Development of an Investment-Friendly Spatial Planning Information Technology-Based Bureaucratic Reform Model at the Riau Islands Province Investment and One-Stop Integrated Services Office

Iskandar Z Nasution[1]
Universitas Pasundan

Kamal Alamsyah[2]
Universitas Pasundan

Lia Muliawaty[3]
Universitas Pasundan

Correspondence : Iskandar Z Nasution (iskandarzn25@gmail.com)

Submited : 20-10-2025, Accepted : 22-11-2025, Published : 24-12-2025

Abstract

The main problem in this research is the suboptimal implementation of information technology-based bureaucratic reform in utilizing spatial planning to support the investment ecosystem in the Riau Islands Province. Bureaucratic reform is a crucial need to create efficient, transparent public services and provide legal certainty for business actors. This research uses a case study method with a qualitative approach, aiming to deeply understand social phenomena in their natural context without external intervention. The results show that the implementation of information technology-based bureaucratic reform at the Riau Islands Province Investment and One-Stop Integrated Service Office (DPMPTSP) has shown significant progress. The digitalization of the licensing system through Online Single Submission (OSS) and the integration of Geographic Information System (GIS)-based spatial data have improved the efficiency, transparency, and accountability of public services. This system facilitates investors in obtaining real-time information regarding land status and business location suitability, thereby accelerating the licensing process, reducing costs and time, and minimizing the potential for bureaucratic irregularities. However, the implementation of this bureaucratic reform still faces several obstacles, including limited human resources and organizational culture, weak commitment and leadership, and technical and systemic issues. Therefore, it is necessary to develop an investment-friendly spatial information technology-based bureaucratic reform model that takes into account institutional aspects, governance, human resource management, and accountability. This model is expected to be a strategic step in realizing modern, efficient, and responsive governance to the needs of the business world.

Keywords: Bureaucratic Reform, Information Technology, Spatial Planning, Investment Climate, Integrated Public Services.

Introduction

Bureaucratic Reform is a national commitment to realizing a clean, accountable, and professional paradigm and governance system for a dynamic Indonesian government (Sumantri, 2022). Bureaucratic Reform is a national program that must be implemented by all Ministries, Institutions, and Regional Government Agencies, based on Presidential Regulation Number 81 of 2010 concerning the Grand Design of Bureaucratic Reform 2010-2025 and Regulation of the Minister of Administrative and Bureaucratic Reform Number 11 of 2015 concerning the Road Map for Bureaucratic Reform 2015-2019 (Putri et al., 2022).

Bureaucratic reform in regional government seeks to realize good public governance (Sedarmayanti, 2013). This reflects the government's commitment to addressing weaknesses in the implementation of bureaucratic functions, which primarily serve to provide public services to the community (Arti & Rizky, 2023). Reform offers the hope that the government will contribute to providing easy, fast, simple, and transparent services. Improving public services is

one of the changes expected through bureaucratic reform (Napir & Junus, 2019). Regional governments are obligated to provide public services, including licensing services. Licensing services are one implementation of bureaucratic reform, with the hope of improving the bureaucracy by realizing professional, effective, and efficient licensing services (Suhartoyo, 2019).

The rapid development of information technology is also driving acceleration in all sectors. Government officials are required to be able to work in accordance with these technological developments (Adila & Putri, 2024). According to Cahyono (2017), technology has become quite important as an instrument in carrying out government duties. The era of disruption has received special attention from the President of the Republic of Indonesia, as a phenomenon that must be addressed quickly through accelerating substantial bureaucratic reform, not merely procedural. The government has developed various digital applications, such as e-budgeting, e-project planning, delivery systems, administration, e-controlling, e-reporting, e-monitoring and evaluation, and other applications that need to be continuously implemented as a manifestation of substantial bureaucratic reform, antithetical to procedural bureaucracy (administrative documents, SPJ absence reporting, and performance allowances). According to Cahyono (2017), the direction of bureaucratic reform in facing the era of disruption is how to make a positive contribution to the speed of service and increase the nation's competitiveness.

In the modern technological development of the Industrial Revolution 4.0, with advances in Internet of Things technology, it has impacted all areas of life. Facing the bureaucratic reform of Industry 4.0, technological innovation is needed to facilitate the provision of public services to the community and to create an effective and efficient bureaucracy in government agencies, thus realizing good governance (Muharam, 2019). With the development of bureaucracy in Indonesia and the growing demand for effective and efficient state administration services, the simplification of civil servants (ASN) is decreasing, and state administration is demanding continuous innovation to achieve national goals (Hendrayadi, 2020). The demand for bureaucratic simplification presents a challenge for all employees. This simplification requires employees to innovate as much as possible while prioritizing bureaucratic ethics (Yasa et al., 2021).

Regional development planning should address spatial planning, as it serves as a guide and constraint for development activities. Regional development is often carried out without adhering to spatial plans, thus neglecting environmental carrying capacity and regional vulnerability to natural disasters (Ulenaung, 2019). While development plans were initially expected to drive long-term economic growth in a region, many remain unfulfilled due to a lack of support from natural resources and environmental carrying capacity for regional development (Djadjuli, 2018). Spatial utilization should be implemented through development management that maintains a balance between utilization, sustainability, availability, existence, and usefulness of natural resources and the environment, while maintaining function, carrying capacity, and comfort in current life without compromising opportunities for future development (Suhardi & Panjaitan, 2025).

One of the bureaucracies providing services to the public is the Riau Islands Province Investment and One-Stop Integrated Services Office (DPMPTSP). The Riau Islands Province Investment and One-Stop Integrated Services Office, in accordance with its authority and duties, is required to meet sustainable public service standards and the growing demands for reform within the community. Furthermore, service administration is expected to be able to address challenges faced to ensure service administration aligns with the organization's goals and objectives. The implementation of service administration is no longer manual but has shifted to an online system. This includes electronic and non-electronic service systems and information availability, online licensing, service announcements, strategic plans, online complaints, the Public Satisfaction Survey (SKM/e-voting), and other compliance standard indicators established by the Indonesian Ombudsman.

This study aims to comprehensively examine and analyze the implementation of Information Technology-Based Bureaucratic Reform in investment-friendly spatial planning at

the Riau Islands Province Investment and One-Stop Integrated Services Office (DPMPTSP). Furthermore, this study also aims to identify and analyze various obstacles encountered in implementing this bureaucratic reform, including those related to human resources, organizational culture, leadership, and technical and systemic constraints. Furthermore, this research is directed to examine and formulate the development of an effective and sustainable spatial planning information technology-based bureaucratic reform model, so that it can support the improvement of the quality of public services, provide legal certainty, and create a conducive investment climate in the Riau Islands Province.

Methods

The research method used in this study is a case study with a qualitative approach. The case study method was chosen because it is considered most appropriate for exploring and deeply understanding a specific phenomenon or event occurring in a real and natural context (Moleong, 2007). Through this method, researchers can comprehensively study, explain, and interpret a case without any intervention or manipulation from outside parties. This approach allows researchers to obtain a complete picture of the dynamics of implementing information technology-based bureaucratic reform in investment-friendly spatial planning, specifically at the Riau Islands Province Investment and One-Stop Integrated Service Office.

The qualitative approach used is based on interpretive epistemology, an approach that places understanding the meanings, perceptions, and experiences of social actors as the primary focus of the research (Sugiyono, 2013). The purpose of this approach is to construct and interpret social phenomena, theories, and policy frameworks through interpretations of social activities occurring in the field. Data were collected through qualitative techniques such as in-depth interviews, observation, and documentation studies, allowing researchers to capture social realities contextually and in-depth. With this approach, it is hoped that research will be able to produce a comprehensive understanding and relevant recommendations for the development of effective bureaucratic reforms oriented towards improving the investment climate.

Results and Discussion

Implementation of Information Technology-Based Bureaucratic Reform for Investment-Friendly Spatial Planning at the Riau Islands Province Investment and One-Stop Integrated Services Office.

The implementation of bureaucratic reform at the Riau Islands Province Investment and One-Stop Integrated Services Office (DPMPTSP) has shown significant progress in public service and licensing governance. The implementation of information technology-based systems for electronic licensing, such as the Online Single Submission (OSS), has become a key instrument in accelerating the investment licensing process. Through the OSS, investors can apply for permits online without having to visit the service office, thereby reducing time, costs, and the potential for cumbersome bureaucratic practices.

The Riau Islands Provincial Government has also developed a digital spatial planning information system integrated with regional planning data. This system allows potential investors to determine land status, spatial allocation, and the alignment of business locations with the Regional Spatial Plan (RTRW) and Detailed Spatial Plan (RDTR). This data integration is a crucial prerequisite for creating investment-friendly spatial planning, as it provides investors with legal certainty and avoids land use conflicts that often hinder investment realization. Although digital infrastructure has begun to develop, the implementation of information technology-based bureaucratic reform at the Riau Islands DPMPTSP still faces several structural and cultural obstacles.

From a structural perspective, not all regencies/cities in the Riau Islands region have sufficient technological capacity and human resources to operate an integrated licensing and spatial planning system. Some island regions also face limited internet access and network infrastructure. This creates disparities in the implementation of digital public services between regions. From a cultural perspective, resistance to change among civil servants remains a challenge. Some civil servants are still accustomed to conventional work patterns and have not

yet fully mastered digital-based investment management information systems. This limited digital literacy impacts service effectiveness, as sophisticated information technology systems will not function optimally without human resources prepared to adapt to innovation.

The implementation of investment-friendly information technology-based bureaucratic reform at the Riau Islands Province Investment and Integrated One-Stop Service Office is, conceptually, a manifestation of the principles of good governance, which emphasize transparency, accountability, participation, and efficiency in public services. Information technology serves as a tool for transforming the bureaucracy, shifting its focus from power to service. In the context of the Riau Islands Regional Investment and Investment Services Agency (DPMPTSP), digitalization of spatial planning and investment permits is an instrument for realizing smart government in the regional investment sector. Based on internal evaluations and empirical observations, the Online Single Submission (OSS) system and spatial planning data integration have accelerated permit processing times from several weeks to just a few business days on average. Furthermore, transparency in the process and tracking of permit application status through online platforms have increased public and business trust in the government bureaucracy. This demonstrates that digitalization of public services directly contributes to improving the public satisfaction index and reducing the potential for corruption in the permit process.

In implementing investment-friendly spatial planning information technology-based bureaucratic reform at the Investment and Integrated One-Stop Service Office of the Kepulauan Province, several aspects need to be strengthened to ensure a truly systemic impact. Several stages are required:

First, data synchronization is necessary between agencies, particularly between the DPMPTSP (Services for the Development of Private Sector), the Public Works and Spatial Planning Agency (Dishub), the Regional Development Planning Agency (Bappeda), and vertical agencies such as the National Land Agency. Data asymmetry often leads to differing interpretations of spatial use and land status, ultimately hindering the issuance of business location permits.

Second, cybersecurity and data protection also require serious attention. In the digital era, information security is a strategic issue that cannot be ignored, especially when investment and spatial planning data are sensitive. Furthermore, there is a need to increase the capacity of civil servants through ongoing digital competency training and certification. Civil servants who master information technology will not only improve service efficiency but also strengthen a performance-based work culture, a key indicator of bureaucratic reform. Internal development programs, such as coaching and mentoring, can be an effective strategy to accelerate the adaptation process to new technologies.

The Riau Islands Province's Department of Public Works and Public Housing (DPMPTSP) has taken progressive steps by strengthening its technological infrastructure, establishing an inter-agency data communication network, and developing an online licensing service portal integrated with the national system. This initiative makes the licensing process more transparent and can be monitored online, reducing the potential for bureaucratic irregularities and accelerating service times. This implementation aligns with the spirit of national bureaucratic reform, which emphasizes the principles of efficiency, accountability, and openness to public information. In addition to digital infrastructure, improving the capacity of human resources (HR) within the civil service is a key factor in the success of this reform. DPMPTSP personnel need to be equipped with digital government skills, spatial data analysis, and information systems management to optimally manage technology. Continuous training and competency certification are essential components of the strategy to strengthen the digital bureaucracy. With professional and tech-savvy human resources, the quality of public services can improve and public trust in government institutions will be strengthened.

The implementation of information technology-based bureaucratic reform also encourages multi-stakeholder collaboration between local governments, the private sector, and universities. This collaboration creates space for the development of data-driven public service

innovations, research on regional investment potential, and improvements in the quality of geographic information systems that support development planning. With good synergy, the Riau Islands DPMPTSP can utilize technology as an instrument for driving the regional economy and as an effective development monitoring tool. However, several challenges remain, such as limited internet networks in small island areas, system integration between districts/cities, and the need for regular technology audits and evaluations. These challenges require the regional government to continue improving and innovating to ensure the digital systems it builds are truly effective, secure, and sustainable. Overall, the implementation of investment-friendly spatial planning information technology-based bureaucratic reform at the Riau Islands Province DPMPTSP demonstrates a positive direction for change toward an adaptive and inclusive digital government. By strengthening digital systems, improving human resource quality, and building collaboration-based governance, the Riau Islands has the potential to become a model region that successfully integrates bureaucratic reform and technology as a driver of sustainable economic growth. This initiative not only accelerates ease of investment but also strengthens regional competitiveness amidst the national economic transformation toward the digital era.

Field analysis reveals that the implementation of investment-friendly spatial planning information technology-based bureaucratic reforms at the Riau Islands Province Investment and One-Stop Integrated Services Agency (DPMPTSP) has demonstrated significant progress in improving the efficiency, transparency, and accountability of public services. Digitizing the licensing system through the Online Single Submission (OSS) and integrating Geographic Information System (GIS)-based spatial data allows investors to obtain legal certainty and real-time information on land status and business location suitability. This implementation not only accelerates the licensing process but also reduces costs, time, and the potential for bureaucratic irregularities. The success of this reform depends heavily on strengthening the human resource capacity of civil servants through digital government training, spatial data management, and competency certification. Technology-adaptive human resources are the foundation for creating a performance-based and innovation-driven work culture. Furthermore, multi-stakeholder collaboration with the private sector and universities strengthens the digital ecosystem, delivers innovative public services, and improves data quality for evidence-based decision-making. However, challenges such as limited digital infrastructure in the archipelago, system integration between districts/cities, and the need for regular technology evaluations and audits remain to be addressed. Overall, the implementation of information technology-based bureaucratic reform at the Riau Islands DPMPTSP has become a model of modern, efficient, and investment-friendly governance, which supports sustainable economic growth, increases public trust, and strengthens regional competitiveness in facing global economic dynamics.

Obstacles in the Implementation of Investment-Friendly Spatial Planning Information Technology-Based Bureaucratic Reform at the Investment and One-Stop Integrated Services Office of the Riau Islands Province

1. **Human Resources and Bureaucratic Culture**

Human resources (HR) and bureaucratic culture are two fundamental elements determining the successful implementation of investment-friendly spatial information technology-based bureaucratic reform at the Riau Islands Province Investment and One-Stop Integrated Services Agency (DPMPTSP). In the context of digital government transformation, HR is not merely a policy implementer but also a change agent with a strategic role in adapting new systems, managing innovation, and ensuring the sustainability of bureaucratic reform within the local government.

The main challenge faced lies in the disparity in civil servant competency in mastering digital technology and understanding spatial information systems. Many employees are still accustomed to conventional work patterns based on manual administration, preventing the transition to digitalization from running optimally. Limitations in technical skills, such as spatial data management, the use of digital service applications, and investment information analysis,

lead to dependence on external experts or specific technical operators. This poses a risk to the system's sustainability when staff turnover or changes in organizational structure occur.

The analysis and information from field informants concluded that the obstacles to implementing investment-friendly spatial planning information technology-based bureaucratic reform at the Riau Islands Province Investment and One-Stop Integrated Services Agency (DPMPTSP) indicate that the transformation to digital government requires comprehensive preparedness, encompassing human resources, institutions, and technological infrastructure. Although the policy direction of this reform aligns with the spirit of modernizing public services, in practice, various obstacles remain that hinder its optimal implementation. Limited human resources are a major challenge. Many officials still lack mastery of digital systems and spatial data management, resulting in suboptimal technology-based service delivery. A bureaucratic culture that remains conventional, hierarchical, and oriented toward procedural compliance also hinders innovation and speed of service delivery. Furthermore, limited digital infrastructure across the vast archipelago creates disparities in access to information between regions, resulting in inconsistent system implementation at the district/city level.

Challenges in cross-agency coordination and system integration between sectors, from an institutional perspective, arise between DPMPTSP and technical agencies and the central government. The lack of data interoperability means that the licensing and spatial planning management processes are not yet fully efficient and transparent. This results in slow service delivery and reduced certainty for investors. Therefore, information technology-based bureaucratic reform requires a more comprehensive approach. Improving the competence of civil servants, improving digital infrastructure, and establishing an adaptive and innovative work culture are key to success. If these obstacles can be overcome through cross-sector collaboration and strong leadership commitment, the Riau Islands Province DPMPTSP has the potential to become a model for digital bureaucratic reform that supports a sustainable investment climate in the Indonesian archipelago.

2. Commitment and Leadership

Visionary and progressive leadership is a key factor in guiding organizational change. In the Riau Islands Regional Public Service Agency (DPMPTSP), the leadership's role in initiating the digitalization of investment services and spatial planning integration has a significant influence on policy direction and employee morale. A leader with a clear vision regarding the importance of utilizing technology in public services will be able to build a new work culture that is more open to innovation. This commitment is evident in efforts to encourage the development of a digital licensing system, human resource training, and improving the quality of information technology infrastructure.

Leadership commitment is also tested in terms of policy consistency and sustainability. Bureaucratic reform often stalls midway due to changes in leadership or shifts in regional political priorities. This can hinder the digitalization process, which requires long-term program continuity. Therefore, institutional, rather than personal, policies are needed to ensure reform programs can continue despite structural or leadership changes.

Leadership commitment is also tested in terms of policy consistency and sustainability. Bureaucratic reform often stalls midway due to changes in leadership or shifts in regional political priorities. This can hamper the digitalization process, which requires long-term program sustainability. Therefore, institutional, rather than personal, policies are needed to ensure the reform program can continue despite structural or leadership changes.

Analysis and information from field sources indicate that commitment and leadership are key factors in determining the success of implementing investment-friendly spatial planning information technology-based bureaucratic reform at the Riau Islands Province Investment and One-Stop Integrated Services Agency (DPMPTSP). Obstacles that arise in implementing bureaucratic reform generally stem from weak leadership commitment to digital transformation and a lack of role models in promoting a performance-based and innovation-based work culture. In the context of investment-friendly spatial planning, visionary leadership is needed to ensure inter-agency synergy, policy consistency, and speedy, data-driven decision-making.

The reality on the ground shows that some bureaucratic leaders are still focused on administrative routines rather than systemic change. This hinders the acceleration of licensing digitalization and spatial planning data integration, which are the main foundations of sustainable investment. Furthermore, the commitment of some officials to implementing reform is also suboptimal, evident in the low awareness of the importance of transparent, efficient, and technology-based public services. Overcoming these obstacles requires transformative leadership that not only understands technology but is also capable of motivating all levels of the bureaucracy toward adaptive governance that is responsive to the needs of the business world. Leadership commitment is the driving force behind changing bureaucratic culture toward professional and integrated public service. If strong leadership, coupled with regulatory support and cross-sector collaboration, can be realized, information technology-based bureaucratic reform will strengthen investment competitiveness in the Riau Islands Province and achieve sustainable and inclusive spatial planning.

3. Technical and Systems

Technical and systems aspects are fundamental components in the implementation of investment-friendly spatial planning information technology-based bureaucratic reform at the Riau Islands Province Investment and One-Stop Integrated Services Agency (DPMPTSP). Digital system performance, the quality of technological infrastructure, and inter-agency integration are key indicators of successful implementation of efficient and accountable modern governance. In the context of investment services, a reliable information system plays a crucial role in accelerating the licensing process, increasing transparency, and minimizing the potential for abuse of authority through the automation of administrative procedures.

Various technical obstacles hinder the effective implementation of this information technology. One major challenge is the lack of integration of information systems between agencies, both at the provincial and district/city levels. Unsynchronized spatial planning and licensing data leads to delays in service processes and the potential for overlapping investment policies. Furthermore, digital network infrastructure in several areas of the Riau Islands remains inadequate, particularly in remote island areas. Limited internet access and modern technological devices also hamper the smooth operation of the digital service system relied upon by the DPMPTSP.

Challenges remain with the data management system in terms of maintenance, security, and standardization of spatial information. Unequal data management across agencies leads to inconsistencies in spatial planning maps and compromises the accuracy of investment potential analyses. Furthermore, an inadequate cybersecurity system opens up the risk of data breaches, which can undermine investor confidence in local governments. Therefore, comprehensive and sustainable data governance is needed, encompassing personal data protection, information encryption, and regular system audits.

Internal technical aspects, including limited human resources familiar with information technology, also pose significant obstacles. Some officials within the Regional Development Planning Agency (DPMPTSP) are still unfamiliar with using digital platforms for data processing and inter-agency communication. This creates a dependency on third parties or technology consultants, which in turn can undermine the institution's independence in system management. Therefore, ongoing training and technical assistance are necessary to enable officials to operate, update, and maintain digital systems independently.

The analysis and information from field informants conclude that, overall, the technical and system aspects of implementing investment-friendly spatial planning information technology-based bureaucratic reform at the Riau Islands Province DPMPTSP are strategic elements determining the success of the transformation of public services into the digital era. An integrated, reliable, and adaptive information technology system is key to creating efficiency, transparency, and certainty for investors. Through the implementation of a digital spatial planning system, the licensing process can be carried out more quickly, measurably, and accountably, while simultaneously reducing the potential for bureaucratic obstacles that have been a major obstacle to investment services.

Development of an effective model in the implementation of bureaucratic reform based on investment-friendly spatial planning information technology at the Investment and One-Stop Integrated Services Office of the Riau Islands Province.

Through the utilization of spatial planning information systems and the digitization of licensing services, the regional government strives to create a conducive and highly competitive investment ecosystem. This reform model aims not only to expedite the licensing process but also to ensure alignment between spatial planning, legal certainty, and sustainable development interests. With this innovative approach, the Riau Islands DPMPTSP is expected to become a pioneer in inclusive and pro-investment digital bureaucracy practices. The following is a partial analysis of the operational development of bureaucratic reform parameters:

1. **Institutional Restructuring**

Based on the research findings, the investment-friendly spatial information technology-based bureaucratic reform model at the Riau Islands Province Investment and One-Stop Integrated Services Agency (DPMPTSP) is a crucial step in strengthening the effectiveness of regional governance in the investment services sector. In the digital era, which demands efficiency, transparency, and speed, institutional strengthening is a key foundation for supporting the successful implementation of information technology and bureaucratic transformation. This approach emphasizes not only digital system innovation but also organizational restructuring to be more adaptive, responsive, and integrated with the regional development vision, which focuses on facilitating investment and sustainable economic growth.

The vision and mission of the Riau Islands Province DPMPTSP are fundamentally directed at realizing fast, transparent, and competitive licensing and investment services to support regional economic growth. Within the context of information technology-based bureaucratic reform, this vision is being developed toward effective digital governance, by integrating the licensing and spatial planning systems to ensure public services are accessible online, easily, and accountably delivered.

Interviews with stakeholders indicate that institutional restructuring through digital bureaucratic reform is seen as a strategic step in strengthening a modern and efficient bureaucracy. The digitization of licensing and the integration of spatial planning data are considered capable of increasing service speed, transparency, and legal certainty for investors. This reform also encourages the bureaucracy to be more adaptive to technological developments and business needs.

The organizational strategy focuses on the digitalization of business processes, the development of integrated information systems, and enhanced cross-sectoral coordination with relevant agencies such as the Communication and Information Agency, the Regional Development Planning Agency (Bappeda), the Environmental Agency, and other technical agencies. Integration of spatial, licensing, and environmental data is considered crucial to avoid overlapping policies and ensure spatial use aligns with the principles of sustainable development.

The success of information technology-based bureaucratic reform is also crucially determined by a clear organizational structure and division of tasks. Each sector within the DPMPTSP (Regional Development Planning Agency) has a specific role according to its competency, ranging from online licensing services and data and information system management to the control and evaluation of investment realization based on Geographic Information Systems (GIS). A collaborative and adaptive structure is believed to improve service effectiveness and apparatus accountability.

Overall, the development of an investment-friendly information technology-based bureaucratic reform model within the DPMPTSP of the Riau Islands Province relies heavily on strong institutional arrangements, competent human resources, and cross-sector commitment. This reform represents not only a modernization of the system but also a transformation of bureaucratic culture toward professional, transparent, and pro-investment services. Thus, the Riau Islands are expected to increase regional competitiveness and encourage sustainable economic development based on digital innovation.

2. Governance

Based on the research results of an information technology-based bureaucratic reform model for investment-friendly spatial planning at the Riau Islands Province Investment and One-Stop Integrated Services Agency (DPMPTSP), information technology-based bureaucratic reform plays a crucial role in creating investment-friendly spatial planning while simultaneously strengthening regional competitiveness. Governance is a key aspect in supporting this reform, as it encompasses work system mechanisms, procedures, facility and infrastructure management, and efficient, digital-based archiving.

The governance of information technology-based bureaucratic reform at the Riau Islands Province DPMPTSP is aimed at realizing efficient, transparent, and responsive public services to investment needs. The integration of digital systems into work mechanisms and licensing services is key to accelerating the licensing process and ensuring the appropriateness of investment-friendly spatial planning. The regional government is committed to promoting procedural simplification, increasing staff capacity, and optimizing the use of information technology.

The DPMPTSP's work system mechanisms are developed through the implementation of e-government and digital-based services integrated with relevant technical agencies. This integration aims to create a synchronous, accountable, and data-driven service flow. However, challenges remain, including suboptimal system interoperability and limited human resources in digital data management. Therefore, strengthening cross-unit coordination, implementing digital workflow management, and leadership commitment are crucial factors in supporting the effectiveness of the work system.

Investment service procedures are simplified and measurable through the use of the Online Single Submission (OSS) system integrated with digital spatial planning. This system provides legal certainty and expedites the licensing process for investors. However, challenges remain, including resistance to change and limited real-time spatial data updates. To address these challenges, the development of digital-based standard operating procedures (SOPs) and ongoing training for officials are necessary.

Technological facilities and infrastructure are a crucial foundation for supporting digital bureaucratic reform. The availability of infrastructure such as a reliable internet network, servers, cybersecurity, and data centers is crucial for smooth service delivery. Obstacles such as budget constraints, lack of IT personnel, and reliance on manual systems need to be addressed through sound maintenance planning, the use of cloud technology, and collaboration with digital service providers.

Governance must also maintain a balance between ease of investment and environmental protection. Integrating the licensing system with environmental and spatial planning data enables more accurate and sustainable decision-making. Furthermore, organizing digital archives through an electronic document management system is crucial for ensuring the security, traceability, and transparency of licensing and investment data.

Overall, developing an information technology-based bureaucratic reform model at the Riau Islands Province's DPMPTSP requires a systemic approach that integrates digital work mechanisms, efficient procedures, adequate infrastructure, and modern archiving. This reform will not only improve internal bureaucratic efficiency but also create an investment-friendly spatial plan that supports sustainable regional economic growth.

3. Administrative Resource Management

Based on the research results of an information technology-based bureaucratic reform model for investment-friendly spatial planning at the Riau Islands Province Investment and One-Stop Integrated Services Agency (DPMPTSP), five key indicators are the focus of administrative resource management in this context: the implementation of a merit system, an effective education and training system, performance assessment standards, job competency standards, and a fair remuneration system.

The implementation of information technology-based bureaucratic reform at the Riau Islands Province DPMPTSP relies heavily on the management of professional and integrity-

based administrative resources. The Regional Secretary of the Riau Islands Province emphasized that the implementation of a merit system, effective education and training, and measurable performance assessment standards are key pillars in building a modern bureaucracy that supports investment-friendly spatial planning.

The merit system is the primary foundation of administrative management, where every recruitment, promotion, and transfer process must be based on competence, performance, and integrity. Implementing this system is crucial to ensure that officials managing licensing services and information technology systems have adequate technical skills. However, challenges remain in the form of resistance from the old bureaucratic culture, requiring leadership commitment and objective oversight to ensure the merit system's consistent operation.

Civil servant capacity building is carried out through a training system that adapts to technological developments and public service needs. DPMPTSP officials need to be equipped with digital competencies, mastery of geographic information systems, and data-driven analytical skills. Continuous training, supported by the use of digital learning platforms, is a crucial investment in building an innovative bureaucracy that is responsive to investor needs.

Civil servant performance assessments are developed based on results and impact, utilizing digital systems and real-time performance monitoring dashboards. Transparent and measurable assessments promote accountability, professionalism, and improve the quality of licensing services. Clear job competency standards are also needed to ensure that each position is filled by officials with appropriate technical, managerial, and socio-cultural expertise.

A performance-based remuneration system is a crucial instrument in motivating civil servants to provide public services quickly, transparently, and with integrity. Providing additional income based on measurable performance achievements will foster a competitive and results-oriented work culture. Overall, structuring civil service resources through a merit system, training, performance assessments, competency standards, and fair remuneration is key to the success of information technology-based bureaucratic reform for investment-friendly spatial planning in the Riau Islands Province.

4. Accountability

Based on the research results of an information technology-based bureaucratic reform model for investment-friendly spatial planning at the Riau Islands Province Investment and One-Stop Integrated Services Agency (DPMPTSP), information technology-based bureaucratic reform in the spatial planning and investment licensing sector is one of the regional government's agendas to improve the quality of public services in the Riau Islands Province. The Investment and One-Stop Integrated Services Agency (DPMPTSP) plays a central role in creating a conducive investment climate, which in turn demands transparent, accountable, and efficient bureaucratic governance. The implementation of this bureaucratic reform is not only related to the digitization of the licensing process but also emphasizes the accountability of officials in three main dimensions: work responsibility, performance measurement, and reporting of work results.

Accountability is a key pillar in the development of information technology-based bureaucratic reform to realize investment-friendly spatial planning in the Riau Islands Province. Officials are required to be aware of their responsibility in every licensing process and spatial planning management to ensure that it is carried out in accordance with regulations and on time. The use of digital systems enables work processes to be carried out transparently, measurably, and accountably to both management and the public.

The responsibility of civil servants extends beyond the implementation of administrative tasks to the quality and effectiveness of public services to investors. Digitizing permits through systems such as the Online Single Submission (OSS) and Geographic Information Systems (GIS) facilitates real-time monitoring of all stages of the permitting process. With a digital audit trail, every action of civil servants can be traced, minimizing the potential for irregularities and strengthening integrity and legal certainty for investors.

Performance measurement is a crucial dimension of digital bureaucratic accountability. Civil servant performance is measured through data-based indicators, such as the speed of permit processing, the accuracy of spatial planning compliance, the level of data integration between

agencies, and investor satisfaction. The implementation of information technology-based Key Performance Indicators (KPIs) enables objective, fair, and results-oriented performance evaluations, while also serving as a basis for managerial decision-making.

Reporting of work results has also improved through the use of integrated information systems. All processes and performance achievements are digitally recorded and presented in the form of periodic reports and performance dashboards accessible to leaders and the public within their jurisdiction. This mechanism supports transparency, enhances investor confidence, and serves as a means for continuous evaluation and improvement of public services.

1. However, accountability at the Riau Islands Province's DPMPTSP still faces several weaknesses, such as a suboptimal performance monitoring system, late reporting, and a lack of clarity in the division of responsibilities within the apparatus. This situation has impacted the effectiveness of information technology-based bureaucratic reform and investor confidence. Therefore, strengthening accountability through digital system integration, human resource capacity building, and consistent evaluation and oversight is an urgent need to achieve professional, transparent, and investment-friendly governance.

Conclusion

The implementation of information technology-based bureaucratic reforms in investment-friendly spatial planning at the Riau Islands Province's Department of Public Works and Services (DPMPTSP) has shown significant progress. Digitizing permits through the Online Single Submission (OSS) and integrating Geographic Information System (GIS)-based spatial data has improved the efficiency, transparency, and accountability of public services. This system provides legal certainty and real-time information to investors regarding land status and business location suitability, while accelerating the licensing process, reducing costs and time, and reducing the potential for bureaucratic irregularities. The success of this reform implementation is largely determined by strengthening the human resource capacity of civil servants through digital government training and spatial data management.

However, based on conditions on the ground, the implementation of this bureaucratic reform still faces various obstacles. The main obstacles include limited human resources and a bureaucratic culture that remains conventional, hierarchical, and less adaptable to innovation. Furthermore, bureaucratic commitment and leadership are not fully oriented towards systemic change, thus slowing the acceleration of service digitization. Technical barriers also persist, such as limited internet networks in the archipelago, data asymmetry between agencies, and weak cybersecurity systems that hamper the optimization of digital systems.

Therefore, developing a bureaucratic reform model based on investment-friendly spatial planning information technology is a strategic step toward modern governance that is responsive to the needs of the business world. This model needs to be supported by adaptive institutional arrangements, digital-based work system management, and the organization of civil servant resources through the implementation of a merit system, continuous education and training, and results-based performance assessments. Furthermore, strengthening accountability is crucial, given that the performance monitoring and reporting mechanisms at the DPMPTSP are still not optimal and digitally integrated. Therefore, improvements are needed to ensure that civil servant performance can be measured objectively and transparently.

References

Adila, N., & Putri, L. D. M. (2024). Digitalisasi Tata Kelola SDM Aparatur di Indonesia. *Jurnal ISO: Jurnal Ilmu Sosial, Politik dan Humaniora*, *4*(2).

Arti, N. D. B., & Rizky, R. Y. (2023). Analisis korupsi dan upaya mewujudkan good governance di Indonesia. *Jurnal Ilmiah Administrasi Pemerintahan Daerah*, *15*(2), 135-149.

Cahyono, E. (2017). Era Disruption dan Manajemen Strategik Birokrasi. *Sekretariat Kabinet Republik Indonesia*.

Djadjuli, D. (2018). Peran pemerintah dalam pembangunan ekonomi daerah. *Dinamika: Jurnal Ilmiah Ilmu Administrasi Negara*, *5*(2), 8-21.

Hendrayady, A. (2020). Inovasi Pelayanan Publik Pemerintah Provinsi Kepulauan Riau Di Era Revolusi Industri 4.0. *KEMUDI: Jurnal Ilmu Pemerintahan*.

Moleong, L. J. (2007). *Metodologi Penelitian Kualitatif*. Bandung: PT. Remaja Rosda Karya.

Muharam, R. S. (2019). Inovasi Pelayanan Publik Dalam Menghadapi Era Revolusi Industri 4.0 Di Kota Bandung. *Decision: Jurnal Administrasi Publik*, *1*(01), 39-47.

Napir, S., & Junus, D. (2019). Penguatan Program Prioritas Pemerintah Daerah Dalam Mewujudkan Good Governance Di Kabupaten Gorontalo. *Journal of Public Administration and Government*, *1*(1), 34-38.

Putri, R. A., Setyoko, P. I., & Indiahono, D. (2022). Ratio Legis Grand Design Reformasi Birokrasi: Upaya Perbaikan Dimensi Administrasi Publik dari Masa ke Masa. *Jurnal Ilmu Politik dan Pemerintahan*, *8*(2).

Sedarmayanti, P. S. (2013). Reformasi administrasi publik, reformasi birokrasi, dan kepemimpinan masa depan. *PT. Refika Aditama, Bandung*, *20*, 271-273.

Sedarmayanti. (2001). Sumber daya manusia dan produktivitas kerja. *Bandung: CV. Mandar Maju*.

Sugiyono, D. (2013). Metode penelitian pendidikan pendekatan kuantitatif, kualitatif dan R&D.

Suhardi, S., & Panjaitan, P. (2025). Analisis Strategi dan Kebijakan Pemerintah Daerah dalam Perencanaan Pembangunan Ekonomi Nasional. *Jurnal Ilmu Manajemen, Bisnis dan Ekonomi (JIMBE)*, *3*(1), 42-55.

Suhartoyo, S. (2019). Implementasi fungsi pelayanan publik dalam pelayanan terpadu satu pintu (PTSP). *Administrative Law and Governance Journal*, *2*(1), 143-154.

Sumantri, I. (2022). Reorientasi reformasi birokrasi dan good governance dalam penyelenggaraan sektor publik di Indonesia. *PAPATUNG: Jurnal Ilmu Administrasi Publik, Pemerintahan Dan Politik*, *5*(2), 63-72.

Ulenaung, V. Y. (2019). Implementasi penataan ruang dalam peraturan daerah rencana tata ruang wilayah (RTRW) menurut undang-undang nomor 26 tahun 2007. *Lex Administratum*, *7*(2).

Yasa, A., Suswanta, S., Rafi, M., Rahmanto, F., Setiawan, D., & Fadhlurrohman, M. I. (2021). Penguatan reformasi birokrasi menuju era society 5.0 di indonesia. *Nakhoda: Jurnal Ilmu Pemerintahan, 20*(1), 27-42.