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Policy Analysis of Free Public WiFi Facilities as an Effort to Advance Banda Aceh's Development into a Smart City

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Abstract

Advancements in information technology have prompted local governments to enhance digital-based public services through the implementation of the Smart Cityconcept. One initiative undertaken by the Banda Aceh City Government is the provision of free WiFi facilities in several public parks to ensure equitable internet access and improve public digital literacy. However, implementation faces various challenges, such as limited free WiFi network capacity, equipment malfunctions, low public digital literacy, and a lack of public concern regarding the preservation of public facilities. This study aims to analyze the implementation of the free WiFi provision policy in Banda Aceh's public parks in support of Smart City development. A qualitative research method with a descriptive approach was employed. Data were gathered through interviews, observation, and documentation involving informants from the Banda Aceh City Communication, Informatics, and Statistics Agency (Diskominfotik), technical staff, park security personnel, and members of the public including students who use the free WiFi. Data analysis was conducted using the Miles and Huberman interactive model, comprising data reduction, data display, and conclusion drawing. The results indicate that the policy implementation has proceeded reasonably well based on the dimensions of "Content of Policy" and "Context of Implementation" as defined by Merilee S. Grindle. The program has yielded benefits by increasing internet access and supporting educational activities, public services, and the community's digital economic activities. Nevertheless, implementation still faces obstacles such as limited network infrastructure, technical disruptions, and suboptimal digital literacy and public participation in maintaining the free WiFi facilities. Therefore, improvements in network capacity, infrastructure maintenance, service coverage expansion, and strengthened digital literacy education are required to ensure the success of Smart Citydevelopment in Banda Aceh.

Keywords: Policy Implementation, Free WiFi, Smart City, Merilee S. Grindle, Banda Aceh City

Introduction

Over the past decade, rapid advances in information and communication technology (ICT) have fundamentally reshaped the way governments deliver public services (Makmun et al. 2025). Digital technologies are no longer viewed merely as supporting tools but have become an integral component of public sector transformation, enabling governments to improve administrative

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efficiency, increase transparency, strengthen accountability, and provide services that are more responsive to citizens' needs (Mozin et al. 2025). As digital transformation continues to evolve, many governments have integrated ICT into governance systems to improve service quality while promoting broader public participation in governmental processes (Radika et al, 2025). Nevertheless, the implementation of digital governance remains uneven, particularly in developing countries where disparities in technological infrastructure, institutional capacity, and digital literacy continue to influence the effectiveness of public service delivery (Ridwan et al, 2025). Within this context, the Smart Cityconcept has emerged as one of the most widely adopted approaches for integrating digital technologies into urban governance (Ariyanti et al. 2024). Rather than focusing solely on technological advancement, Smart City initiatives emphasize the interaction between technology, governance, public participation, and sustainable urban development (Tan & Taeihagh, 2020). Information and communication technologies are expected to facilitate better coordination among government institutions, improve the quality of public services, optimize the management of urban resources, and ultimately enhance citizens' quality of life (Aldhi et al. 2025). Consequently, Smart City development has become an important policy agenda for many cities seeking to strengthen digital governance and achieve sustainable urban development.

In Indonesia, the transformation toward digital governance has been reinforced through the implementation of the Electronic-Based Government System (SPBE) (Nugraha et al. 2025), which encourages public institutions to integrate digital technologies into administrative and public service processes. This national policy provides the foundation for local governments to develop Smart City initiatives that are consistent with regional needs and capacities. In Banda Aceh, this commitment has been formalized through Mayor Regulation No. 18 of 2020 concerning Smart City, which outlines strategic directions for digital governance, information infrastructure, electronic public services, and integrated urban management. The policy is further complemented by Mayor Regulation No. 46 of 2021 on Satu Data Banda Aceh, which strengthens data governance as an essential element of evidence-based policymaking.

Previous studies have also shown that the implementation of Smart City in Banda Aceh emphasizes collaboration between government institutions, digital infrastructure development, and community participation while integrating local values into digital governance (Yahaya & Nur Fazila. 2020). As one of the cities implementing this concept, the Government of Banda Aceh has introduced a free WiFi program in several public spaces, such as Bustanussalatin Park, Tibang Urban Forest, and the PLTD Apung tourism area. This program aims to expand public access to the internet, improve digital literacy, and support digital-based public services in realizing Banda Aceh as a Smart City.

Existing studies generally agree that public WiFi contributes to improving digital accessibility and supports the implementation of Smart City initiatives. For example, Puspita et al. (2024) reported that public WiFi programs can broaden access to digital information and government services, although their effectiveness largely depends on infrastructure quality, network management, and institutional coordination. Similarly, Saidah and Hairunnisa (2023) argued that improvements in digital literacy determine whether public internet facilities are utilized for productive activities such as education and information seeking. Fazil et al. (2022) further emphasized that digital literacy constitutes an important pillar of Smart City development in Banda Aceh. Collectively, these studies indicate that successful publik WiFi implementation depends not only on technological infrastructure but also on governance arrangements, institutional coordination, and community participation.

Despite these contributions, several important issues remain insufficiently explored. Most previous studies have concentrated on technological readiness, digital infrastructure, citizen participation, or general Smart City governance (Fuady et al. 2021). Comparatively little attention has been given to examining free public WiFi as a public policy whose success depends on both policy design and implementation processes. Furthermore, studies specifically focusing on Banda Aceh rarely analyze the implementation of the free WiFi program using Merilee S. Grindle's Policy Implementation Theory. Consequently, limited empirical evidence is available regarding how the policy content and implementation context jointly influence the effectiveness of free WiFi services in supporting Smart Citydevelopment. These include limited network capacity during peak usage

periods, which reduces internet speed and service quality, as commonly reported in large-scale municipal wireless networks. Technical disruptions related to infrastructure reliability and environmental conditions also affect network stability. In addition, damage or loss of WiFi equipment increases maintenance challenges and may interrupt service continuity. Another important issue is the relatively low level of digital literacy among some community members, resulting in internet facilities being used primarily for entertainment rather than educational, economic, or public service purposes. Previous studies have similarly emphasized that infrastructure limitations, maintenance challenges, digital literacy gaps, and governance capacity remain significant barriers to the successful implementation of Smart City initiatives and digital public services in developing countries.

Previous studies on Smart City implementation in Indonesia have primarily examined citizen engagement, governance, technological infrastructure, service innovation, and the factors influencing Smart City success (Nasir & Yuslinaini. 2024). Studies conducted in Banda Aceh have likewise focused on the Islamic Smart City concept, environmental and political factors, and digital governance rather than on the implementation of the free WiFi policy itself. Although these studies provide valuable insights into Smart City development, they have not specifically analyzed the implementation of the free WiFi policy using Merilee S. Grindle's policy implementation framework, particularly the dimensions of Content of Policy and Context of Implementation. Therefore, this study addresses this gap by examining how these two dimensions influence the implementation of the free WiFi policy in supporting Smart Citydevelopment in Banda Aceh.

In response to these gaps, this study investigates the implementation of the free WiFi policy in public parks in Banda Aceh by employing Merilee S. Grindle's Policy Implementation Theory. Particular attention is given to the dimensions of Content of Policy and Context of Implementation to understand how the policy has been implemented and to identify factors affecting its effectiveness in supporting Smart Citydevelopment. A qualitative descriptive approach was adopted to explore the implementation of the free WiFi policy from the perspectives of policy implementers and service users. Data were obtained through in-depth interviews, field observations, and documentation involving officials from Diskominfotik Banda Aceh, technical officers, park security personnel, and members of the community, including university students who regularly use the service. The collected data were analyzed using the interactive model developed by Miles and Huberman, while source and method triangulation were employed to enhance data credibility.

This study is significant both theoretically and practically. From a theoretical perspective, it is expected to contribute to the understanding of how public policies are implemented, particularly by applying Merilee S. Grindle's policy implementation theory in the context of Smart Citydevelopment. From a practical perspective, This study contributes to the growing literature on public policy implementation by demonstrating the applicability of Merilee S. Grindle's framework within the context of digital public services and Smart Citydevelopment. Practically, the findings may assist the Banda Aceh Government in improving public WiFi management, strengthening institutional coordination, and expanding equitable access to digital services across the city.

In this study, policy implementation is defined as the process of executing public policies so that predetermined objectives can be achieved effectively through the involvement of various actors, resources, and implementation environments. Free WiFi refers to a wireless internet service provided by the Government of Banda Aceh in public places free of charge as part of digital-based public services. The Smart Cityconcept refers to urban development that utilizes information and communication technology to improve the quality of public services, the effectiveness of government governance, and the quality of life of the community.

This article consists of several sections. The first section is the Introduction, which explains the background, literature review, research gap, research objectives, research methods, significance of the study, conceptual definitions, and the organization of the paper. The next section discusses the research methods used in this study. Furthermore, the article presents the research findings and discussion on the implementation of the free WiFi provision policy based on the dimensions of Content of Policy and Context of Implementation according to Merilee S.

Grindle. The final section contains the conclusions and recommendations, which are expected to provide input for the development of free WiFi provision policies in supporting Smart Citydevelopment in Banda Aceh.

Theoretical Framework

This study employs the Policy Implementation Theory proposed by Merilee S. Grindle in Politics and Policy Implementation in the Third World (1980). According to this theory, the success of public policy implementation depends not only on the quality of the policy itself but also on how the policy is implemented in practice. Grindle categorizes the determinants of implementation success into two major dimensions: Content of Policy and Context of Implementation. These dimensions have continued to be widely adopted in contemporary public administration studies because they provide a comprehensive analytical framework for examining the interaction between policy design, institutional settings, implementing actors, and target groups.

1. The Selection of the Theory

The selection of Merilee S. Grindle's policy implementation theory is based on its suitability for analyzing the implementation of the free WiFi policy in Banda Aceh city parks as part of Smart Citydevelopment. Recent studies indicate that policy implementation is influenced not only by policy objectives but also by institutional capacity, stakeholder coordination, resource availability, and community participation. Grindle's framework remains highly relevant because it explains policy implementation through two complementary dimensions: Content of Policy, which examines the design and objectives of a policy, and Context of Implementation, which emphasizes institutional conditions, actor interactions, and environmental factors affecting implementation. This framework has been widely applied in recent studies of public service reform, digital governance, and policy implementation in Indonesia.

In this study, the free WiFi program represents a digital public service policy intended to expand internet access, strengthen digital literacy, and support Smart Citydevelopment in Banda Aceh. Therefore, Grindle's theory provides an appropriate analytical framework because it enables a comprehensive assessment of both policy design and implementation processes, allowing the study to evaluate whether the objectives of the free WiFi policy have been effectively achieved within the local implementation context.

2. The Connection of the Theory

Merilee S. Grindle's implementation theory is highly relevant to this study because the implementation of the free WiFi provision policy depends not only on the availability of internet infrastructure but also on policy design, institutional capacity, stakeholder collaboration, and community responsiveness (Mubarok et al. 2020). Recent studies have confirmed that Grindle's framework remains applicable in analysing digital governance, Smart City initiatives, and electronic public service implementation in Indonesian local governments. In the Content of Policy dimension, Grindle explains that policy implementation success is influenced by six main elements: Interest Affected, Type of Benefits, Extent of Change Envisioned, Site of Decision Making, Program Implementers, and Resources Committed. These six elements are highly relevant for explaining how the Banda Aceh City Government, through Diskominfotik (the Office of Communication, Informatics, and Statistics), designed and implemented the free WiFi program as part of a digital-based public service initiative.

Furthermore, the Context of Implementation dimension emphasises the importance of institutional characteristics, actor collaboration, political commitment, and public responsiveness in determining implementation success (Prihatin & Wicaksono. 2021). Similar findings have been reported in recent studies on Smart Citygovernance and digital public services, which highlight that collaboration among government agencies, service providers, and citizens significantly influences policy outcomes.

3. The Application of the Theory

In this study, Grindle's policy implementation theory is used as the primary analytical framework to guide data collection through interviews, observations, and field documentation, as well as to analyse the findings using indicators adapted from Grindle's policy implementation model. Recent studies have demonstrated that Grindle's framework remains highly relevant for qualitative policy implementation research because it enables researchers to examine both policy

content and implementation context systematically. Grindle's theory consists of two principal dimensions Content of Policy and Context of Implementation which have been widely adopted to evaluate policy implementation across various public sectors. In this study, the Content of Policy dimension is employed to examine the government's objectives in providing free WiFi facilities in Banda Aceh city parks, identify the groups affected by the policy, and analyse the expected benefits of the programme.

The researcher also analyzes the types of benefits generated by the free WiFi program, including benefits for education, public services, the digital economy, and access to information. In addition, the study investigates the changes the government aims to achieve through the program, such as improving community digital literacy and accelerating Smart Citydevelopment. The study further examines the authorities responsible for determining the free WiFi policy, particularly the Site of Decision Making. Moreover, the researcher analyzes how the free WiFi program is implemented, including the division of responsibilities among Diskominfotik, PT Telkom Indonesia, and city park security officers. The study also evaluates the available resources, such as budget adequacy, network infrastructure, WiFi equipment, technical personnel, and technological support for program implementation.

In the Context of Implementation dimension, the researcher analyzes Power, Interests, and Strategies of Actors Involved, focusing on the collaboration between the government, the internet service provider, and field officers in managing the free WiFi facilities. Institution and Regime Characteristics are used to evaluate the commitment of the Banda Aceh City Government to maintaining and improving the free WiFi program as part of its Smart Citypolicy. Compliance and Responsiveness are used to analyze how the community uses the free WiFi facilities, the level of participation of students and university students in utilizing the service, their involvement in maintaining public facilities, and how the government responds to complaints and feedback from free WiFi users.

Thus, all concepts within Merilee S. Grindle's policy implementation theory are translated into operational indicators in this study so that they can be used to explain how the free WiFi provision policy in Banda Aceh city parks is implemented in practice. The analysis of these two dimensions is expected to provide a comprehensive picture of the factors influencing the success of policy implementation and the role of the policy in supporting Smart Citydevelopment in Banda Aceh. This is also consistent with the findings of the study, which indicate that the success of the program depends on the quality of the policy content, the cooperation between Diskominfotik and PT Telkom Indonesia, the availability of resources, and the active participation of the community in using and maintaining the free WiFi facilities.

Literature Review

The implementation of public policy has long been recognized as one of the most critical stages in achieving policy objectives (Wijaya et al. 2023). A well-formulated policy does not automatically produce successful outcomes because its effectiveness depends on how the policy is translated into practical actions within society (Kusumastuti & Rouli. 2021). For this reason, policy implementation has become an important area of study in public administration, particularly in examining whether government programs are capable of delivering the expected public benefits. Various scholars have emphasized that implementation is influenced not only by policy design but also by institutional capacity, stakeholder interaction, resource availability, and the surrounding socio-political environment. Numerous implementation models have been developed to explain why some public policies succeed while others encounter obstacles. Among the most frequently adopted models are those proposed by Edward III (1980), Mazmanian and Sabatier (1983), Van Meter and Van Horn (1975), and Merilee S. Grindle (1980). Although each framework offers different analytical perspectives, Grindle's model is considered particularly comprehensive because it simultaneously examines policy characteristics and implementation environments. Rather than focusing solely on administrative procedures, the model incorporates interactions among implementing organizations, decision makers, target groups, available resources, and external political conditions.

This study adopts the Policy Implementation Theory introduced by Merilee S. Grindle in Politics and Policy Implementation in the Third World (1980). Grindle argues that

implementation outcomes are determined by two closely related dimensions: Content of Policy and Context of Implementation. The first dimension concerns the substance of the policy, including the interests affected, expected benefits, intended changes, decision-making authority, implementing agencies, and committed resources. The second dimension focuses on the implementation environment, including institutional characteristics, power relations, stakeholder interests, political support, and the responsiveness of target groups. These dimensions provide a comprehensive analytical framework for understanding why similar policies may generate different outcomes across different settings.

The continued relevance of Grindle's framework has been demonstrated in many recent studies of public policy implementation. Mubarok et al. (2020) argued that Grindle's model remains one of the most comprehensive approaches because it combines policy substance with implementation context when evaluating government programs. Likewise, Prihatin and Wicaksono (2021) employed Grindle's framework to analyze forestry policy implementation and concluded that successful implementation depends on the interaction between policy content and institutional conditions. More recently, Wijaya et al. (2023) found that policy implementation effectiveness is strongly influenced by coordination among implementing agencies, institutional commitment, and community participation, all of which correspond closely to Grindle's analytical dimensions.

Within the context of Smart Citydevelopment, public WiFi has increasingly been regarded as part of digital public service innovation (Wahyuni et al. 2021). Previous studies have primarily evaluated public WiFi from technological perspectives, including network quality, user satisfaction, service effectiveness, and infrastructure readiness (Fazil et al. 2022). While these studies provide valuable insights into technical performance, relatively few have examined free public WiFi as a public policy whose implementation is influenced by institutional arrangements, stakeholder collaboration, and policy design. Consequently, the implementation process itself remains insufficiently explored. This limitation is particularly evident in studies concerning Banda Aceh. Existing research has generally focused on Smart Cityinitiatives, electronic government services, or digital infrastructure without specifically analyzing how the implementation of the free WiFi policy is shaped by policy content and implementation context. As a result, empirical evidence explaining the interaction between government institutions, technical implementers, and community responses remains limited.

Accordingly, this study seeks to address that gap by employing Merilee S. Grindle's policy implementation framework to analyze the implementation of the free WiFi policy in Banda Aceh City. The study specifically examines how the dimensions of Content of Policy and Context of Implementation influence the effectiveness of the program in supporting Smart Citydevelopment. Through this approach, the research is expected to contribute both to the empirical literature on digital public services and to the broader discussion of policy implementation in developing countries.

Methods

Research Design

This study employed a qualitative approach with a descriptive research design. A qualitative approach is appropriate for exploring social phenomena and understanding the perspectives, experiences, and interactions of stakeholders involved in policy implementation (Grindle, 1980). The qualitative approach was selected because it enables researchers to obtain an in-depth understanding of policy implementation processes, stakeholder interactions, and community experiences within their natural settings. The descriptive research design was employed to provide a systematic description of the implementation of the free WiFi policy based on actual conditions observed in the field without manipulating the research setting. The analysis of policy implementation was guided by Merilee S. Grindle's implementation framework, which has been widely applied in recent studies to evaluate public service policies, digital governance, and Smart City initiatives through the dimensions of Content of Policy and Context of Implementation.

Data Sources

This study used both primary and secondary data. Primary data were obtained through in-depth interviews, field observations, and documentation. Research informants were selected using a purposive sampling technique, based on the consideration that they possessed knowledge, experience, and direct involvement in the implementation of the free WiFi program in Banda Aceh city parks. The informants consisted of:

a. Officials from the Banda Aceh Office of Communication, Informatics, and Statistics (Diskominfotik), as the institution responsible for designing, managing, and evaluating the free WiFi program.
b. Field technical officers and park security officers, as they were responsible for monitoring, maintaining, and reporting network disruptions or WiFi equipment damage.
c. Community members and university students using the free WiFi service, as they were the target groups who directly experienced the benefits and challenges of the policy implementation.

Secondary data were obtained from official documents of the Banda Aceh City Government, Mayor Regulation of Banda Aceh Number 18 of 2020 concerning Banda Aceh Smart City, the Banda Aceh Smart City Master Plan 2019–2029, reports from Diskominfotik, cooperation documents with PT Telkom Indonesia, scientific articles, national and international journals, and other references relevant to policy implementation, Smart City development, and public WiFi service provision.

Instruments

The researcher served as the primary instrument (human instrument), as qualitative research places the researcher in a central role in collecting information from various perspectives of the informants and analyzing the data. To support the data collection process, several supporting instruments were used:

a. Semi-structured interview guidelines developed based on the dimensions of Merilee S. Grindle's implementation theory.
b. Observation sheets used to record the physical condition of the free WiFi facilities, user activities, and the environmental conditions of the research sites.
c. Documentation, including photographs of interview activities, WiFi equipment conditions, research locations, and official documents related to the free WiFi policy.

The interview guidelines were developed based on the two dimensions of Grindle's theory. The Content of Policy dimension includes Interest Affected, Type of Benefits, Extent of Change Envisioned, Site of Decision Making, Program Implementers, and Resources Committed. The Context of Implementation dimension includes Power, Interests, and Strategies of Actors Involved, Institution and Regime Characteristics, and Compliance and Responsiveness. These instruments enabled the researcher to obtain clear and detailed information in accordance with the research objectives.

Data Collection

Data collection was conducted through several stages:

a. Field observation was carried out at the research sites, namely Bustanussalatin Park (Taman Sari), Tibang Urban Forest, and the PLTD Apung area in Banda Aceh. The observations aimed to examine the condition of the free WiFi facilities, how the community utilized internet access, and the supporting infrastructure.
b. In-depth interviews were conducted with all research informants. The interviews were conducted directly using a simple interview guide, allowing informants to explain their experiences and opinions in detail regarding the free WiFi facilities in the city parks. The researcher asked main questions based on the interview guide and developed follow-up questions according to the informants' responses to obtain more comprehensive information.
c. Document collection involved gathering official documents, photographs and videos of research activities, audio recordings of interviews, government policies, official news

releases, and other supporting documents related to the free WiFi program in Banda Aceh city parks.

All collected data were then transcribed, categorized according to the research indicators, and prepared for analysis.

Data Analysis

Data were analyzed using the interactive analysis model of Miles, Huberman, and Saldaña (2014), which consists of four stages:

a. Data collection through interviews, observations, and documentation.
b. Data condensation by selecting, simplifying, categorizing, and focusing the data according to Merilee S. Grindle's implementation indicators.
c. Data display in the form of narrative descriptions, matrices, and tables to facilitate understanding of the relationships among the findings.
d. Conclusion drawing and verification by interpreting the findings based on policy implementation theory and rechecking the obtained data.

The analysis focused on identifying findings related to the two main dimensions of Grindle's theory. Thus, each interview result was categorized into the indicators of Content of Policy and Context of Implementation.

Data Accuracy

To ensure data accuracy, several verification techniques were applied throughout the research process. All interviews were audio-recorded and fully transcribed to prevent information loss. The researcher compared interview results with field observation findings and official government documents as a form of source triangulation. In addition, unclear information was rechecked through follow-up interviews (member checking) with several key informants. All data were analyzed systematically based on the theoretical indicators to ensure consistency in the conclusions drawn from the findings.

Trustworthiness

The trustworthiness of the data was maintained through four criteria: credibility, transferability, dependability, and confirmability, following the concept proposed by Lincoln and Guba (1985). Credibility was ensured through triangulation and member checking. Transferability was maintained by providing detailed descriptions of the research context and informant characteristics. Dependability was achieved by documenting the entire research process systematically. Confirmability was ensured by verifying that all findings were derived from field data rather than the researcher's assumptions. These strategies were employed to enhance the rigor and trustworthiness of this qualitative study.

Ethical Considerations

This study was conducted in accordance with the principles of social research ethics and the Declaration of Helsinki. Prior to the interviews, all informants were informed about the research objectives, procedures, potential benefits, and their right to refuse or withdraw from participation at any time. All informants provided voluntary informed consent to participate in the study. The confidentiality of informants was protected by using codes or categories in data presentation. This study did not involve medical interventions or experiments involving participants; therefore, ethical clearance from an ethics committee was not required. All data obtained were used solely for academic and research purposes.

Findings

This study found that the implementation of the free WiFi facility policy in Banda Aceh city parks has generally been carried out effectively and has supported the government's efforts to realize a Smart City. The findings are organized based on the two main dimensions of policy implementation proposed by Merilee S. Grindle (1980), namely Content of Policy and Context of Implementation.

Content of Policy

The findings indicate that the provision of free WiFi in Bustanussalatin Park, Tibang Urban Forest, and the PLTD Apung area is intended to meet the community's need for internet access and to support digital-based public services (Figure 1). Informants from Diskominfotik explained that the free WiFi program is one of the government's efforts to improve community digital literacy and expand access to information in public spaces. As stated by one informant:

"This program also provides direct benefits to the community, especially university students and school students who use the WiFi to complete assignments, search for references, access academic information, and obtain internet access in public spaces."

The study also found that the government aims to improve digital literacy, expand equitable internet access, and enhance the quality of public services. In the implementation process, Diskominfotik plays a central role in decision-making, including determining installation locations and managing the program. Meanwhile, PT Telkom Indonesia serves as the technical partner responsible for providing the network infrastructure and WiFi equipment.

The resources allocated for the program are relatively adequate, as they are supported by government funding, cooperation with PT Telkom Indonesia, network infrastructure, and technical personnel. However, several obstacles were identified, including network disruptions during peak usage periods, equipment damage, router theft, and decreased network quality due to weather conditions.

Figure 1: Documentation of interviewees: representatives from Diskominfotik, students at Tibang Urban Forest, and security personnel at PLTD Apung.

Context of Implementation

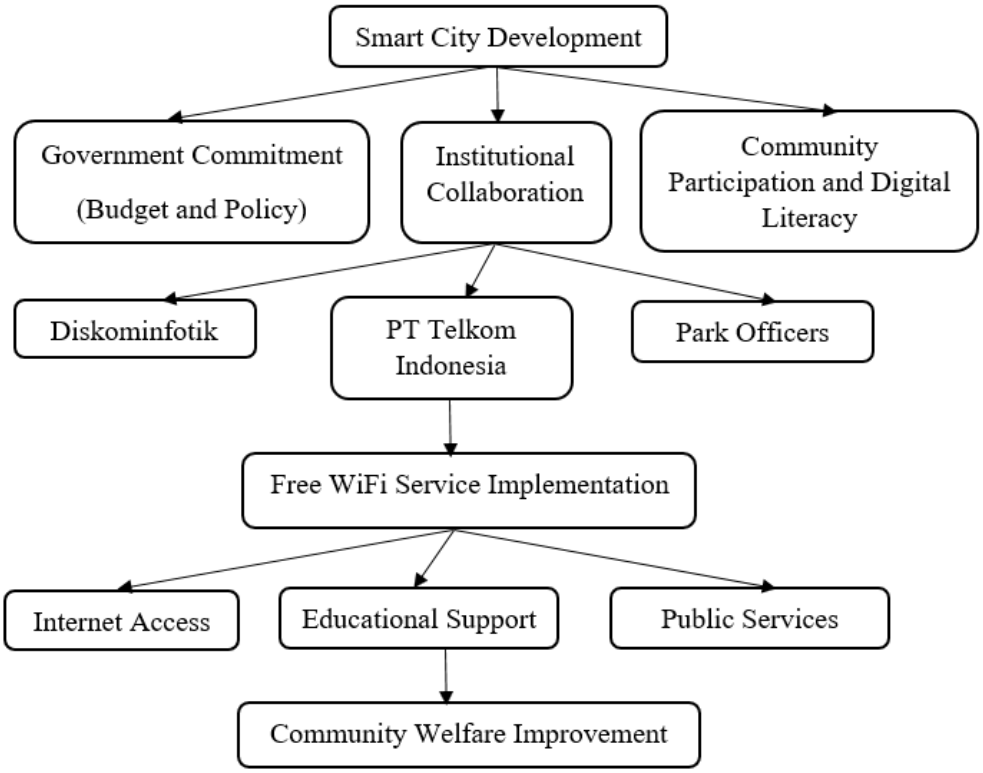
The success of the free WiFi policy is highly dependent on cooperation among several actors. Diskominfotik, representing the local government, plays a key role in regulating and managing the policy. PT Telkom Indonesia is responsible for providing internet network services, installing the required equipment, and repairing technical problems related to the free WiFi facilities. Park security officers act as intermediaries between the community and the local government by reporting complaints or suggestions regarding the WiFi facilities. Meanwhile, the community serves as the primary user of the free WiFi facilities in Banda Aceh city parks.

In addition to inter-institutional cooperation, the study found that the commitment of the local government is essential for maintaining the sustainability of the free WiFi program. The government has demonstrated this commitment by allocating sufficient funding, conducting regular maintenance of WiFi equipment, and maintaining cooperation with PT Telkom Indonesia.

Nevertheless, community members expressed expectations that the coverage of the free WiFi service could be expanded so that more people could benefit from the program. The study found that the community's response to the program has generally been positive. Most users utilize the free WiFi for productive purposes; however, several issues remain, such as the lack of awareness among some users regarding the maintenance of public facilities, which has led to incidents of WiFi equipment loss.

The government has established a complaint-handling mechanism through field officers, who forward reports to Diskominfotik and PT Telkom Indonesia technicians so that technical problems can be addressed and resolved as quickly as possible (Figure 2).

Figure 2: Flowchart Collaboration Mechanism in the Implementation of the Free WiFi Policy in Banda Aceh City Parks



Discussion

The implementation of digital public service policies has become an important component of Smart City development because digital transformation is no longer limited to the adoption of information technology but also involves institutional readiness, public participation, and effective governance (Makmun et al. 2025). In this regard, Merilee S. Grindle's (1980) policy implementation theory provides a useful framework for understanding how policy outcomes are influenced by both the substance of the policy and the environment in which it is implemented (Ruliyanta et al. 2023). Recent literature similarly argues that successful Smart City initiatives depend on the interaction between technological infrastructure, organizational capacity, stakeholder collaboration, and citizens' ability to utilize digital services effectively. Consequently, evaluating a digital public service program requires attention not only to technical performance but also to the institutional and social conditions that shape implementation (Isabella & Agustian. 2023).

Against this background, the present study sought to understand how the implementation of the free WiFi policy in Banda Aceh's public parks reflects the dimensions of Content of Policy and Context of Implementation proposed by Grindle (Fazil et al. 2022). More specifically, the study explored whether the objectives of the policy have been translated into practical outcomes and identified the factors that either facilitate or hinder its implementation in supporting the Smart City agenda.

The empirical findings indicate that the free WiFi program has generally been implemented in accordance with its intended objectives (Genda et al. 2024). Across Bustanussalatin Park, Tibang Urban Forest, and the PLTD Apung area, public internet access has become easier for visitors, particularly for students, university students, and other community members who rely on internet connectivity for daily activities. The availability of free internet has also contributed to easier access to educational resources, online information, and several forms of digital public services. Nevertheless, field observations and interviews also revealed that implementation is still

constrained by several operational issues, including unstable network performance during peak usage, weather-related technical disruptions, damaged equipment, and the limited capacity of the existing network infrastructure (Mahayani, 2024).

One of the most notable findings concerns the way students have incorporated the free WiFi service into their academic routines. Many respondents explained that they frequently visit public parks not only for recreation but also to complete university assignments, search for scientific literature, attend online classes, and collaborate with classmates. This pattern suggests that the function of public open spaces in Banda Aceh is gradually evolving. Rather than serving exclusively as recreational areas, these locations have also become informal learning environments where digital technology supports educational activities outside traditional classrooms. Such findings demonstrate that the policy contributes directly to expanding educational opportunities through accessible digital infrastructure (Muttaqin et al. 2024).

At the same time, the study identified an issue that deserves particular attention. Although the infrastructure is widely available, productive internet use has not yet become the dominant pattern among all users. Interviews with both government officials and park users indicate that entertainment, social networking, and video streaming remain the primary reasons for accessing the free WiFi service. This situation was not entirely anticipated because one of the government's broader objectives is to strengthen digital literacy and encourage more productive use of digital technology. The findings therefore imply that providing internet access alone does not automatically lead to meaningful improvements in digital capability.

The results obtained in this study are consistent with previous research emphasizing that the sustainability of public WiFi programs depends on institutional collaboration and adequate technical infrastructure. The cooperation between Diskominfotik Banda Aceh and PT Telkom Indonesia illustrates how clearly defined institutional responsibilities can support the continuity of digital public services. Likewise, earlier studies have reported that affordable public internet access can facilitate learning activities, improve information accessibility, and encourage broader participation in digital society. The present findings reinforce those conclusions by demonstrating similar conditions within the context of Banda Aceh.

However, this study also provides evidence that differs from some earlier assumptions suggesting that the expansion of internet infrastructure will naturally improve community digital literacy. The experiences reported by participants indicate that increased connectivity does not necessarily translate into more productive patterns of technology use. Instead, digital literacy appears to be influenced by several interconnected factors, including educational background, individual digital skills, patterns of internet use, and the availability of continuous educational support. Consequently, the effectiveness of digital public service policies cannot be evaluated solely through infrastructure indicators but must also consider behavioural and social dimensions.

Viewed through Grindle's policy implementation framework, these findings illustrate the close relationship between Content of Policy and Context of Implementation. The objectives, expected benefits, implementing organizations, and allocated resources demonstrate that the policy has been designed to support digital transformation within Banda Aceh. Nevertheless, implementation outcomes continue to depend on external conditions such as institutional coordination, community participation, infrastructure reliability, and users' digital competence. This interaction confirms Grindle's argument that successful implementation is achieved when policy content is supported by a conducive implementation environment rather than by policy design alone.

Despite these encouraging findings, several limitations should be acknowledged. The study was conducted only in three public parks that provide free WiFi facilities and relied on qualitative evidence obtained from a limited number of informants. For this reason, the findings should not be interpreted as representing all public WiFi services across Banda Aceh. Even so, the evidence gathered during the fieldwork suggests a broader proposition that may be examined in future studies, namely that the effectiveness of free public WiFi policies is determined by the combined influence of infrastructure quality, institutional coordination, community digital literacy, and public participation in maintaining and utilizing digital facilities responsibly.

From a practical perspective, the findings provide several recommendations for local government. Increasing bandwidth capacity, extending WiFi coverage to additional public spaces, strengthening equipment maintenance, and improving security measures would enhance service quality. Equally important is the implementation of continuous digital literacy programs that encourage citizens to use public internet facilities for educational, economic, and other productive purposes. Ultimately, Smart City development should not be understood merely as the expansion of digital infrastructure. Sustainable digital transformation also requires investments in human capacity, institutional collaboration, and community engagement. Future studies may complement these findings by employing quantitative or mixed-method approaches to examine user satisfaction, network performance, and the long-term contribution of public WiFi programs to digital literacy and Smart City development.

Conclusion

This study aimed to analyze the implementation of the free WiFi facility policy in Banda Aceh city parks in supporting Smart City development by applying Merilee S. Grindle's policy implementation theory, which consists of two main dimensions: Content of Policy and Context of Implementation. The analysis of these dimensions was conducted to examine how the policy was implemented, the factors that supported and hindered its implementation, and its contribution to improving digital-based public services in Banda Aceh. These objectives were achieved through an examination of the implementation of the free WiFi program in Bustanussalatin Park, Tibang Urban Forest, and the PLTD Apung tourism area.

The findings indicate that, from the Content of Policy dimension, the free WiFi policy has been designed in accordance with the community's need for internet access in public spaces. The program provides tangible benefits for the community, particularly for school students, university students, and park visitors, by facilitating access to information, supporting educational activities, enabling access to digital-based public services, and supporting digital economic activities. The Banda Aceh City Government, through Diskominfotik, has also established clear objectives, namely improving community digital literacy, expanding equitable internet access, and accelerating the realization of a Smart City. In addition, the program implementation is supported by a clear division of roles between Diskominfotik as the policy implementer and PT Telkom Indonesia as the technical partner responsible for internet network provision. Nevertheless, the study identified several obstacles, including limited network capacity during periods of high user demand, damage to WiFi equipment caused by weather conditions, and incidents of equipment loss that affected service quality.

From the Context of Implementation dimension, the findings show that policy implementation success is influenced by effective coordination among Diskominfotik, PT Telkom Indonesia, park security officers, and the community as service users. The commitment of the Banda Aceh City Government to maintaining the free WiFi program as part of its digital-based public service initiative is an important factor supporting the sustainability of the policy. The study also found that the community's response to the program has generally been positive, as the free WiFi facilities are considered highly beneficial for daily activities. However, the level of community digital literacy in utilizing the internet productively still needs to be improved so that the policy objectives go beyond merely providing internet access and also contribute to improving the quality of human resources in the digital era.

This study has important implications for the development of public administration, particularly in understanding how public policies involving information technology can be implemented effectively. The findings support Merilee S. Grindle's theory, which argues that policy success depends not only on the content of the policy itself but also on the surrounding conditions, including how relevant actors cooperate, the level of commitment of implementing institutions, and the response of the target groups. The study also contributes to understanding how public WiFi policy implementation can serve as a form of innovation in digital public services for Smart Citydevelopment at the local government level.

However, this study has several limitations. First, it focuses only on three city park locations that provide free WiFi facilities: Bustanussalatin Park, Tibang Urban Forest, and the PLTD Apung tourism area. Therefore, the findings cannot fully represent the overall implementation of the

public WiFi policy across all areas of Banda Aceh. Second, the study employed a qualitative approach, meaning that the findings are primarily based on the experiences, perceptions, and views of the involved actors, without conducting more in-depth measurements of user satisfaction or overall service quality.

Despite these limitations, the study provides an important contribution by identifying factors that support and hinder the implementation of the free WiFi policy, including infrastructure conditions, institutional coordination, digital literacy, and community participation. These findings can serve as a basis for local government evaluation in improving the effectiveness of digital-based public service policies.

To gain a more comprehensive understanding of the effectiveness of the free WiFi policy, future studies should consider using quantitative or mixed-methods approaches. Such approaches would enable researchers to measure policy effectiveness, network quality, community satisfaction, and the impact of the free WiFi program on improving digital literacy more comprehensively. Future research could also be conducted in other public spaces or by comparing the implementation of free WiFi policies across several regions that have adopted the Smart City concept. This would provide a broader understanding of free WiFi policies and their implementation in different regional contexts.

From a policy perspective, the Banda Aceh City Government should increase bandwidth capacity at locations with high numbers of users and expand the coverage of free WiFi services to other public spaces, such as additional city parks and major public gathering areas. The government should also strengthen the security and maintenance systems for network equipment to ensure better service quality. Furthermore, it is necessary to implement continuous digital literacy education programs to help community members understand how to use the internet safely and effectively. Through these efforts, the quality of digital-based public services is expected to improve while strengthening the implementation of a more inclusive, effective, and sustainable Smart City development in Banda Aceh.

Ethics approval

This study did not require formal approval from an Institutional Review Board (IRB) or Ethics Committee because it involved no medical intervention, clinical experimentation, or vulnerable populations. The research was conducted through interviews, observations, and documentation related to the implementation of a public policy in public spaces. Prior to data collection, all participants were informed about the objectives of the study and voluntarily agreed to participate. Written or verbal informed consent was obtained from all participants before the interviews were conducted. Participants were assured that their identities would remain anonymous, that the information provided would be treated confidentially, and that participation was entirely voluntary. This study was conducted in compliance with the Declaration of Helsinki.

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Competing interests

All the authors declare that there are no conflicts of interest.

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Underlying data

Derived data supporting the findings of this study are available from the corresponding (the activity of conveying information, messages, or ideas in writing from one party to another) author on reasonable request.

Declaration of artificial intelligence use

This study used artificial intelligence (AI) tools during manuscript preparation in the following capacities:

1. Language refinement, including improving grammar, sentence structure, and readability of the manuscript.
2. Content summarization, assisting in summarizing research findings and conclusions more concisely.
3. Technical writing assistance, providing suggestions for organizing academic writing and improving the clarity of technical descriptions.

Artificial intelligence tools were not used to analyze research data, interpret interview results, or draw the final conclusions of this study. We confirm that all AI-assisted processes were critically reviewed by the authors to ensure the integrity and reliability of the results. The final decisions, interpretations, and conclusions presented in this article were solely made by the authors.

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