaluation. This study contributes to the development of a more innovative, responsive, and sustainable RPJMD.

Introduction

Regional development has a strategic role in improving community welfare, strengthening the local economy, and creating a sustainable environment. Effective development planning requires not only the right allocation of resources, but also the optimal utilization of regional potential. Each region has different characteristics, resources, and competitive advantages, so that a one-size-fits-all development approach is no longer relevant, this is in accordance with what was conveyed (Nuraini, 2004) which states that another uniqueness found in this residential area is the pattern of community settlements. However, the reality on the ground shows that there are still many regional

development plans that are general, less innovative, and do not fully utilize local potential. This has an impact on the low effectiveness of development programs, inequality of development between regions, and the limited contribution of development to community welfare and environmental conservation. On the other hand, the era of globalization and technological developments requires local governments to adopt innovative approaches in development planning in order to face economic, social, and environmental challenges in a more adaptive manner.

RPJMD (Regional Medium-Term Development Plan) as a strategic planning document has an important function in determining the direction of regional development for five years. The RPJMD must be able to be an instrument that integrates innovation, maximizes local potential, and responds to community needs in a targeted manner. The integration of innovation in development planning includes not only technological innovation, but also innovation in policies, resource management strategies, and sustainable development models. By integrating innovation based on regional potential, it is hoped that development is not only quantitative, but also quality, sustainable, and oriented towards improving community welfare. The absence of innovation or planning that is not based on local potential can cause inefficiency, suboptimal resource management, and reduced regional competitiveness. Therefore, research on the integration of innovation in regional potential-based development planning in accordance with the RPJMD is very important as an effort to realize sustainable, inclusive, and responsive development to the changing times.

The Regional Spatial Plan (RTRW) of North Sumatra Province for 2017–2037 provides a comprehensive overview of the regional division and planned space utilization at the provincial level. This shows the zoning of various areas, ranging from urban areas, industrial areas, conservation areas, agriculture, to aquatic areas. This information is very important in the context of research on the integration of innovation in regional potential-based development planning, because spatial planning is the basic framework for mapping local potential and designing sustainable development. The character of the inhabitants of a place will also be very influential in the spatial planning of an area (Nuraini, et al., 2021; Nuraini et al., 2023).

Through this RTRW, development planners can identify areas that have advantages in economic potential, natural resources, and cultural potential, so that the innovations developed can be on target and according to regional characteristics. For example, areas designated as agricultural and plantation areas can be the focus of agricultural technology innovation or more efficient resource management. Meanwhile, urban areas or industrial areas can be directed to innovations in smart city infrastructure, renewable energy, or industrial waste management. In addition, the RTRW also helps ensure that development not only pays attention to economic aspects, but also environmental and social aspects, in accordance with the principles of sustainable development. The integration of innovation in spatial map-based planning allows each development policy and program to be tailored

to the region's specific potential and needs, thereby strengthening development effectiveness, improving community welfare, and minimizing space utilization conflicts. Thus, the North Sumatra Province RTRW map is one of the main data that supports this research, because it provides a spatial framework to integrate innovations in each stage of regional potential-based development planning in accordance with the RPJMD, while ensuring the sustainability of development in various sectors.

The urgency of research on the integration of innovation in regional potential-based development planning in accordance with the RPJMD is very important considering the various challenges and opportunities faced by local governments in the era of globalization and technological development. Effective regional development is not only about channeling budgets and resources, but must be able to make optimal use of local potential, encourage innovation, and respond to community needs in a targeted manner.

The reality on the ground shows that many regional development programs are still general, less innovative, and not entirely based on local potential. This condition causes low development effectiveness, inequality between regions, and limited development contribution to community welfare and environmental sustainability. In this context, research that focuses on the integration of innovation is very relevant because it can provide strategic input for the preparation of RPJMD so that development is not only quantitative, but also qualitative, sustainable, and responsive to economic, social, and environmental dynamics.

In addition, the use of the Regional Spatial Plan (RTRW) as one of the main data of the research provides a concrete spatial framework to identify regional potential. RTRW allows the development of innovations that suit regional characteristics, both in economic, social, and environmental aspects. For example, agricultural areas can be geared towards efficient agricultural technology innovations, while urban areas can be geared towards infrastructure innovation, renewable energy, or waste management. With this regional potential-based approach, development programs are expected to be more targeted, improve community welfare, and minimize conflicts in space utilization.

More broadly, this research has both academic and practical urgency. From the academic side, this research enriches the literature on innovative regional development strategies based on local potential, as well as a reference for sustainable development studies. From a practical perspective, the results of this research can be an input for local governments in developing development policies that are more effective, adaptive, and oriented towards improving the quality of life of the community. Therefore, this research is worth doing, because it has high relevance to strengthen the effectiveness of the RPJMD and realize inclusive, innovative, and sustainable regional development.

Problem Identification

Based on the background description, some of the problems that arise in the context of regional development planning in North Sumatra Province include:

1. Development planning that is less based on local potential
Many development programs are still general and do not pay attention to the specific characteristics of the region, so local potential has not been utilized optimally.
2. Lack of innovation in Development planning
The application of innovation, both in technology, policy, and resource management strategies, is still limited. This results in development tending to be quantitative and less responsive to global challenges and societal needs.
3. Inequality of development between regions
Differences in resource allocation and the effectiveness of development programs between regions lead to gaps in community welfare and development's contribution to the local economy.
4. Limited integration of economic, social, and environmental aspects
Development has not fully paid attention to the principle of sustainability. The use of RTRW as a spatial framework and innovation guide is still not optimal, so the potential for conflicts in the use of space remains high.
5. The need to face the era of globalization and technological development
Local governments need innovative approaches to make development more adaptive, effective, and sustainable, but there are still many obstacles in the implementation of this strategy.

Problem Formulation

Based on the identification of the above problems, the formulation of this research problem can be formulated as follows:

1. What is the level of integration of innovation in regional development planning based on local potential according to the RPJMD in North Sumatra Province?
2. What are the factors that are obstacles in the implementation of regional potential-based innovation in development planning?
3. What strategies can be applied to increase the effectiveness of regional potential-based development planning to be more innovative, sustainable, and responsive to community needs?

Literature Review

2.1. The Concept of Regional Development Based on Local Potential

Effective regional development must be oriented towards the optimal use of local potential. According to Chatim (2025), the main goal of regional development planning is to optimize local potential and reduce development inequality between regions. This approach emphasizes the importance of identifying and developing local natural, cultural, and economic resources as a basis for designing relevant and sustainable development programs.

2.2. Innovation in Regional Development Planning

Innovation in regional development planning includes the application of new ideas, methods, or technologies to improve the effectiveness and efficiency of the planning process. Nainggolan (2019) explained that local government innovation is very important in the implementation of good and reliable governance. One example of innovation is the use of information technology in the regional planning system, as applied in Semarang City through the SIMPERDA (Regional Planning System) program. This kind of innovation allows for data integration, public participation, and transparency in the planning process.

2.3. Regional Medium-Term Development Plan (RPJMD)

The RPJMD is a strategic planning document that sets the direction of regional development for five years. According to Permendagri No. 86 of 2017, the RPJMD must be prepared by integrating the vision, mission, and programs of regional heads, as well as paying attention to the potential and needs of the region. The integration of innovation in the RPJMD is needed to ensure that development planning is not only quantitative, but also quality and sustainable.

2.4. Integration of Innovation in the RPJMD for Sustainable Development

The integration of innovation in the RPJMD aims to create a sustainable, inclusive, and responsive development to the changing times. According to Juniawan (2020), the implementation of an integrated development planning system through e-planning in Gianyar Regency has shown benefits in terms of synchronization between planning documents, public participation, and efficiency of the planning process. However, challenges such as technical, social, and policy factors still need to be addressed to improve the effectiveness of implementation.

RESEARCH METHODOLOGY

3.1. Research Approach

This research uses a qualitative approach because it aims to understand social phenomena in depth in a natural context. According to Aspers and Corte (2019), qualitative research is an approach that involves interpretive and naturalistic methods to understand phenomena in the context of daily life. This approach allows researchers to explore the meaning, experiences, and perspectives of informants holistically.

3.2. Types of Research

This type of research is a case study. Moleong (2019) explains that a case study is a study that investigates phenomena in a real-life context with a holistic approach. This research will focus on the implementation of the RPJMD in North Sumatra Province, by

highlighting the integration of regional potential-based innovations in development planning.

3.3. Location and Subject of Research

This research was carried out in North Sumatra Province, focusing on several districts/cities that have different local characteristics and potential. The research subjects consisted of:

1. Key Informants: Regional planning officials, heads of related agencies, and members of the DPRD.
2. Supporting Informants: Academics, practitioners, and local communities involved in the development planning process.

3.4. Data Collection Techniques

The data collection techniques used include:

1. In-Depth Interview: To explore informants' views, experiences, and perceptions regarding the integration of innovation in development planning.
2. Participatory Observation: To understand social dynamics and the planning process firsthand.
3. Documentation: Analyze documents related to RPJMD, RTRW, and development evaluation reports.

3.5. Data Analysis Techniques

The collected data were analyzed using thematic analysis techniques, which include:

1. Initial Coding: Identify and code relevant data units.
2. Categorization: Groups codes into main themes.
3. Interpretation: Interpreting themes to understand their meaning and implications in the context of the research.

3.6. Validity and Reliability

To ensure the validity and reliability of the research, triangulation techniques are used, which include:

1. Source Triangulation: Compare data from different sources to ensure consistency of information.
2. Triangulation Methods: Using a variety of data collection techniques to enrich understanding.
3. Researcher Triangulation: Involves more than one researcher to reduce bias in data analysis.

Results and Discussion

What is the level of integration of innovation in regional development planning based on local potential according to the RPJMD in North Sumatra Province

The integration of innovation in regional development planning is one of the key factors to realize effective, sustainable, and responsive development to the needs of the community. According to Juniawan (2020), innovation integration can be in the form of technological innovation, policy innovation, and innovation in resource management, all of which aim to increase the effectiveness and efficiency of the development planning process. In North Sumatra Province, the RPJMD is a strategic instrument that sets the direction of regional development for five years. Research on the RPJMD document and interviews with related parties shows that the level of innovation integration still varies between districts/cities. Some regions have begun to adopt information technology-based innovations, such as the use of electronic planning systems to manage local potential data, facilitate public participation, and improve coordination between agencies.



Figure 1. Map of the Administrative Region

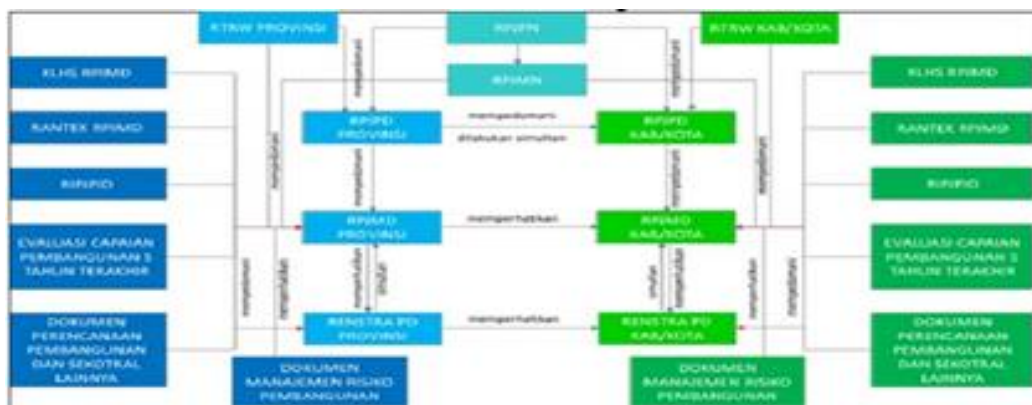
However, on the other hand, there are areas where innovation integration is still limited to administrative aspects or planning documents alone, without really optimizing the existing local potential. This is in line with Chatim's (2025) findings that uneven implementation of innovation in planning can lead to development inequality, low program effectiveness, and lack of development contribution to community welfare.

Tahapan	Kegiatan	Januari	Februari	Maret	April	Mei	Juni	Juli	Agustus	Keterangan
Persiapan Penyusunan RPJMD	Pembentukan Tim Penyusun RPJMD									
	Orientasi Penyusunan RPJMD									
	Penyajian Agenda Kerja									
	Penyajian Data dan Informasi									
Penyusunan subrajab RPJMD Provinsi	Pembahasan Visi dan Misi secara Teknokratik									Paling lambat 40 hr
	Penyusunan Rancangan Awal Rancangan									
	Konsultasi Public									
	Penyampaian Rancangan ke DPRD									Paling lambat 10hr Dibahas dalam 10hr
	Pembahasan dan Kesepakatan									
	Konsultasi Rancangan ke MDN									
	Musyawarah									
Proses Penetapan RPJMD Provinsi	Penyampaian Rancangan kepada DPRD									Paling lambat 90 hr
	Pembahasan dengan DPRD									
	Persetujuan Bersama									
	Evaluasi Rancangan RPJMD									
	Penetapan Perda RPJMD									Paling lambat 5 bln

Table 1 Stages of Preparation of the RPJMD

In addition, the level of innovation integration is also influenced by the factors of human resource capacity, budget availability, and regional policy support. Regions that have human resources who are skilled in technology and innovative planning tend to be able to implement development strategies based on local potential more optimally. On the other hand, regions with limited human resources or lack of innovative policy support face challenges in maximizing local potential for sustainable development.

Table 2 The Relationship of RPJMD with Development Planning



Thus, mapping the level of innovation integration in the RPJMD in North Sumatra Province is important as a basis for formulating strategies to improve regional development planning. Good integration will ensure that each development program is tailored to the characteristics of the region, economic, social, and environmental potential, so that development results are more effective, sustainable, and have a direct impact on the welfare of the community.

What are the factors that are obstacles in the implementation of regional potential-based innovations in development planning

The application of innovation in regional potential-based development planning faces various structural, resource, and social constraints. According to Nainggolan (2019), the success of innovation at the local government level does not only depend on the

availability of innovative technology or policies, but is also influenced by organizational capacity, human resource capabilities, and stakeholder support.

First, human resource constraints are one of the main factors. Some regions still have limited human resources who have competence in innovative planning or the use of information technology. This makes it difficult for innovations to be applied optimally, both in identifying local potential and in integrating innovations into the RPJMD document (Chatim, 2025).

Second, budget constraints and financial resources. The integration of innovations, especially those based on technology, requires investment in information systems, training, and capacity building. Regions with budget constraints tend to prioritize routine and administrative programs, so innovation tends to be delayed or not implemented (Juniawan, 2020).

Third, policy and regulatory constraints. Lack of support for regional policies that encourage innovation can hinder the implementation of development strategies based on local potential. Some rigid bureaucratic regulations or procedures make innovative planning difficult to implement, especially when it involves cross-sector collaboration or the utilization of complex local potential.

Fourth, cultural factors and resistance to change are also important challenges. Innovation often faces resistance from regional apparatus or the community due to changes in procedures, technological adaptation, or new approaches in managing local potential. According to Nasution (2023), this social resistance can slow down the process of integrating innovation, even though the real potential of the region is already available and ready to be utilized.

Fifth, infrastructure and technology constraints. Not all regions have adequate technology facilities and information networks to support the integration of innovation. This limits the ability of local governments to collect local potential data, monitor program implementation, and engage community participation effectively.

By understanding these constraints, local governments can formulate appropriate mitigation strategies, such as increasing human resource capacity, providing special budgets for innovation, simplifying regulations, and strengthening infrastructure and public participation. Understanding these constraints is important so that the implementation of regional potential-based innovations can run effectively, sustainably, and have a positive impact on community welfare.

What strategies can be applied to increase the effectiveness of regional potential-based development planning to be more innovative, sustainable, and responsive to community needs

To realize innovative, sustainable, and responsive regional development to the needs of the community, a comprehensive and integrated strategy is needed. According to Nainggolan (2019) and Juniawan (2020), this strategy must include aspects of technology, policies, human resources, and public participation.

First, strengthening the capacity of human resources (HR). Local governments need to improve the competence of the apparatus in terms of innovative planning, management of local potential data, and the use of information technology. Training, workshops, and competency development programs can encourage the apparatus to be more adaptive to innovative approaches. This is in accordance with the findings of Chatim (2025) which

states that increasing human resource capacity is the key to successful integration of innovation in development planning.

Second, the use of information technology and electronic planning systems. This strategy includes the use of e-planning, Geographic Information System (GIS), and other digital platforms to map local potential, monitor program implementation, and increase community participation. With the support of technology, the integration of innovation can be carried out faster, on target, and more transparently.

Third, strengthening regional regulations and policies that support innovation. Local governments need to draft regulations that facilitate the implementation of innovation, reduce complex bureaucracy, and encourage cross-sector collaboration. Clear and flexible policies will facilitate the implementation of regional potential-based development programs.

Fourth, the development of participatory planning models. The involvement of the community, academia, and the private sector in the planning process can increase the relevance of the program to local needs and strengthen accountability. According to Nasution (2023), public participation is an important factor to ensure more responsive and sustainable development.

Fifth, increasing synergy between agencies and stakeholders. Collaboration between local governments, research institutions, local communities, and the private sector can enrich innovative ideas, utilize resources efficiently, and strengthen the sustainability of development programs.

Sixth, continuous monitoring and evaluation. Each innovative strategy needs to be evaluated periodically to measure effectiveness, adjust to local potential dynamics, and ensure a positive impact on community well-being. This evaluation can be carried out through performance indicators based on outputs, outcomes, and development impacts.

By implementing these strategies, regional potential-based development planning will become more innovative, effective, sustainable, and responsive. This not only improves the quality of RPJMD documents, but also makes a real contribution to improving community welfare and regional competitiveness.

Conclusion

Based on the results of analysis and discussion, this study can be concluded as follows:

1. Innovation Integration Level: The integration of innovation in regional development planning in North Sumatra Province has shown developments, especially in the use of information technology and electronic planning systems. However, its implementation still varies between districts/cities, and some regions have not fully optimized local potential.
2. Obstacles to Implementing Innovation: The main obstacles include limited competent human resources, limited budgets, less supportive regulations, resistance to change, and limited infrastructure and technology. These factors affect the effectiveness of integrating innovation in local potential-based development planning.
3. Strategies to Increase Effectiveness: Strategies that can be applied to increase the effectiveness of development planning include strengthening human resource capacity,

utilizing information technology, developing regulations that support innovation, participatory planning models, synergy between stakeholders, and continuous monitoring and evaluation. This strategy is expected to produce more innovative, sustainable, and responsive planning to the needs of the community.

Thus, the integration of innovation in regional potential-based development planning in accordance with the RPJMD is an important step to realize effective, inclusive, and sustainable development in North Sumatra Province.

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