

Research Article

Smart Village Policy in 3T Regions for Accelerating Village SDGs Achievement: Opportunities and Challenges

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Abstract. Underdeveloped, frontier, and outermost (3T) regions in Indonesia face persistent gaps in infrastructure and public services that pose a distinct challenge to accelerating the achievement of Village SDGs. Studies that explicitly link Smart Village policy implementation with Village SDGs achievement in these regions remain scarce. This study analyzes the implementation of Smart Village policy in 3T regions through the lens of communication, resources, disposition, and bureaucratic structure, and identifies the opportunities and challenges it presents for accelerating Village SDGs achievement. A descriptive qualitative approach with a case study design was employed in Nunukan Regency, North Kalimantan, across three representative zones: Sebatik, Krayan, and Lumbis. The study population comprised Smart Village stakeholders in Nunukan Regency, with a purposively selected sample of 12 informants representing district government, village government, village facilitators, and community leaders. Data were collected through in-depth interviews, field observation, and documentation, and analyzed using the Miles and Huberman interactive model, comprising data reduction, data display, and conclusion drawing, with thematic categories based on the four policy implementation indicators of Edward III. The findings show that implementer disposition is the primary strength across all zones, while resources, bureaucratic structure, and digital inclusion remain weak points most strongly shaped by geographic conditions. The policy opens opportunities in public services, village economy, education, health, and governance, but faces challenges in infrastructure, human resources, bureaucratic fragmentation, social exclusion, privacy, and financing sustainability. The study concludes that accelerating Village SDGs achievement requires zone-differentiated strategies and an explicit linkage between village digital data and the development planning cycle.

Keywords: 3T Regions; Nunukan Regency; Policy Implementation; Smart Village; Village Sdgs.

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1. Introduction

Underdeveloped, frontier, and outermost (3T) regions in Indonesia continue to be overshadowed by gaps in basic infrastructure, digital connectivity, and public service quality compared with other regions. This condition poses a distinct challenge to accelerating the achievement of the Sustainable Development Goals at the village level. The government operationalizes this agenda through the Village SDGs scheme as an instrument to close such gaps and realize welfare, while simultaneously accelerating the achievement of national SDGs (Aly et al., 2022). Smart Village policy has emerged as one breakthrough to support the acceleration of sustainable village development through digitalization and innovation in the management of village resources (Prayitno et al., 2021). However, the implementation of Smart Village in 3T regions faces problems that are far more complex than those in more advanced village areas, primarily due to infrastructure limitations, remote geographic conditions, and the sociocultural diversity of local communities (Hombone, 2025). Empirical

data reinforce the urgency of this issue. Research on a number of 3T villages across eleven provinces indicates that regional budget allocation and domestic investment remain the main determinants of village development, while resource governance on the ground has yet to be optimal (Febriyanto & Darmawan, 2024). Another study in Nunukan Regency, North Kalimantan, further demonstrates that public service management in 3T regions still requires stronger institutional capacity (Herlawan & Simangunsong, 2022). This study specifically takes Nunukan Regency as its location, representing a 3T region that shares a direct border with Malaysia. The geographic complexity of its coastal areas, outermost islands, and remote border hinterlands reflects the diverse challenges of policy implementation also faced by many other 3T regions in Indonesia. This issue becomes even more complex when linked to national Village SDGs achievement. Statistics Indonesia (Badan Pusat Statistik) recorded 84,276 village-level administrative areas in Indonesia in 2024, yet the distribution of village development status remains uneven across regions. This condition makes accelerating Village SDGs achievement a distinct challenge for villages in 3T regions that are structurally disadvantaged in terms of infrastructure and resources (Simamora et al., 2024). This underscores a genuine research gap: studies that explicitly link Smart Village policy implementation with Village SDGs achievement in 3T regions remain very limited, as most prior research has focused solely on the technical aspects of village digitalization without connecting it to a policy implementation theoretical framework or a comprehensive set of SDGs indicators. Theoretically, however, the factors of communication, resources, disposition, and bureaucratic structure, which lie at the core of the policy implementation process, should serve as important explanatory variables for why Village SDGs achievement differs across regions, particularly in 3T areas where bureaucratic capacity tends to be more limited than in more advanced villages.

Based on this problem, the present study offers novelty by integrating an analysis of Smart Village policy implementation, using the factors of communication, resources, disposition, and bureaucratic structure, with Village SDGs indicator achievement in 3T regions as a single unified analytical framework. Prior research has tended to evaluate Smart Village and Village SDGs separately. This study instead positions Smart Village as a policy instrument whose success is measured directly by its contribution to accelerating SDGs achievement at the village level, while also mapping the opportunities and challenges of its implementation contextually in border and hinterland regions that have received comparatively little attention in public policy research. This novelty is also relevant given that Village SDGs risk becoming a mere administrative instrument if their implementation is not accompanied by genuine grassroots empowerment (Anggraini, 2025). The purpose of this study is to analyze the implementation of Smart Village policy in 3T regions in terms of the factors of communication, resources, disposition, and bureaucratic structure, and to identify the opportunities and challenges faced in supporting the acceleration of Village SDGs achievement. This study also aims to formulate contextual policy strategies for accelerating village digital transformation in underdeveloped, frontier, and outermost regions. The benefits of this study are twofold. Theoretically, this study is expected to enrich the public policy literature by filling a research gap that directly links Smart Village implementation with Village SDGs achievement in 3T regions (Iskandar, 2021). Practically, the findings are expected to provide input for local and village governments in designing Smart Village policies that are more adaptive to the geographic and sociocultural characteristics of 3T regions. This study is also expected to serve as a strategic reference for the sustainable acceleration of SDGs achievement at the village level.

2. Literature Review

This study rests on two main theoretical foundations. The first is George C. Edward III's theory of public policy implementation, which explains that policy implementation success is shaped by four factors: communication, resources, disposition, and bureaucratic structure (Sutikno et al., 2023). This framework is used to dissect how Smart Village policy is translated by village officials and stakeholders in 3T regions. The second is the concept of Smart Village and village digitalization, which positions information technology as a pillar of village economic development and services (Mayasari et al., 2022). This concept is combined with the Village SDGs framework as the operational mechanism for achieving sustainable development goals down to the village level, in alignment with the National Medium-Term Development Plan (Simamora et al., 2024). These two foundations complement one another:

Edward III's theory explains the dynamics of the implementation process, while the Smart Village and Village SDGs concepts explain the substance and outcomes to be measured. Additional support is drawn from research on smart rural-based village development policy innovation, which affirms that the success of village-level policy innovation cannot be separated from local context, institutional capacity, and tiered regulatory support from the central government down to the village (Kagungan & Rosalia, 2022).

Prior empirical studies further substantiate the urgency of this issue. Research covering a number of 3T villages across eleven provinces found that regional budget allocation and domestic investment remain the principal determinants of village development, while on-the-ground resource governance has yet to be optimized (Febriyanto & Darmawan, 2024). A related study conducted in Nunukan Regency similarly found that public service management in 3T regions still requires stronger institutional capacity (Herlawan & Simangunsong, 2022). At the national level, Village SDGs have been shown to be closely aligned with the National Medium-Term Development Plan and the global SDGs agenda (Simamora et al., 2024). A study in Riau Province further found that the success of Village SDGs implementation is strongly influenced by policy design and the availability of fiscal resources, with villages highly dependent on the Village Fund tending to struggle to maintain consistent indicator achievement over time (Mashur et al., 2023). Taken together, these studies indicate that structural and fiscal determinants, rather than technical digitalization alone, remain central to explaining variation in village development and SDGs outcomes across Indonesia's 3T regions.

3. Research Methods

This study employs a descriptive qualitative approach with a case study design. This design was chosen to gain an in-depth understanding of how Smart Village policy is implemented in the real context of a 3T region, along with the accompanying opportunities and challenges (Adlini et al., 2022). The research location was set in Nunukan Regency, North Kalimantan, selected purposively as one of the 3T regencies that shares a direct border with Malaysia. This regency has diverse regional characteristics, encompassing coastal areas and outermost islands, remote border hinterlands, and remote non-border hinterlands, making it representative for illustrating the range of opportunities and challenges in Smart Village implementation across 3T regions in general. The determination of locus villages was carried out through purposive sampling of villages that had implemented Smart Village initiatives and Village SDGs programs. These villages were grouped into three representative zones: the coastal and border-island zone in Sebatik, the border hinterland zone in Krayan, and the non-border hinterland zone in Lumbis. Research informants were also determined through purposive sampling, comprising local government elements from agencies responsible for village community empowerment and communication and informatics, village government elements in the form of village heads and Smart Village operators, village facilitators, and community leaders in each zone. This selection took into account informants' knowledge of and direct involvement in the policy implementation process.

Data collection was carried out through three methods. First, in-depth interviews with informants to explore their experiences and perceptions of policy communication, resource availability, implementer disposition, and bureaucratic structure in Smart Village implementation. Second, field observation of digital infrastructure availability and the utilization of Smart Village services in the locus villages. Third, documentation in the form of policy documents, Village SDGs achievement reports, and village profile data. These three techniques complement one another to produce a comprehensive picture of the policy's opportunities and challenges on the ground. Data analysis was conducted using the Miles and Huberman interactive model, comprising three stages that proceed simultaneously. The first stage is data reduction, to sort and focus information relevant to the four policy implementation indicators of Edward III: communication, resources, disposition, and bureaucratic structure. The second stage is data display, organizing findings into thematic categories of opportunities and challenges in each zone. The third stage is conclusion drawing and verification, to synthesize the findings into a comprehensive picture of Smart Village policy's contribution to accelerating Village SDGs achievement in Nunukan Regency (Adlini et al., 2022). This study also applied source triangulation by comparing information from various types of informants across the three zones, and technique triangulation by comparing

the results of interviews, observation, and documentation, to maintain data credibility and validity.

4. Results and Discussion

Field data collection in Nunukan Regency yielded 12 informants. Three of them were from the district level, representing the village community empowerment agency, the communication and informatics agency, and the district facilitator. The remaining nine informants were from the village level, distributed evenly across the three representative zones: Sebatik as the coastal and border-island zone, Krayan as the border hinterland zone, and Lumbis as the non-border hinterland zone. Interview data were reinforced through field observation on eight indicators of infrastructure and service readiness, policy documentation, and official secondary data from Statistics Indonesia (BPS) Nunukan Regency for the 2024-2026 period. Source and technique triangulation showed a consistent pattern of findings across zones, strengthening the validity of the thematic interpretation based on the four policy implementation indicators of Edward III. In the communication dimension, Smart Village policy has been transmitted through official letters, coordination meetings, technical guidance, mentoring, and instant messaging groups. However, the clarity of benefits and outreach to digitally unreached groups has not been evenly distributed across zones. District-level informants confirmed that policy messages are often received by village officials as an administrative reporting obligation rather than as an instrument for resolving village service problems, and that the purpose and benefit indicators need to be repeated continuously in language close to officials' everyday work. Communication patterns also differ markedly between zones: Sebatik relies on the speed of digital channels such as instant messaging owing to high mobility and economic activity, whereas Krayan and Lumbis depend more on face-to-face communication, with customary leaders, teachers, and hamlet heads serving as the main intermediaries, given limited network coverage and dispersed settlement patterns. The resource dimension emerged as the most dominant differentiating factor across zones. Field observation showed a connectivity quality score of 4 out of 5 in Sebatik, compared with only 2 in Krayan and Lumbis. A similar pattern was observed in the availability of electricity, devices, and operator capacity. Village operators in hinterland areas generally work offline first and then synchronize data once network access becomes available. This adaptive strategy helps maintain service continuity but increases the risk of data duplication and version discrepancies. Dependence on a single operator per village was also consistently observed across all zones, making the capacity and sustainability of human resources a critical single point of failure in policy implementation.

In the disposition dimension, the commitment of officials and operators was found to be high and relatively even across the three zones, reflected in an average score above 3.9 on a 5-point scale. Village heads and operators showed a willingness to complete services despite technical obstacles, particularly when residents experienced direct benefits. Nevertheless, resistance and potential work fatigue emerged when policy applications changed frequently, reporting requirements overlapped, or operators lacked adequate work support. Community concerns about personal data security and digital fraud also affected acceptance levels, particularly among women-led micro, small, and medium enterprises (MSMEs) and elderly residents. The bureaucratic structure dimension showed the weakest condition compared with the other three dimensions, with scores ranging from 2.3 to 3.0. Standard operating procedures for account governance, data backup, version control, operator handover, and disruption escalation have not been standardized across villages. Coordination across villages, sub-districts, and the regency still relies heavily on personal relationships and instant messaging groups. Application duplication and differing reporting formats across programs add to operators' workload and risk lowering data quality. Table 1 presents the analytical scores for the four policy implementation dimensions, together with service benefit and digital inclusion scores, across the three zones, consistently showing a gradation pattern from Sebatik toward Lumbis.

Table 1. Analytical Scores of Smart Village Policy Implementation across Zones in Nunukan Regency (scale 1-5).

Dimension	Sebatik	Krayan	Lumbis	Interpretation
Communication	3.5	2.9	2.6	Sebatik excels in digital-channel speed; hinterland areas require a hybrid approach.
Resources	3.6	2.4	2.0	Connectivity, devices, and regional cost are the main differentiators.
Disposition	4.1	4.0	3.9	Implementer commitment is relatively strong across all zones.
Bureaucratic structure	3.0	2.6	2.3	SOPs and data integration remain weak, especially in difficult-access areas.
Service benefit	3.7	3.0	2.7	Basic administrative services are strongest; sectoral services remain underdeveloped.
Digital inclusion	3.1	2.4	2.2	Assistive services and non-digital alternatives are still needed.

Table 1 shows that Sebatik consistently achieved the highest scores on nearly all dimensions, particularly resources (3.6) and service benefit (3.7). This is consistent with its position as a coastal zone with higher mobility and economic activity. Krayan occupies a middle position, with a disposition score that remains high at 4.0, even though its resources and digital inclusion scores are considerably lower. Lumbis recorded the lowest scores on nearly all dimensions except disposition, reflecting the geographic challenges posed by rivers and dispersed settlements. The numerical pattern in this table confirms that the disposition dimension is relatively unaffected by geographic conditions, whereas the resource, bureaucratic structure, and digital inclusion dimensions are strongly shaped by each zone's characteristics. To further clarify this gradation pattern visually, Figure 2 presents a bar-chart comparison of the six dimensions. Despite these limitations, Smart Village policy in Nunukan Regency opens a number of genuine opportunities for village development, as summarized in Figure 1. In the field of public services, digitalization has accelerated the initial submission of documents, complaints, and service tracking, reducing residents' travel time and cost, particularly in villages with difficult geographic access such as Lumbis. In the field of data and planning, the updating of village profiles and household data integration allows assistance and development programs to be better targeted. In the field of village economy, MSME catalogs, product promotion, and digital payments have begun to be utilized by business actors in Sebatik, although content consistency and market reach still require further mentoring. In the field of education and health, shared access points and health cadre reporting have accelerated information referral in dispersed settlement locations.

In the field of governance, budget publication and data correction channels have contributed to strengthening the transparency and accountability of village government. These six opportunity domains are summarized visually in Figure 1, alongside six corresponding categories of challenges faced in each domain. The contribution of Smart Village policy to accelerating Village SDGs achievement in Nunukan Regency can be observed across eight of the most relevant goals: No Poverty Village, Healthy and Prosperous Village, Quality Village Education, Equitable Village Economic Growth, Village Infrastructure and Innovation, Village without Inequality, Just and Peaceful Village, and Partnership for Village Development. Official data from Nunukan Regency provide relevant context for these achievements. The percentage of poor residents fell from 5.73 percent in 2024 to 5.27 percent in 2025. The Human Development Index stood at 69.87 in 2025, and the open unemployment rate stood at 2.61 percent, with more than half of workers engaged in informal activities. These data suggest that improved household data accuracy through Smart Village has the potential to strengthen the targeting of poverty alleviation and informal employment programs, and is also relevant to the more than twenty-one thousand agricultural business households recorded in Nunukan Regency. However, this contribution will only become tangible if digital data are genuinely used in village deliberations, the formulation of Village Government Work Plans (RKPDs) and Village Budgets (APBDs), program targeting, and benefit evaluation, rather than merely fulfilling a data-input obligation.

Discussion

These dimension-level patterns align closely with prior research. The communication findings are consistent with studies in other Indonesian border regions showing that the effectiveness of digital policy transmission in remote villages is strongly determined by combining formal channels with social approaches centered on local figures (Hombore, 2025), and underscore the importance of tiered regulatory support from the regency down to the village so that policy messages do not remain merely normative (Kagungan & Rosalia, 2022). The resource-dimension findings reinforce earlier evidence that information and communication technology infrastructure gaps remain the primary obstacle to digital transformation in remote and border areas (Hombone, 2025), a pattern also consistent with digital-divide narrowing observed in e-government implementation in other regencies with difficult geographic characteristics (Dimas & Fahlevvi, 2024). The disposition-dimension pattern, strong commitment yet vulnerable to fatigue, is consistent with findings on the importance of individual digital capability as a foundation for the sustainability of Smart Village transformation, which cannot rely on commitment alone without adequate structural support (Siregar, 2024). As shown in Figure 2, the sharpest inter-zone gaps occur in the resource and digital inclusion dimensions, while the disposition dimension remains relatively uniform across the three regions. This pattern confirms that structural and geographic factors, rather than individual commitment alone, are the primary determinants of Smart Village policy implementation success in 3T regions. This finding reinforces the proposition from prior research that public service management in border-characteristic regencies requires sustained institutional capacity strengthening, rather than short-term technical intervention alone (Herlawan & Simangunsong, 2022). The opportunity for strengthening the local-institution-based digital economy, such as through cooperatives, is consistent with findings that technology adoption and expanded market access are key to optimizing MSMEs in areas with limited capital and digital literacy (Dzikrullah & Chasanah, 2024). Similarly, information openness and data-based participatory mechanisms serve as a key instrument for preventing governance irregularities at the village level (Putri, C. M., et al., 2024), reinforcing the governance-related opportunities identified in this study.

Figure 1 shows that each identified opportunity is directly matched by a challenge of comparable weight, meaning that capitalizing on these opportunities cannot be separated from mitigating the corresponding risks. Implementation challenges and risks were consistently identified across all zones, spanning six main categories: infrastructure limitations, human resource vulnerability, bureaucratic structure fragmentation, social exclusion risk, privacy and data security threats, and weak planning for digital service financing sustainability. The risk of social exclusion is most pronounced among elderly residents, residents without devices, and dispersed settlements, as reported by customary-leader and health-cadre informants in Lumbis. This vulnerability is consistent with findings that elderly groups consistently show the lowest levels of digital literacy and penetration compared with other age groups, requiring a tailored mentoring approach (Muljati et al., 2024). Privacy risk also emerged prominently due to the habit of sharing identity documents via instant messaging and using personal accounts for official service purposes, a pattern also found in personal data security studies in other villages, with the potential for data misuse if not accompanied by adequate digital security education (Putri, A., et al., 2024). This multidimensional pattern of challenges is consistent with findings that the digital divide in areas with difficult geographic characteristics cannot be resolved through device provision alone, but requires simultaneous intervention at the level of literacy, data governance, and financing sustainability (Dimas & Fahlevvi, 2024; Hombore, 2025). Overall, these findings confirm that the success of Smart Village policy in 3T regions is determined more by the alignment of service design with local geographic and sociocultural conditions than by the number of applications adopted. The high level of implementer commitment found in the disposition dimension proved insufficient to compensate for weak connectivity, reliance on a single operator, and reporting fragmentation over the long term. A mixed service model, combining digital, offline, face-to-face, mobile, and local-figure-intermediated approaches, proved more inclusive than full digitalization, particularly for the Krayan and Lumbis zones. This finding aligns with the recommendation that Smart Village implementation strategies in border regions should be built through a collaborative governance model sensitive to local sociocultural context, rather than standardizing technical approaches across all regions (Hombore, 2025). Accordingly, the opportunities and challenges identified in this study indicate that accelerating Village SDGs achievement through Smart

Village in 3T regions requires zone-differentiated strategies, strengthening of adaptive bureaucratic structures, and an explicit linkage between village digital data and the village development planning and budgeting cycle.

5. Conclusion

This study concludes that the implementation of Smart Village policy in Nunukan Regency shows a consistent pattern across the four dimensions of Edward III. Implementer disposition is the primary strength, with scores above 3.9 across all zones, while resources, bureaucratic structure, and digital inclusion remain weak points most strongly shaped by geographic conditions, with the sharpest gap occurring between Sebatik as the coastal zone and Krayan and Lumbis as the hinterland zones. This policy opens genuine opportunities in public services, data and planning, village economy, education, health, and governance. However, these opportunities are directly matched by six categories of challenges: infrastructure limitations, human resource vulnerability, bureaucratic fragmentation, social exclusion risk, privacy and data security threats, and weak planning for financing sustainability. Its contribution to accelerating Village SDGs achievement will only become tangible once digital data are genuinely utilized in deliberations, the formulation of RKPDs and APBDs, program targeting, and benefit evaluation, rather than merely fulfilling a data-input obligation.

Based on these conclusions, this study recommends several strategic steps for the Nunukan Regency government and other 3T regions with similar characteristics. First, establish a minimum core service package covering administration, public information, complaints, data updating, and Village SDGs integration, so that all villages have a clear service standard. Second, apply zone-differentiated strategies: strengthening digital integration and the digital economy in Sebatik, prioritizing offline-first service approaches in Krayan, and mobile services with local-figure intermediaries in Lumbis. Third, build human resource resilience through a minimum of two operators per village, accompanied by handover procedures and continuous mentoring, to reduce the risk of single-point failure. Fourth, improve data governance through standardized formats, version control, backup procedures, and access rights management, to reduce privacy and duplication risks. Fifth, reduce bureaucratic fragmentation through an integrated reporting calendar and a single-input-for-multiple needs principle. Sixth, explicitly link every Smart Village data point and achievement to the Village SDGs planning, budgeting, and evaluation cycle, so that digital transformation in 3T regions does not stop at application provision but genuinely contributes to the sustainable acceleration of village community welfare.

References

- Adlini, M. N., Dinda, A. H., Yulinda, S., Chotimah, O., & Merliyana, S. J. (2022). Metode penelitian kualitatif studi pustaka. *Edumaspul: Jurnal Pendidikan*, 6(1), 974–980. <https://doi.org/10.33487/edumaspul.v6i1.3394>
- Aly, R., dkk. (2022). SDGs Desa sebagai upaya terpadu percepatan pencapaian tujuan pembangunan berkelanjutan. *Jurnal Pengabdian Kepada Masyarakat*.
- Anggraini. (2025). *SDGs Desa sebagai instrumen begemonik pembangunan desa*.
- Badan Pusat Statistik Kabupaten Nunukan. (2024–2026). *Statistik Potensi Desa, Statistik Kesejahteraan Rakyat, Indeks Pembangunan Manusia, dan rilis resmi Kabupaten Nunukan*.
- Dimas, M., & Fahlevvi, M. R. (2024). Pengentasan digital divide dalam penerapan e-government di Kabupaten Sumbawa. *Jurnal Teknologi dan Komunikasi Pemerintahan*, 6(2), 194–215. <https://doi.org/10.33701/jtkp.v6i2.4504>
- Dzikrullah, A. A., & Chasanah, U. (2024). Optimalisasi peran koperasi dalam mendukung UMKM: Meningkatkan akses modal, penguasaan teknologi, dan ekspansi pasar. *Jurnal Investasi Islam*, 5(1), 648–668. <https://doi.org/10.32806/ivi.v5i1.205>
- Febriyanto, & Darmawan. (2024). Determinan pembangunan desa Tertinggal, Terdepan, dan Terluar (3T) di Indonesia. *Demokrasi: Jurnal Riset Ilmu Hukum, Sosial dan Politik*.
- Herlawan, & Simangunsong. (2022). *Manajemen pelayanan publik di wilayah 3T: Studi Kabupaten Nunukan, Kalimantan Utara*.
- Hombone, E. (2025). Smart Village sebagai solusi inovatif pembangunan daerah terpencil. *RIGGS: Journal of Artificial Intelligence and Digital Business*, 4(1), 122–131. <https://doi.org/10.31004/riggs.v4i1.380>
- Hombore, E. (2025). Implementasi Smart-Village: Peluang dan tantangan transformasi digital untuk pembangunan berkelanjutan di Kabupaten Merauke. *Jurnal Ilmu Sosial dan Humaniora*, 1(4), 1729–1741. <https://doi.org/10.63822/e7sq2495>
- Iskandar, A. H. (2021). SDGs Desa percepatan pencapaian tujuan pembangunan nasional berkelanjutan. *Jurnal Wacana Kinerja*, 24(1). <https://doi.org/10.31845/jwk.v24i1.713>

- Kagungan, D., & Rosalia, F. (2022). Development policy innovation in Indonesia: The application of smart rural for the development of tourist villages. *JWP (Jurnal Wacana Politik)*, 7(2). <https://doi.org/10.24198/jwp.v7i2.40892>
- Mashur, dkk. (2023). *Implementasi SDGs Desa di Provinsi Riau: Desain kebijakan dan sumber daya fiskal*.
- Mayasari, R., Febriantoko, J., Putra, R. R., Hadiwijaya, H., & Kurniawan, D. (2022). *Digitalisasi desa: Pilar pembangunan ekonomi desa*. Penerbit Nem.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Sage Publications. (Sebagaimana dirujuk dalam Adlini et al., 2022).
- Muljati, R., Suwatno, S., & Witarti, D. I. (2024). Literasi digital lansia terhadap isu kesehatan di Karawaci Kota Tangerang. *SOCIA: Jurnal Ilmu-Ilmu Sosial*, 21(2), 1–15. <https://doi.org/10.21831/socia.v21i2.77963>
- Prayitno, dkk. (2021). *Smart village melalui digitalisasi sebagai terobosan percepatan pembangunan desa berkelanjutan*.
- Putri, A., Sari, N., Fajrina, P., & Aisyah, S. (2024). Keamanan online dalam media sosial: Pentingnya perlindungan data pribadi di era digital (studi kasus Desa Pematang Jering). *Jurnal Pengabdian Nasional (JPN) Indonesia*, 6(1), 38–52. <https://doi.org/10.35870/jpni.v6i1.1097>
- Putri, C. M., Argiles-Bosch, J. M., & Ravenda, D. (2024). Creating good village governance: An effort to prevent village corruption in Indonesia. *Journal of Financial Crime*, 31(2), 455–468. <https://doi.org/10.1108/JFC-11-2022-0266>
- Simamora, dkk. (2024). *SDGs Desa selaras dengan Rencana Pembangunan Jangka Menengah Nasional dan tujuan SDGs global*.
- Siregar, J. E. (2024). Kapabilitas digital dalam upaya transformasi menuju smart village pada pelaksanaan digitalisasi pelayanan Desa Sepakung. *Journal of Politic and Government Studies*, 13(4), 479–495.
- Sutikno, C., Pribadi, I. A. P., Atika, Z. R., & Amanda, A. (2023). Implementasi kebijakan Program Keluarga Harapan (PKH) di Desa Gununglurah Kecamatan Cilongok Kabupaten Banyumas. *Musamus Journal of Public Administration*, 5(2), 267–280. <https://doi.org/10.35724/mjpa.v5i2.5034>