Journal of Governance and Accountability Studies (JGAS)
ISSN 2774-6739, Vol 5, No 2, 2025, 143-156 https://doi.org/10.35912/jgas.v5i2.2954

Public-private partnership in widening Indonesia's internet access with the Palapa Ring Project

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Article History
Received on 26 May 2025
1st Revision on 16 June 2025
2nd Revision on 9 July 2025
Accepted on 23 July 2025

Abstract
Purpose: This study analyzes how well the Palapa Ring project helps provide equal Internet access across Indonesia, especially in the 3T (Frontier, Outermost, and Disadvantaged) regions. It aims to understand the role of policies and regulations in supporting the project's success and ensuring that all citizens have fair access to digital connectivity.
Methods: This study used a normative-juridical method with a qualitative approach. It analyzes the laws and policies related to the Palapa Ring Project. Data were collected by reviewing legal documents, government policy reports and academic writings. No field surveys or specific software were used, only a literature review.
Results: The study found that The Palapa Ring project has helped expand Internet access in 3T regions through cross-sector collaboration. However, there are still problems related to regulations and supervision that need to be improved to keep the project effective and trustworthy.
Conclusion: The project has made progress in increasing digital access in remote areas; however, stronger regulations and better oversight are necessary to maintain and improve its impact.
Limitations: This study is limited to analyzing documents and policies; it does not include direct field observations or interviews, which may limit practical insights.
Contributions: This study contributes to the discussions on digital equity, public policy, and infrastructure development. This is useful for policymakers, government agencies, researchers, and organizations working on digital transformation, especially in developing countries or underserved regions.

Keywords: *Governance and Telecommunication Infrastructure, Internet Access, Policy Accountability*

How to Cite: Taulu, R. A. N., & Kurniawan, T. (2025). Public-private partnership in widening Indonesia's internet access with the Palapa Ring Project. *Journal of Governance and Accountability Studies*, 5(2), 143-156.

1. Introduction

Internet access has become an essential part of daily life, supporting various aspects such as communication, education, health care, and employment. According to Kumar, Tiwari, and Zymbler (2019), Internet-related technologies, particularly the Internet of Things (IoT), have brought significant changes to human activities by enhancing automation and efficiency across sectors. Abdel-Basset, Manogaran, Mohamed, and Rushdy (2019) emphasized the central role of the Internet in the modern world, enabling more effective and interactive modes of learning and communication. Internet connectivity has been shown to increase individual productivity and accelerate digital transformation across multiple industries. During emergencies, such as the COVID-19 pandemic, Internet access

proved to be a critical factor in allowing people to remain connected to work, education, and healthcare services amid social restrictions (Király et al., 2020). However, unequal Internet access can exacerbate the digital divide, particularly for the elderly, low-income groups, and those living in remote areas (Hargittai, Piper, & Morris, 2019). Consequently, governments and relevant stakeholders must ensure that Internet access is widely available so that its benefits can be equitably distributed across all segments of society.

In the Indonesian context, Internet access has become a fundamental necessity for key sectors such as education, the economy, and public services. Despite its growing importance, the distribution of Internet access remains uneven, particularly in the 3T regions. According to a report from the Telecommunications and Information Accessibility Agency (Badan Aksesibilitas Telekomunikasi dan Informasi / BAKTI) under the Ministry of Communication and Digital Affairs (MCDA), more than 12,548 villages across Indonesia still lack adequate Internet connectivity (Apnitami & Wibisono, 2023). Stable Internet access is crucial for supporting inclusive development and improving the quality of life in remote areas. Data from the Indonesian Statistics Institution BPS (2021) indicate that only 56% of Indonesian households have internet access, with significantly lower penetration rates in rural and remote areas than in urban regions. Consequently, communities in the 3T regions face substantial barriers in accessing education, engaging in digital business, and utilizing online public and healthcare services. According to Pratama (2023), without sufficient Internet access, these communities struggle to participate in the digital economy and are limited in accessing information and employment opportunities. Therefore, increased investment in telecommunications infrastructure and subsidies for underprivileged communities are essential to ensure equitable access to digital connectivity across the country.

Internet access is increasingly recognized as a basic necessity and fundamental human right in the digital era. Internet access is a moral human right and must be universally available, with the suggestion that states should provide it for free to those unable to afford it. This view reinforces the idea that connectivity goes beyond convenience; it is essential for individuals to exercise freedom of expression and participate meaningfully in civic life, echoing the UN Human Rights Council's position on safeguarding digital speech (Reglitz, 2020). The Indonesian government is obligated to ensure this right, as mandated by Law No. 36 of 1999 on Telecommunications, which stipulates that telecommunications services must be equitably available and accessible to all citizens. Nonetheless, digital disparities persist, particularly in the 3T regions, highlighting the need for further government intervention. The MCDA holds primary responsibility for managing and developing telecommunications infrastructure across the country. Law No. 11 of 2008 on Electronic Information and Transactions and Law No. 36 of 1999 on Telecommunications serve as the legal foundation for ensuring equitable digital access in Indonesia. Although several public policies have been introduced to expand Internet reach, their implementation continues to face challenges, including infrastructure limitations, high costs, and geographic barriers in remote areas.

This study adopts Governance Theory as its theoretical and conceptual framework to analyze the dynamics of public-private partnerships (PPP). Governance theory emphasizes the transition from hierarchical state control to collaborative networks involving public, private, and civil society actors. Klijn and Koppenjan (2014) describe this as network governance, in which actors coordinate and share resources to address complex societal challenges. This framework is relevant to Indonesia's efforts to expand Internet access, particularly in remote regions where the state alone cannot address complex infrastructure challenges. By recognizing the role of multiple actors, governance theory lays the foundation for more integrated approaches and opens the way for future collaboration models, such as the network approach and public-private cooperation, to achieve inclusive digital connectivity. Using this framework, this study examines how collaborative arrangements between public and private actors are structured, managed, and influenced by broader institutional and policy environments. Governance Theory provides a lens through which to understand the shift from hierarchical government control to more decentralized, network-based approaches in public policy implementation, particularly in the context of PPP initiatives. To address these challenges, adopting a public policy conceptual framework has become an effective strategy for ensuring program sustainability and efficiency. Silke Adam and

Hanspeter Kriesi (2019) argue in The Network Approach that modern public policy implementation requires not only government intervention but also collaboration with diverse actors, including the private sector and civil society. In Indonesia, this approach is increasingly applied in digitalization projects, where the government partners with Internet service providers and telecommunications operators to accelerate network development in isolated regions. A broader focus that moves beyond state-led formal institution building and considers governance with or without the state, also at the informal level, promises to generate further innovations. Multilevel governance should have no problems accommodating governance arrangements that involve non-state actors (Börzel, 2020).

One widely used model for implementing internet access provision is the Public-Private Partnership (PPP), which involves collaboration between the government and the private sector in delivering public infrastructure. Howlett (2023), in Designing Public Policies, highlights that PPPs enhance the efficiency of public policy implementation by combining public resources with the innovation and technical capacity of the private sector. In the context of Internet access, PPPs enable joint investment in telecommunications infrastructure, whereby the government may provide incentives or subsidies to encourage private sector participation in extending network coverage to underserved areas.

While prior studies have addressed Indonesia's digital development, most have focused on urban expansion, private sector investment, or technical connectivity. There remains a notable gap in the literature regarding how PPPs are utilized as governance instruments to promote inclusive digital access in noncommercial regions. This study seeks to fill that gap by analyzing how the PPP mechanism functions within the Palapa Ring Project and to what extent it supports the goal of digital equity. The main research question guiding this study is as follows: How does the Palapa Ring project, as a strategic national initiative, address the issue of unequal Internet access in 3T regions through the PPP approach? This research draws upon Governance Theory as conceptualized by Klijn and Koppenjan (2014), who view governance as the coordination of interdependent actors operating within networks rather than through hierarchical control. To deepen the analysis of actor interactions and influence, this study also employs the Network Approach developed by Adam and Kriesi, which emphasizes the structural and communicative relationships among political actors and their roles in shaping policy outcomes. Additionally, the study adopts Howlett's framework on public–Private Partnerships (PPP) to explore institutional design, risk-sharing, and accountability in collaborative infrastructure delivery. Methodologically, this study applies a qualitative case study approach, involving document analysis and policy review, to evaluate the design, implementation, and outcomes of the Palapa Ring Project. This study is significant because it explores how institutional frameworks, particularly BAKTI and the MCDA, are project-implementing and regulatory bodies within the PPP scheme. It critically assesses whether the combination of strategic national planning, legal instruments, and multi-stakeholder collaboration can fulfill the public policy objective of equitable digital access, especially for underserved communities historically left behind. The findings are expected to contribute to the academic discourse by linking PPP-based infrastructure policy to the principles of inclusive governance. Practically, this research provides insight into how PPP models can be strengthened to ensure accessibility, accountability, and sustainability in delivering essential digital services in developing contexts.

2. Literature review

2.1 Palapa Ring Project

The National Optical Fiber Backbone Project, widely known as the Palapa Ring, is a strategic initiative designed by the Government of Indonesia to develop a robust and integrated telecommunications infrastructure across the Indonesian archipelago. The primary objective of this project is to connect all regencies and cities in Indonesia through a high-speed broadband network to address the persistent digital divide across various regions. Through the establishment of this infrastructure, the government aims to ensure equitable access to the Internet, particularly in areas that have historically faced limitations in telecommunications connectivity. The presence of the Palapa Ring is expected to stimulate digital economic growth, accelerate the transformation of public services, and enhance the dissemination of information and education across the nation. Furthermore, this network serves as a

foundational component supporting the digitalization of strategic sectors, including public administration, healthcare, education systems, and creative industries—all of which require reliable and high-quality Internet infrastructure for optimal operation. The Indonesian government first initiated the Palapa Ring project in 2007 as part of a systematic effort to expand telecommunications access nationwide. Its implementation was carried out in stages because of Indonesia's vast and geographically complex terrain. The project was divided into three regional packages: the Western Palapa Ring, the Central Palapa Ring, and the Eastern Palapa Ring. Construction of the Western Ring began in 2016 and was completed in March 2018, followed by the Central Ring, which was completed in December 2018, and the Eastern Ring, which was completed in August 2019. The entire network became fully operational on October 14, 2019, marking a new era of equitable digital access throughout the country.

The project's inception was driven by the fact that, out of 514 regencies and cities in Indonesia, 457 had already been connected to broadband networks through investments by private telecommunications providers. However, 57 regions remain unconnected due to their challenging geographical conditions, lack of supporting infrastructure, and relatively small user bases, making them commercially unviable for private sector investment. The Palapa Ring project was thus introduced as a policy response to reach these underserved regions and ensure that all areas of Indonesia could benefit from equitable digital connectivity. These regions have been designated as high-priority targets in the national telecommunications infrastructure development agenda. Consequently, the project has served as a tool for modernizing digital infrastructure and as a tangible demonstration of the government's commitment to promoting social equity and inclusivity in access to information and communication (Komdigi, 2019).

The implementation of the Palapa Ring is underpinned by a strong legal foundation supported by several regulations aimed at ensuring equitable access to telecommunications services. One of the primary legal frameworks is Law No. 36 of 1999 on Telecommunications, which obligates the government to build and develop a national telecommunications network, including in remote areas, to improve social welfare and competitiveness. In terms of project financing and sustainability, Presidential Regulation No. 78 of 2010 provides the legal basis for private sector participation through PPP, particularly for strategic infrastructure projects that may be commercially unattractive to private investors. This is further clarified by Presidential Regulation No. 38 of 2015, which defines the mechanisms for implementing and managing PPP-based infrastructure projects and ensures effective collaboration between the government and private entities. Additionally, Minister of National Development Planning Regulation No. 4 of 2015 outlines the procedures for planning, implementing, and monitoring PPP-based projects to ensure transparency and efficiency. Ministerial Regulation No. 25 of 2015 from the MCDA further mandates telecommunications operators to support equitable access through the Universal Service Obligation (USO) program, enabling the Palapa Ring to reach 3T areas.

Table 1. Palapa Ring Demographics (based on Package)

Number	West	Central	East	Total
Regencies/Cities	5	17	35	57
Villages	376	1.648	4.681	6.705
Population (in millions)	1.0	1.7	3.1	5.8
GDP Per Capita (in millions)	214	37	32	25
Mobile Phone Penetration	69	55	33	47
Internet Users (in percent)	79	71	38	50
Palapa Ring Access Points	15	17	95	127
Fiber Optic Cable Length (in KM)	2.275	2.995	6.878	12.148

Source: Palapa Ring Smart Book (2019)

The table above presents data on the scope and impact of the Palapa Ring Project on advancing telecommunications infrastructure in Indonesia. According to the table, the project has successfully reached 57 regencies/cities, comprising 5 in the Western Ring, 17 in the Central Ring, and 35 in the

Eastern Ring. Additionally, the project has connected 6,705 villages, distributed as follows: 376 villages in the West, 1,648 in the Central region, and 4,681 in the East. In terms of population coverage, the infrastructure has provided telecommunications access to approximately 5.8 million people: 1 million in the West, 1.7 million in the Central region, and 3.1 million in the East. From an economic perspective, the project covers regions with varying Gross Regional Domestic Product (GRDP) per capita, with figures of IDR 214 million in the West, IDR 37 million in the Central region, and IDR 32 million in the East, yielding an average of IDR 25 million.

From a technological standpoint, the disparity in mobile penetration across regions is evident, with the West reporting 69%, the Central region 55%, and the East 33%, compared to the national average of 47%. Internet user penetration also varies significantly, with 79% in the West, 71% in the Central region, and only 38% in the East, resulting in an overall national average of 50%. To support Internet connectivity, the project developed 127 telecommunications network nodes, consisting of 15 in the West, 17 in the Central region, and 95 in the East. The network is supported by an optical fiber infrastructure spanning 12,148 km: 2,275 km in the West, 2,995 km in the Central region, and 6,878 km in the East. These data underscore the Palapa Ring's role as a foundational pillar in expanding telecommunications access, especially in areas underserved by commercial operators. By improving digital infrastructure equity, the project is expected to accelerate technology-driven economic growth, enhance access to information, and strengthen Indonesia's digital transformation.

2.2 Public-Private Partnership (PPP) System

Public-Private Partnership (known in Indonesia as Kerja Sama Pemerintah dan Badan Usaha or KPBU) refers to a collaborative framework between the government and the private sector in the provision of infrastructure and public services. In Indonesia, the legal basis governing PPP is stipulated in Presidential Regulation No. 38 of 2015, which affirms that this model aims to enhance the efficiency of infrastructure development by leveraging the resources and expertise of the private sector. According to Fakrulloh (2024), this scheme facilitates accelerated development while maintaining strict government oversight, thereby ensuring a more balanced distribution of risks between the two parties. Internationally, PPP have been widely adopted as a solution to budgetary constraints in the development of large-scale infrastructure projects.

From an academic standpoint, Kurniawan et al. (2021) emphasized that the implementation of PPP yields positive outcomes in two key areas: the improvement of public infrastructure quality and the optimization of private sector investment to support national economic growth. This model enables the government to ensure project continuity without bearing the full burden of the upfront investment costs. Moreover, collaboration with the private sector presents opportunities for technology transfer and enhancement of managerial capacity in public service delivery. The success of PPP projects depends heavily on meticulous planning, clearly defined contractual agreements, and equitable risk allocation to ensure project efficiency and sustainability.

One of the most commonly used payment mechanisms in PPP implementation is the Availability Payment (AP) scheme. This method stipulates that payments to the private partner are made incrementally based on the availability of infrastructure services rather than their actual usage. This scheme is regulated by Minister of Finance Regulation No. 260/PMK.08/2016, which states that payments are disbursed after project completion and upon meeting agreed-upon service standards. The AP model provides cash flow certainty to the private sector, thereby enabling the implementation of projects that may not be commercially viable but are essential from a public interest perspective. Furthermore, it allows the government to ensure that the services provided consistently meet the quality standards throughout the contract duration.

As a component of quality control within the PPP model, the Service Level Agreement (SLA) functions as a key instrument to ensure that the private partner adheres to the operational standards specified in the contract. The SLA serves as a reference point for evaluating the quality of infrastructure services delivered, thereby allowing the government to guarantee that the services remain optimal and are

aligned with public needs. Sihombing (2024) underscores that the SLA in PPP projects is designed to safeguard public interests by ensuring the quality, accessibility, and sustainability of infrastructure services that are managed by private entities. The SLA also includes technical provisions, such as maintenance standards, system reliability, and penalty mechanisms in cases where the private partner fails to meet agreed commitments. Through the SLA, the government retains control over service quality assurance, even when public services are managed by the private sector under the PPP framework.

2.3 Indonesia National Medium-Term Development Plan

The National Medium-Term Development Plan (Rencana Pembangunan Jangka Menengah Nasional or RPJMN) is a national development planning document prepared every five years as a derivative of the vision, mission, and work programs of the elected President and Vice President. The RPJMN serves as a strategic guideline for ministries, agencies, and local governments to formulate policies and development programs aligned with the National Long-Term Development Plan (RPJPN). The RPJMN positions digital infrastructure as a cornerstone of Indonesia's development policy, emphasizing the integration of telecommunications backbone projects with broader socio-economic goals. The RPJMN 2020–2024 explicitly mandates the expansion of broadband to all rural and *3T* areas, asserting that such infrastructure serves as a strategic pillar in driving inclusive digital transformation and enhancing local economic capacities through agriculture, education, and microenterprise development (Ministry of National development. This approach mirrors the RPJMN's goal of aligning ministerial and regional actions with the long-term national vision of increased competitiveness through equitable digital access. These efforts are designed to ensure equitable access to technology for all citizens, including those in remote and underserved areas (Ilham, 2023).

Within the RPJMN, National Priorities serve as the primary focus areas through which the government directs structured development efforts with a tangible impact on society. These priorities are categorized into strategic sectors deemed essential for achieving national development goals. For instance, in the 2025–2029 RPJMN, the government established eight key priorities, including poverty alleviation, improvement of human resource quality, digital-based economic transformation, and enhancement of sustainable infrastructure. Digital economy development and telecommunications infrastructure are emphasized as priorities to support an inclusive economic ecosystem, stimulate Internet-based micro, small, and medium enterprises (MSMEs), and improve the efficiency of online public services. This sectoral focus within the RPJMN allows for optimized resource allocation and continuous performance evaluation every five years. By prioritizing digital priorities, this strategy builds a solid foundation for adjusting policies in response to evolving social and economic dynamics (Shan et al., 2025). Similar findings were presented by Endriyono, Gunarto, and Murwiati (2025), who demonstrated that the digital economy strategy within the Smart Village program in Lampung promotes the development of data-driven policies and digital infrastructure while directly contributing to local economic growth and social resilience.

Telecommunication infrastructure development policies in Indonesia are formulated based on the RPJPN and operationalized through successive RPJMN cycles every five years. Telecommunications infrastructure is prioritized to enhance national digital connectivity, thereby supporting economic growth and equitable access to information. The RPJMN outlines the strategies and programs necessary to ensure that telecommunications development aligns with Indonesia's long-term development vision (Kurniawan et al., 2021). The development of Information and Communication Technology (ICT) infrastructure has been a central focus of the 2020–2024 RPJMN. The government has positioned digital infrastructure as a strategic component to drive economic growth and promote equitable development across the country. In this context, infrastructure is no longer limited to physical assets such as roads and transportation but also includes the strengthening of digital connectivity as part of the transition towards a technology-driven economy. ICT infrastructure plays a critical role in supporting various sectors, including public services, industry, and access to information. Therefore, ICT development is directed toward expanding digital access nationwide, including in remote regions, to boost national competitiveness and productivity.

As part of the national strategy, the 2020–2024 RPJMN outlines several initiatives to accelerate ICT infrastructure development in Indonesia. A key policy involves the use of Universal Service Obligation (USO) funds to expand Internet access in areas not yet reached by commercial networks. Additionally, the government has promoted regulatory reforms to expedite broadband infrastructure development by simplifying licensing and encouraging infrastructure investment. These efforts aim to ensure that Internet services are widely accessible, including in the education, healthcare, and industry sectors, to accelerate digital transformation. In practice, ICT infrastructure development is manifested through broadband network expansion, with the Palapa Ring project serving as a flagship initiative to provide Internet connectivity to the most remote parts of the country.

2.4 Governance Perspective

Governance in public policy refers to the processes and structures used to direct, manage, and oversee public activities involving various stakeholders, including the government, private sector, and civil society. This approach emphasizes cross-sector collaboration to achieve common goals and address complex public issues. One specific form of governance is collaborative governance, which Ansell and Gash (2008) define as an arrangement in which one or more public agencies directly engage non-state stakeholders in a formal, consensus-oriented, and deliberative collective decision-making process aimed at designing or implementing public policy or managing public programs or assets. This approach emerged in response to the limitations of traditional governance models in addressing issues that require multi-stakeholder cooperation, thus enabling the integration of broader resources, expertise, and perspectives into public policy processes. In this context, collaborative governance aims to build more dynamic relationships between the government and non-state actors to create more inclusive and collectively driven policy solutions (Emerson et al., 2012).

The implementation of collaborative governance theory can be observed in the Palapa Ring Project. This project was carried out through a PPP scheme, in which the MCDA through BAKTI acted as the 'Government Contracting Agency.' For the project's execution, BAKTI collaborated with three Project Implementing Entities (BUP), each responsible for a different project package: (1) the Western Package, implemented by PT Palapa Ring Barat (PRB), covering the regions of Riau, Riau Islands, Jambi, and West Kalimantan, with a cable length of 2,000 kilometers and an investment value of IDR 3.48 trillion; (2) the Central Package, implemented by PT Len Telekomunikasi Indonesia (LTI), a subsidiary of PT Len Industri (Persero), covering Kalimantan, Sulawesi, and North Maluku; and (3) the Eastern Package, implemented by PT Palapa Timur Telematika (PTT), covering East Nusa Tenggara, Maluku, West Papua, and Papua, with a total fiber-optic cable length of approximately 8,450 kilometers and a bandwidth capacity of 80 Gbps (Kominfo, 2019). The collaboration between the government and business entities in this project reflects the principles of collaborative governance, wherein the involvement of various stakeholders allows for the integration of resources and expertise to achieve strategic national infrastructure development goals. According to Emerson et al. (2012), collaborative governance involves public policy decision-making processes and structures that enable constructive multi-stakeholder participation across public institutions, levels of government, and the public, private, and civil sectors to achieve common goals that cannot be achieved by a single party alone. In the context of the Palapa Ring, the application of collaborative governance not only improved the efficiency and effectiveness of project implementation but also ensured that various regional needs and interests were accommodated, resulting in more sustainable and broadly impactful outcomes for Indonesian society.

2.5 Research Differentiation

This research occupies a strategic and distinctive position in the discourse on digital infrastructure in Indonesia by integrating technical, institutional, national planning, and policy governance aspects into a single public policy analysis framework. Unlike Komdigi's (2019) report, this study adds an evaluative perspective on the effectiveness of the project in addressing digital inequality and its implementation challenges in the field. It also emphasizes the dynamics of cross-sectoral coordination and project operationalization in frontier, outermost, and least developed regions (3T), which remain underexplored in the official project literature. Furthermore, while previous research on PPP schemes

and national priorities in the RPJMN tends to focus on legal frameworks and macro-planning strategies, references such as Fakrulloh (2024), Sihombing (2024), and Bappenas (2025) highlight the importance of financing schemes and policy support in building digital infrastructure. However, these discussions tend to be normative and do not thoroughly examine how such collaborations are implemented in the Palapa Ring Project.

This research serves as both a complement and a differentiator by analyzing how the PPP contract is applied through SLA monitoring, private sector involvement across the three project regions, and quality control mechanisms by BAKTI as a Government Contracting Agency. Within the context of the RPJMN, this study also traces the link between the national development direction and the execution of strategic digital infrastructure policies. While theoretical frameworks on collaborative governance by Ansell and Gash (2008) and Emerson et al. (2012) are discussed, this study strengthens those theories through empirical evidence from the Palapa Ring project case study. By illustrating the direct collaboration between MCDA/BAKTI and private partners in each development zone, this study affirms that collaborative governance can be effectively implemented in digital projects in developing countries. Thus, the main contribution of this research lies in bridging theory and practice by offering a comprehensive and contextual public policy analysis. Rather than presenting data or concepts in isolation, this study integrates four dimensions—technical, institutional, strategic, and collaborative—to answer one core question: how can national digital infrastructure projects ensure equitable access and service sustainability in frontier, outermost, and least developed/3T regions?

3. Methodology

This study employs a qualitative approach with a public policy analysis framework based on secondary data. This approach was chosen because public policy is a complex phenomenon that often requires an in-depth examination of existing documents and regulatory frameworks. Qualitative research using secondary data, such as public reports, open government documents, and institutional publications, is increasingly favored for its ability to provide contextual depth and broad geographic insights when primary data collection is limited or not feasible. Secondary data serves as the primary source for this study, as it offers broader insights into the policy context without the need to conduct primary data collection through surveys or interviews (Cheong, Lyons, Houghton, & Majumdar, 2023).

Data collection in this research was conducted through a literature review by examining various documents related to the public policy under study. This study also employs a qualitative approach, conducting data collection through a structured literature review of multifaceted sources. Secondary data included legal documents and official regulations, government reports, and peer-reviewed academic articles. Document analysis was used to extract insights following established qualitative standards that promote rigor and contextual depth (Morgan, 2022). In addition, tertiary sources, such as legal indexes and policy dictionaries, were used to support the understanding of terminology and concepts applied in this study.

This study employed a descriptive-qualitative approach, wherein the collected data were systematically examined to identify recurring patterns, themes, and categories. To enhance validity, triangulation techniques were applied by comparing information across multiple data sources, including literature reviews, policy reports, and previous empirical studies. Employing varied data sources or methods within qualitative research enables researchers to capture diverse perspectives and enrich their analysis, playing a crucial role in qualitative research by enhancing the credibility, validity, and depth of research findings (Meydan & Akkaş, 2024). By employing this method, the study aims to provide a richer understanding of the implementation and effectiveness of the examined public policy and offer insights that may inform the development of improved policies in the future.

As an alternative, this study could have employed a mixed-methods approach or a quantitative design, such as survey-based research targeting relevant stakeholders or policymakers to gather empirical perceptions of policy implementation. However, such methods were not selected because of resource

constraints and the study's emphasis on institutional and regulatory analysis, which is more effectively explored through qualitative document analysis.

4. Results and discussion

4.1 Role of the Government Contracting Agency and Collaborative Governance Implementation

To support the effective implementation of the project, BAKTI established a monitoring team responsible for coordinating across stakeholders, assessing the compliance of 'Project Implementing Entities' with the PPP agreement, and managing various challenges encountered during project execution. In addition, the team plays a key role in managing communication between the public and private sectors to ensure that the project is implemented efficiently and aligned with its predetermined objectives. In the project monitoring process, BAKTI is responsible for ensuring that all technical, administrative, and operational aspects related to the Palapa Ring infrastructure proceed as planned. One form of implementation of this management is the comprehensive monitoring and supervision of project progress, covering aspects such as network construction, service operationalization, and long-term evaluation of infrastructure sustainability. BAKTI also plays a coordinating role with private sector parties to ensure that the provision of telecommunication services in remote areas complies with the established standards. In practice, evaluations are conducted periodically to assess service effectiveness and identify challenges that may hinder the achievement of the project goals. With this strict monitoring mechanism, the project is expected to operate in a more transparent and accountable manner, allowing any issues to be resolved promptly through cross-sectoral coordination.

In addition to ensuring the continuity of the project from technical and administrative perspectives, BAKTI is also responsible for assessing the compliance of the private sector with the obligations stipulated in the PPP agreement. In this context, each private entity is responsible for constructing and managing the network infrastructure in accordance with the standards set by the government. The monitoring team formed by BAKTI is tasked with evaluating the performance of the private sector, identifying potential violations, and providing recommendations for improvements should discrepancies in project implementation arise. If non-compliance is detected, BAKTI has the authority to issue directives to the private sector to conduct corrective actions and align implementation with the standards set out in the agreement. With this oversight mechanism, the Palapa Ring Project can be executed more effectively and efficiently, ensuring that its benefits reach the wider public. The Palapa Ring project benefits not only the broader society but also telecommunication operators and network providers. Prior to the establishment of this infrastructure, many operators were reluctant to expand services to remote areas because the high investment costs were not proportionate to the potential commercial returns. However, with the introduction of this project, operators can utilize the infrastructure provided by the government to expand service coverage at a more efficient cost than before. Through the PPP model, the government and private sector can collaborate to reach regions that were previously inaccessible to commercial telecommunications services, thereby promoting increased Internet access and the growth of the digital industry in various regions. The Palapa Ring infrastructure serves as a critical enabler for improving communication service quality and allowing broader access to technology-based innovations.

From a governance perspective, the Palapa Ring project illustrates the implementation of collaborative governance, wherein various stakeholders collaborate to manage and implement public policy. Ansell and Gash (2008) describe collaborative governance as a model that involves public agencies in collective decision-making processes with non-government actors through formal, consensus-based, and deliberative mechanisms. In the context of Palapa Ring, this approach is applied through the PPP scheme, which enables the government and private sector to collaborate in the development and management of telecommunications infrastructure. Through this scheme, the government can leverage private sector resources and expertise to accelerate the provision of digital infrastructure, while private actors gain market expansion opportunities by extending telecommunication services to previously unprofitable regions. As such, the collaborative governance model in this project reflects a more adaptive and flexible approach to infrastructure development governance, particularly in addressing resource constraints that often hinder large-scale national projects. The application of collaborative

governance in this project also aligns with the perspective of Emerson, Nabatchi, and Balogh (2012), who emphasized that collaboration in public policy aims to build dynamic relationships between government and non-state actors to create more effective, consensus-based solutions.

In this case, the Palapa Ring project functions not only as a government initiative to enhance telecommunications access but also as a platform to integrate the interests of the private sector and society in the formulation and implementation of digital infrastructure policy. With a coordination mechanism involving various stakeholders, this project is implemented in a more inclusive manner, is oriented toward long-term solutions, and ensures the continuity of telecommunication services across Indonesia. The implementation of collaborative governance in this project also demonstrates how the government can overcome the limitations of traditional governance models, which often face challenges in financing and sustainable operations. By sharing responsibilities with the private sector and encouraging active participation from multiple actors, this project reflects a paradigm shift in the governance of the national telecommunications infrastructure. Such a model not only enhances infrastructure development efficiency but also fosters a more resilient and adaptive system in the face of increasingly complex challenges of digital transformation.

4.2 Enhance Equity in Internet Access

The Government of Indonesia launched the Palapa Ring project as a strategic initiative in public policy to address the challenges of unequal Internet access across different regions. This infrastructure was designed as a fiber-optic backbone network connecting remote areas with economic and governmental centers, thereby accelerating the digital transformation throughout the country. With this project, it is expected that more equitable internet connectivity will enhance digital economic activity, accelerate technology-based public services, and ensure that communities in remote areas can benefit from the digital era without geographical constraints.

Table 2. Palapa Ring Coverage Area

West Package	Central Package	East Package
Bengkalis, Riau	Mahakam Ulu, East Kalimantan	Rote Ndao, East Nusa Tenggara
Meranti Islands, Riau	Morowali, Central Sulawesi	Sabu Raijua, East Nusa Tenggara
Natuna, Riau Islands	North Konawe, Southeast Sulawesi	Aru Islands, Maluku
Anambas Islands, Riau Islands	Konawe Islands, Southeast Sulawesi	West Southeast Maluku, Maluku
Lingga, Riau Islands	Muna, Southeast Sulawesi	Southwest Maluku, Maluku
	West Muna, Southeast Sulawesi	Teluk Wondama, West Papua
	Central Buton, Southeast Sulawesi	South Manokwari, West Papua
	North Buton, Southeast Sulawesi	Nabire, Papua
	Taliabu Island, North Maluku	Yapen Islands, Papua
	Banggai Islands, Central Sulawesi	Waropen, Papua
	Banggai, Central Sulawesi	Supiori, Papua
	North Halmahera, North Maluku	South Sorong, West Papua
	Tidore Islands, North Maluku	Tambrauw, West Papua
	Siau Tagulandang Biaro Islands, North Sulawesi	Maybrat, West Papua
	Sangihe Islands, North Sulawesi	Bintuni Bay, West Papua
	Talaud Islands, North Sulawesi	Arfak Mountains, West Papua
		Mamberamo Raya, Papua
		Puncak Jaya, Papua
		Paniai, Papua
		Tolikara, Papua
		Central Mamberamo, Papua

	Puncak Jaya/Carstensz, Papua Lanny Jaya, Papua Dogiyai, Papua Intan Jaya, Papua Deiyai, Papua Jayawijaya, Papua Keerom, Papua Star Mountains, Papua Yahukimo, Papua Yalimo , Papua Nduga, Papua Boven Digoel, Papua Mappi, Papua Asmat, Papua

Source: Palapa Ring Smart Book (2019)

The table illustrates the government's presence in addressing Internet access inequality in underdeveloped, frontier, and outermost regions through the Palapa Ring project, which is divided into three zones, each serving key households in various parts of Indonesia. The Western Package covers areas such as the Riau Islands, Natuna, and several regions in Sumatra, which have long faced difficulties obtaining stable Internet services. With the availability of fiber-optic networks, cities such as Batam and Tanjung Pinang now enjoy improved connectivity, enabling the commercial, industrial, and governmental sectors to operate more efficiently. Additionally, the development of digital infrastructure has opened up opportunities for MSMEs and the creative sector in these regions to grow more rapidly, with broader market access. In the context of digital data utilization by the government, Riwukore, Marnisah, Habaora, and Yustini (2022) highlight that equitable access to digital infrastructure is essential to support the implementation of the One Data policy and ensure equal distribution of public services in underdeveloped, frontier, and outermost (3T) regions. Meanwhile, the Central Package encompasses Kalimantan, Sulawesi, and North Maluku, connecting key cities, such as Pontianak, Manado, and Ternate, through fiber-optic infrastructure. This network supports the enhancement of digital public services, accelerates the growth of local economies that rely on technology, and expands access to online education for communities in the region. The Eastern Package, which covers East Nusa Tenggara, Maluku, and Papua, plays a crucial role in bridging the digital divide, which has long posed significant challenges. Cities such as Kupang, Jayapura, and Ambon now benefit from more stable Internet access, enabling the development of the tourism sector, telemedicine-based health services, and increased community participation in the digital ecosystem. With the operationalization of the Palapa Ring project, regions that were previously difficult to reach now have greater opportunities to be integrated into the national digital economy.

4.3 Statistical Improvement on The Impact of Policy

From 2019 to 2024, Indonesia experienced a notable increase in internet penetration, rising from approximately 70% to approximately 79.5% of the total population, with over 220 million users by early 2024 (APJII, 2025). This growth was not only a result of the rising demand for digital services but also due to significant infrastructure interventions, including the Palapa Ring project, which laid over 35,000 kilometers of fiber-optic cable with both undersea and terrestrial, connecting the outermost and least developed regions. The project's integration of remote islands into the national network significantly reduced the disparities in digital access. For communities in eastern Indonesia and other 3T (frontier, outermost, and underdeveloped) areas, the availability of high-speed broadband has opened new channels for education, public services, and digital inclusion. By closing the connectivity gap, the Palapa Ring has become a foundational enabler of Indonesia's broader digital transformation agenda.

The expansion of Internet infrastructure across Indonesia has had a transformative impact on national economic development. Internet infrastructure initiatives have significantly increased productivity in various sectors, notably among micro, small, and medium-sized enterprises (MSMEs). The report highlights that enhanced connectivity in remote and *3T* (frontier, outermost, and underdeveloped) regions has supported increased digital adoption, enabling MSMEs to access wider markets and participate in the digital economy. By linking rural businesses and communities to broader economic networks, Internet accessibility has become a vital enabler of inclusive economic growth. From a macroeconomic perspective, improved Internet infrastructure could contribute up to US $150 billion annually to Indonesia's GDP by 2025, driven by enhanced productivity, e-commerce growth, and digital public service delivery (Nugroho, 2023). The report attributes a portion of the country's 5.1% GDP growth in 2022 to ongoing digital transformation and investment in broadband infrastructure. These benefits are not confined to urban centers; they reflect the expanding economic capacity of digitally connected regions, including many that were previously isolated from mainstream commerce and services. This confirms that Internet accessibility in 3T areas is not merely a matter of connectivity but a catalyst for broad-based national economic advancement (Nugroho, 2023).

Internet infrastructure has an impact on economic growth Siswantoro (2023) in West Java before and during the COVID-19 pandemic, the findings show that internet infrastructure has a statistically significant positive effect on economic growth, both pre-pandemic and during the pandemic period. Specifically, each 1% increase in the number of villages with internet access was associated with a 0.093785% rise in regional GDP per capita before the pandemic and a significantly higher impact of 0.359794% during the pandemic. The sharp increase during the pandemic reflected the critical role of Internet access in sustaining business operations, enabling remote work, and facilitating digital transactions during a time of physical restrictions. The province-wide expansion of Internet-connected villages, from 2,958 in 2018 to 4,827 in 2021, parallels a rise in average GDP per capita from Rp 29.16 million in 2018 to Rp 45.19 million in 2021, despite the economic disruptions of the pandemic. This indicates that internet infrastructure was not only essential for maintaining productivity but also played a key role in economic recovery during the pandemic. Furthermore, the study found that regions with the highest Internet access also showed higher GDP per capita levels, finding that a 1% increase in household Internet access led to a 0.66%–0.8% growth in regional GDP (Siswantoro, 2023).

Additionally, the transformative role of Internet access in job creation and workforce transformation (Radjamin & Hermawan, 2024). With more than 60 million new digital consumers entering the market since the pandemic and e-commerce transactions expected to reach $104 billion by 2025, the internet is now central to Indonesia's labor market evolution. It is estimated that the digital ecosystem will generate 31.8 million new jobs over the next five years, especially through MSMEs leveraging online platforms. The Internet democratizes business opportunities and reduces unemployment by enabling self-employment and remote work, particularly among youth and informal sectors.

5. Conclusion

5.1. Conclusion

This study set out to examine how the Palapa Ring project, as a public policy for a strategic national initiative, addresses unequal Internet access in Indonesia's underdeveloped, frontier, and outermost (3T) regions through the lens of public and governance theory. By applying a qualitative public policy analysis framework, this study explored how the governance framework facilitated the project's implementation via a Public-Private Partnership (PPP) model. The findings reveal that the Palapa Ring Project has significantly improved connectivity in previously underserved regions, supporting digital inclusion, economic development, and access to essential public services. Furthermore, statistical data suggest a positive correlation between increased Internet penetration and regional GDP growth, particularly during the COVID-19 pandemic, when digital infrastructure played a vital role in enabling remote activities.

While the project has made considerable progress in expanding infrastructure, this research study also highlights the remaining challenges, such as service quality, affordability, and limited digital literacy in rural communities. This study contributes to the discourse on digital governance by integrating

theoretical, institutional, and developmental perspectives into a single policy framework. This underscores the importance of multi-stakeholder coordination in achieving inclusive digital transformation. For future research, this study offers a foundation for further examining PPP implementation in other sectors or regions and invites empirical exploration of the long-term social impacts of digital infrastructure projects. By linking governance theory to practical implementation outcomes, this study demonstrates the value of decentralized, collaborative models in advancing public interest in developing countries.

5.2. Limitation

A key limitation of this study is that it relied on document analysis and secondary data without field observations or interviews with affected communities. As a result, it may not fully capture the real-world user experience or local implementation challenges in 3T regions.

5.3. Suggestion

Based on the findings and limitations, this study suggests that the government enhance regulatory frameworks and establish stronger oversight mechanisms to ensure the sustainability of the Palapa Ring project. Additionally, continuous funding and proper maintenance of infrastructure should be prioritized to guarantee a long-term impact. Future studies should include field-based research to gather perspectives from local communities and evaluate the on-the-ground effectiveness of the project.

Acknowledgment

The author extends sincere gratitude for the support received from various parties and expresses deep appreciation, particularly to the Faculty of Administrative Sciences, Universitas Indonesia, and the Ministry of Communication and Digital Affairs for providing the facilities, insights, and assistance that have contributed to the completion of this paper.

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