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ANALYSIS OF FACTORS INHIBITING DEVELOPMENT IN VILLAGES WITH SMALL POPULATIONS IN REMOTE AREAS

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Abstract :

Development in sparsely populated villages in remote areas still faces structural barriers that have not been widely studied, especially in border areas such as Nunukan Regency, North Kalimantan. This study aims to identify factors inhibiting development in sparsely populated villages, analyze the influence of population limitations on development achievements, and formulate appropriate policy recommendations. The study used a mixed approach with a sequential explanatory design. The quantitative phase involved 92 respondents from 18 villages in 7 sub-districts selected through proportionate stratified random sampling, then analyzed using descriptive statistics and multiple linear regression. The qualitative phase involved 12 purposive informants from three locus villages in Krayan, Lumbis, and Sebatik Sub-districts, analyzed using the Miles and Huberman interactive model, then integrated through connecting and joint display techniques. The regression model proved significant with an R square of 0.616. Resources had a positive and significant effect, while Population Scale Barriers had a negative and significant effect on development achievements, while Communication, Disposition, and Bureaucratic Structure had no significant effect. Qualitative findings indicate that barriers are cumulative, that apparatus disposition is good despite limited capacity, and that geographic remoteness moderates the impact of small populations, as evidenced by the high achievement rates in villages with good access despite their small populations. This study concludes that population size is not the sole explanation for development barriers. Small populations interact with resource constraints and geographic remoteness, necessitating affirmative action policies based on a geographic difficulty index and a cluster approach between villages.

Keywords : *Village development, low-population villages, remote areas, population scale, affirmative action policies*

INTRODUCTION

Village development remains a national strategic agenda that is not yet fully equitable, especially in villages with relatively small populations in remote areas. Most villages in disadvantaged, frontier, and outermost regions have populations far below the national average, a condition that has direct consequences for the economic scale of those regions (Central Statistics Agency, 2023). When the population is small, the potential workforce, local tax base, and investment attractiveness are also limited, making it difficult for villages to meet the minimum threshold required for efficient infrastructure and public service development. Population conditions can act as a barrier to development if not balanced by adequate infrastructure capacity and resources, and this condition is even more pronounced in villages with small populations than in densely

populated villages (Fizabillah, Damayanti, & Yasin, 2024). These limitations are exacerbated by the difficult-to-reach geographical conditions of remote areas, resulting in high service distribution costs while the benefits received by residents are relatively small compared to villages with larger populations.

Most previous research on village development has focused on financial management, community participation, or policy effectiveness without specifically linking these to population size as a structural inhibiting factor. Prasetyawan and Fadjar examined the allocation of village expenditures to development (2023), Setiyawan highlighted the importance of staff training in Village Fund management (2022), while Veronika and Basri (2023) and Handayani, Suprihati, and Utami (2024) examined the influence of staff competency and community participation on village development. These studies were generally conducted in villages with medium to large populations that have the potential for economic growth, resulting in a gap in understanding how population size itself becomes a stand-alone inhibiting variable, rather than simply a demographic factor. This research gap underlies the formulation of this research problem: the lack of studies that specifically place population scale as the primary unit of analysis in explaining development barriers in remote areas.

The novelty of this research lies in its integration of two previously separate areas of study: public policy implementation theory and the concept of population scale as a structural barrier. Previous research on community participation in village development has primarily focused on participation as a single variable, without considering how a small population limits the scope for participation (Lestari & Wahyuningsih, 2021; Modanggu et al., 2023). This research seeks to address this gap by specifically analyzing how sparsely populated villages in remote areas face unique development barriers, distinct from those faced by densely populated villages. This study is expected to enrich village development studies, which have so far largely neglected to address the intersection between population scale and regional remoteness.

This study utilizes George C. Edward III's theory of public policy implementation, which encompasses four dimensions: communication, resources, disposition, and bureaucratic structure (Purnama, Mulyaningsih, & Susniwati, 2026). This theory is used to examine the effectiveness of these four dimensions when applied to villages with small populations. This theoretical foundation is combined with a sociological perspective on village development, which explains that social structure and population scale influence interaction patterns and a village's collective capacity to drive development (Sunarso, 2023). The concept of community participation is also used to examine how social capital in villages with small populations plays a role in supporting or hindering the development process (Ndraha, 2023), and is reinforced by the concept of the population dilemma as a framework for analyzing the relationship between population size and regional development capacity (Fizabillah et al., 2024).

Based on the above description, this study aims to identify factors inhibiting development in sparsely populated villages in remote areas, analyze the influence of population limitations on the effectiveness of village

development policy implementation, and formulate policy strategy recommendations that are appropriate to the characteristics of sparsely populated villages. Theoretically, this study is expected to enrich the study of public policy implementation by including population scale variables as a new unit of analysis in the context of remote village development. Practically, the results of this study are expected to be a consideration for local governments and village governments in designing development policies that are more adaptive to the characteristics of sparsely populated villages, while also providing input for the preparation of Village Fund regulations and affirmative programs that are more targeted to villages with limited populations in remote areas.

RESEARCH METHOD

This research employed a mixed methods approach with a sequential explanatory design. The quantitative phase was conducted first to map the general patterns and levels of development barriers, followed by the qualitative phase to explore and deepen the meaning behind the quantitative findings. This design was chosen because it provides a comprehensive picture, both in terms of data breadth through numbers and data depth through narratives. This allows for a comprehensive understanding of the factors inhibiting development in sparsely populated villages from two complementary perspectives.

The research was conducted in Nunukan Regency, North Kalimantan. This regency was selected purposively because it is a border regency with a high proportion of sparsely populated villages spread across the interior, land borders, and small islands.

In the quantitative stage, the research population was all sparsely populated villages in Nunukan Regency, namely villages with a population below the threshold for the sparsely populated village category according to the Ministry of Villages, Disadvantaged Regions and Transmigration (Kemendesa PDTT). 18 villages were identified spread across 7 sub-districts based on population data from the Central Statistics Agency and the Village Development Index. Quantitative respondents included Village Heads, village officials, and community leaders in each locus village. The sample size was determined using the Slovin formula with a 5 percent error rate from the total potential respondent population, then distributed to each sub-district using a proportionate stratified random sampling technique to maintain a balanced proportion of respondents between sub-districts. The instrument used was a questionnaire with a Likert scale of 1 to 5, measuring four dimensions of Edward III policy implementation, namely communication, resources, disposition, and bureaucratic structure, plus one unique variable of this study, namely the population scale as a structural inhibiting factor. Before use, the instrument was first tested for validity with Pearson correlation and tested for reliability with Cronbach's Alpha coefficient. The collected quantitative data was analyzed using descriptive statistics to map the scores of each variable, followed by multiple linear regression tests to determine the influence of the five variables on village development achievements.

The results of the quantitative stage were then used as the basis for determining the locus and focus of the qualitative stage through a connecting technique. Villages with the highest and lowest barrier scores in the quantitative stage were selected as qualitative loci to further explore variations in conditions. Based on these results, three villages were selected representing different characteristics of remoteness: a village in the interior bordering Krayan District, a village in the interior not bordering Lumbis District, and a village in the small island bordering Sebatik District. Qualitative informants were determined through purposive sampling, including Village Heads and village officials at the three loci, village facilitators assigned to the area, local community or traditional leaders, and representatives of the Nunukan Regency Community and Village Empowerment Office as policy makers at the district level. Qualitative data were collected through in-depth interviews with semi-structured guidelines, non-participant observation of infrastructure and public service conditions, and documentation studies of the Village Medium-Term Development Plan and Village Fund realization reports. Qualitative data analysis was conducted using the Miles and Huberman interactive model, through the stages of data reduction, data presentation, and drawing conclusions or verification, with deductive thematic categories originating from the same five variables as the quantitative stage.

The integration of quantitative and qualitative data was carried out through connecting and merging techniques. Qualitative findings were used to explain and enrich the meaning behind the regression figures, while the final results of both stages were juxtaposed in a joint display to fully visualize the interrelationships between variables. Data validity was maintained through instrument validity and reliability testing in the quantitative stage, as well as source and technique triangulation in the qualitative stage, by comparing information across informant categories and comparing the results of interviews, observations, and official documents, before all findings were drawn into the final research conclusions.

RESULTS AND DISCUSSION

Quantitative data were collected from 92 respondents spread across seven research locus sub-districts, namely Krayan, Krayan Selatan, Lumbis, Lumbis Hulu, Lumbis Ogong, Sebatik, and Sebatik Tengah, with a proportion of between 11 and 15 respondents per sub-district. Most respondents served as village officials (60.9 percent), followed by community leaders (28.3 percent) and village heads (10.9 percent), with a composition of 60.9 percent male and 39.1 percent female. The respondents' educational level was dominated by high school or equivalent (53.3 percent), followed by bachelor's degree (28.3 percent), diploma (13.0 percent), and master's degree (5.4 percent). The average age of respondents was 41.6 years with an average length of residence of 27.2 years, which indicates that the majority of informants have long experience living in the locus village so they have a sufficient understanding of the dynamics of development that occur.

The results of the reliability test showed that the six constructs were in the

reliable category with Cronbach's Alpha coefficients ranging from 0.734 to 0.810, while the item validity test showed that all 30 statements were valid with a calculated r value above 0.386 at a significance level of less than 0.001. Descriptive statistics showed a fairly clear pattern. The Communication variable was in the medium category with a mean of 2.99, Resources were in the low category with a mean of 2.58, Disposition was in the high category with a mean of 3.40, and Bureaucratic Structure was in the medium category with a mean of 3.05. Most prominently, the Population Scale Barriers variable was in the high category with a mean of 3.91, while Development Achievements were in the low category with a mean of 1.99. This pattern is consistent with the view that population conditions can act as obstacles to development when not balanced by adequate resource capacity (Fizabillah, Damayanti, & Yasin, 2024).

The results of multiple linear regression produced a fairly strong model, with an R^2 of 0.616 and a corrected R^2 of 0.594 ($F = 27.63$; $p < 0.001$), meaning the five predictors together explained approximately 61.6 percent of the variation in Development Achievements. However, not all predictors had a partially significant effect. Resources were shown to have a positive and significant effect ($B = 0.312$; $p < 0.001$), while Population Scale Barriers had a negative and significant effect ($B = -0.469$; $p < 0.001$) and were the predictors with the largest coefficients in the model. In contrast, Communication ($p = 0.134$), Disposition ($p = 0.280$), and Bureaucratic Structure ($p = 0.421$) did not show a significant effect. The competence and adequacy of human resources are the main determinants of the success of development management at the village level (Azis, Roni, Nasiruddin, & Kharisma, 2024), a finding that is in line with the results of this study and also strengthens the position of population scale as a stand-alone structural obstacle (Fizabillah et al., 2024).

Predictor	B	SE	t	p	Interpretation
Constant	2,108	0.589	3,577	<0.001	—
Communication	0.130	0.086	1,511	0.134	Not significant
Resource	0.312	0.081	3,871	<0.001	Significant (+)
Disposition	0.099	0.091	1,087	0.280	Not significant
Bureaucratic Structure	0.061	0.076	0.809	0.421	Not significant
Population Scale Barriers	-0.469	0.080	-5,871	<0.001	Significant (-)

Table 1. Results of multiple linear regression on Development Achievements ($R^2 = 0.616$; $F = 27.63$; $p < 0.001$; $n = 92$)

Variation between villages reinforces this picture. Villages P12 in Lumbis Ogong and P03 in Krayan recorded the highest barrier indexes, at 10.63 and 10.55, respectively, with low development achievements. Conversely, P16 in Sebatik recorded the lowest barrier index (7.12) with the highest development achievements among all the locus villages. Secondary village data corroborates this pattern. P03 is 58.2 kilometers away with a travel time of 3.4 hours, with only 35 percent good road conditions, and 35 percent internet access, making it

underdeveloped. P16 is only 19.8 kilometers away with a travel time of 0.3 hours, with 96 percent good road conditions, and 97 percent internet access, making it developed. Difficult topography and low population density together complicate the provision of public services (Sarjito, 2024), a pattern that also confirms that geographic remoteness moderates the impact of small population sizes on development achievements, rather than being an independent factor.

Qualitative findings from 12 informants reinforce and clarify this quantitative pattern. Village Head P03 stated that the small and dispersed population makes development benefits appear small compared to the high transportation costs (I-01), while Village Facilitators emphasized that the main obstacle is a combination of access, apparatus capacity, and population scale that reinforce each other (I-04). This pattern aligns with the theme of cumulative obstacles emerging in the thematic analysis, namely that a small population is not the sole cause of development delays, but becomes more significant when combined with distance, logistics costs, and a shortage of technical personnel. Conversely, the disposition of apparatus was consistently assessed as good by informants across villages. The commitment of village policy implementers is generally strong, but limited human resources remain the main obstacle hindering program achievement, not a lack of apparatus willingness (Putri & Choiriyah, 2025).

The population scale dimension is evident in informants' narratives about the weak local economy and the migration of productive-age residents. Traditional leader P03 explained that the limited number of buyers makes residents hesitant to open new businesses (I-03), while the Regency DPMD Official emphasized that some programs require a certain number of beneficiaries, so small villages may not meet the threshold despite real need (I-12). Migration of productive-age residents out of villages also reduces the workforce and development cadres. The mobility of productive-age residents to areas with more dynamic economic activity leaves their home regions with the pressure of economic stagnation and limited development capacity (Usman, Lihawa, & Dunggio, 2025). Informants from Sebatik, on the other hand, shared a different experience (I-09 and I-10): proximity to access makes development costs more manageable and supervision easier, resulting in the same funds producing greater output compared to inland villages.

Uniform policies have also been highlighted as a source of practical injustice. The Village Secretary of P09 and the Village Facilitator of Lumbis stated that administrative standards and minimum requirements for program recipients do not take into account the conditions of small, remote villages, resulting in residents' real needs being overlooked by generally applicable provisions (I-06 and I-08). The effectiveness of village development depends heavily on the alignment of policies with local needs and characteristics, not simply the size of the budget allocation (Handayani, Suprihati, & Utami, 2024; Prasetyawan & Fadjar, 2023). Secondary data from Nunukan Regency also provides important context. Although the regency's GRDP reached IDR 40.54 trillion with economic growth of 4.03 percent in 2024, this aggregate growth does

not automatically reflect equitable development outcomes in small and remote villages as identified in this study.

The integration of mixed methods through joint displays demonstrates consistent agreement between quantitative and qualitative findings across all dimensions. The data support the proposition that small population size is a development barrier when interacting with remoteness, logistical costs, and limited technical personnel, but population size cannot be treated as the sole explanatory factor. A comparison between P03 and P16 confirms that small-population villages with better access can still achieve high development outcomes. Therefore, the most relevant policy strategies are an affirmative approach based on minimum service fees, cluster-based technical support between villages, and success indicators that assess service affordability and sustainability, rather than simply the number of beneficiaries.

Integrasi Temuan Kuantitatif dan Kualitatif (Joint Display)

Dimensi	Temuan Kuantitatif	Temuan Kualitatif	Meta-Inferensi
Komunikasi	Mean sedang (2,99); tidak signifikan terhadap capaian	Jaringan lemah & informasi terlambat di Krayan; lebih lancar di Sebatik	*Efektivitas komunikasi bergantung pada infrastruktur digital dan jarak*
Sumber Daya	Mean rendah (2,58); berpengaruh positif signifikan (β=0,312)	Aparatur merangkap tugas; tenaga teknis & anggaran terbatas	*Sumber daya menjadi mekanisme utama penjelas capaian pembangunan*
Disposisi	Mean tinggi (3,40); tidak signifikan terhadap capaian	Komitmen aparat dinilai baik oleh hampir seluruh informan	*Kemauan pelaksana tidak cukup tanpa kapasitas & dukungan sumber daya*
Struktur Birokrasi	Mean sedang (3,05); tidak signifikan terhadap capaian	Format & tanggal seragam tidak adaptif; pelaporan daring terganggu jaringan	*Perlu fleksibilitas prosedural tanpa mengurangi akuntabilitas*
Hambatan Skala Kependudukan	Mean tinggi (3,91); berpengaruh negatif signifikan (β=-0,469)	Tenaga kerja, pasar, dan iuran pemeliharaan terbatas karena penduduk sedikit	*Populasi kecil menjadi hambatan struktural, terutama saat terpencil*
Capaian Pembangunan	Mean rendah (1,99); P03 tertinggi, P16 terendah	Akses Sebatik membuat material & pengawasan lebih efisien	*Populasi kecil tak selalu berarti capaian rendah; aksesibilitas memoderasi dampaknya*

narratives, namely limited technical personnel and weak local economies of scale due to the small population. In contrast, Communication, Disposition, and Bureaucratic Structure are not statistically significant, but qualitative accounts explain the reasons differently. Communication is hampered by networks and distance, disposition is good but insufficient without supporting capacity, and bureaucratic structure is quite supportive but not yet adaptive to conditions in remote areas. This pattern of co-reading confirms that development barriers in sparsely populated villages are multidimensional and interconnected, so that policy interventions that only target one dimension, such as strengthening digital communication, will not be sufficient to address the root of the problem unless resources and population scale are also addressed.

CONCLUSION

This study concludes that development in sparsely populated villages in remote areas of Nunukan Regency is hampered primarily by limited resources

and by the population scale itself, which are statistically proven to have a significant effect on development outcomes with Resources B of 0.312, Population Scale Constraints B of -0.469, and R^2 of 0.616. In contrast, Communication, Disposition, and Bureaucratic Structure do not have a significant effect although the disposition of the apparatus is considered good by almost all informants, so the main problem is not one of willingness but rather capacity and geographic context. Variation between villages also shows that remoteness moderates the impact of small populations, as evidenced by the fact that village P16 in Sebatik, which has a small population but good access, was able to achieve the highest development outcomes, in contrast to village P03 in Krayan, which achieved the lowest achievements due to a combination of small population and severe remoteness.

Therefore, population size cannot be treated as the sole explanation for obstacles to village development. Based on these conclusions, this study recommends five policy steps. First, district governments and relevant ministries need to establish affirmative policies that consider the geographic difficulty index and high costs in Village Fund allocations, not just population or beneficiary numbers. Second, an inter-village cluster mechanism needs to be established to share technical personnel, procurement, and marketing of village products so that weak economies of scale in small villages can be collectively addressed. Third, villages with low connectivity need to be given schedule flexibility and offline reporting mechanisms without compromising accountability. Fourth, the minimum number of program recipients should be changed to a cluster scheme or minimum service standards so that small villages are not excluded from the national program.

Fifth, asset maintenance plans and per-household cost analyses need to be mandatory before physical development is implemented to ensure the sustainability of development outcomes. For future research, it is recommended to expand the scope of the locus to other border districts with different geographic characteristics and add migration variables and the geographic difficulty index explicitly to the model, to test the consistency of the finding that remoteness moderates the impact of population scale on village development outcomes.

REFERENCES

Azis, DI, Roni, R., Nasiruddin, N., & Kharisma, AS (2024). The influence of village apparatus competence and information technology utilization on accountability in village fund management in Brebes District. JFAS: Journal of Finance and Accounting Studies, 7(2). https://doi.org/10.33752/jfas.v7i2.9845

Central Bureau of Statistics. (2023). Indonesian Statistics 2023. BPS RI.

Fizabillah, AF, Damayanti, S., & Yasin, M. (2024). Analyzing the dilemma of population problems as an obstacle to development or a driver of development. Trending: Journal of Management and Economics, 2(3), 136–146. https://doi.org/10.30640/trending.v2i3.2677

Handayani, R., Suprihati, S., & Utami, WB (2024). The influence of village fund allocation management, village policies, and community participation on the development of Giriwarno Village. Journal of Accounting and Taxation, 24(2).

Lestari, S., & Wahyuningsih, Y. (2021). Community participation in the preparation of the Village Government Work Plan (RKPDes). Journal of Social Sciences and Sciences, 1(10), 1254–1261. https://doi.org/10.59188/jurnalsosains.v1i10.235

Modanggu, I., Kuuna, W., Pambudi, M., & Eraku, S. (2023). The role of community participation in the regional planning process: A case study in Butu Village, Tilongkabila District. JGS, 1(2), 79–84. https://doi.org/10.69606/geography.v1i2.72

Ndraha, T. (2023). Community participation in village development. Rineka Cipta.

Prasetyawan, MRAR, & Fadjar, NS (2023). Analysis of village expenditure allocation for village development (Case study of developing villages in Trenggalek Regency 2019–2022). Journal of Development Economic and Social Studies, 2(4), 928–938. https://doi.org/10.21776/jdess.2023.02.4.18

Purnama, G., Mulyaningsih, & Susniwati. (2026). The influence of the implementation of village financial management policies and community participation on the effectiveness of village development in Selaawi Village, Selaawi District, Garut Regency. PAPATUNG: Journal of Public Administration, Government and Politics.

Putri, BAP, & Choiriyah, IU (2025). Implementation of Village Funds in Community Empowerment (Case Study in Ketapang Village, Tanggulangin District, Sidoarjo Regency). Jurnal Noken: Ilmu-Ilmu Sosial, 11(1), 1–18. https://doi.org/10.33506/jn.v11i1.3995

Sarjito, A. (2024). The impact of difficult topography and low population density on the availability of public services in Papua. Journal of Publicity, 11(1), 48–60.

Setiyawan, AR, & M Ec, D. (2022). Fiscal decentralization of the Village Fund policy program towards the independence and welfare of the people of Kerjo District, Karanganyar Regency [Doctoral dissertation, Muhammadiyah University of Surakarta].

Sunarso, B. (2023). Sociology of village development. Uwais Inspiration for Indonesia.

Usman, MZ, Lihawa, F., & Dunggio, I. (2025). Migration and spatial planning: Dynamics of population mobility in regional transformation in Gorontalo Province. Journal of Engineering Research, 4(1), 225–239.

Veronika, Y., & Basri, YM (2023). The influence of apparatus competence, organizational commitment, community participation, accountability, and transparency on village financial management. Journal of Accounting and Auditing Studies, 19(2), 91–105.