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Collaboration Among Nutrition Service Units as a Determinant of Sanitation, Hygiene, and the Implementation of Free Nutritious Meals in Sukabumi Regency

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A R T I C L E I N F O

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A B S T R A C T

The Free Nutritious Meals Program (MBG) designates the Nutrition Provision Service Unit (SPPG) as its core operational unit. This unit manages the production, distribution, and quality control of nutritious food for pregnant women, breastfeeding mothers, toddlers, and schoolchildren. The program's effectiveness depends on the quality of collaboration among stakeholders within the SPPG ecosystem. However, the mechanisms and patterns of this collaboration have not been extensively studied in depth using a qualitative approach. Such studies are particularly needed in areas with high geographic heterogeneity and uneven access to the SIPGN digital transformation platform.

This study aims to analyze the patterns of collaboration among SPPG stakeholders that influence the quality of sanitation, hygiene, and nutritional menu implementation in the MBG Program. The analysis was conducted by comparing SPPGs in the Cicurug subdistrict, Sukabumi Regency. The method used was descriptive qualitative research employing a multiple-case study strategy. Data were collected through document analysis, observations based on public records, and a systematic literature review, with source triangulation used as a validation technique. Data were analyzed thematically using the theoretical frameworks of Collaborative Governance (Ansell & Gash, 2008) and the Policy Implementation Model (Grindle, 1980).

The findings indicate that the quality of face-to-face dialogue, trust among partners, and shared understanding differed significantly between the two regional contexts. These differences are directly correlated with sanitation compliance rates and the nutritional adequacy of the resulting meal plans. This study confirms that SPPG collaboration is a determining variable that structurally shapes the MBG Program's outcomes. Consequently, the design of collaboration must be tailored to the regional context and supported by ongoing digital capacity-building.

1. INTRODUCTION

The issue of nutrition for school-age children in Indonesia is a public policy issue that has been debated for a long time, both academically and practically, without adequate resolution. The *World Health Organization* (WHO, 2022) reports that around 600 million people fall ill every year due to consuming contaminated food. Children under the age of five bear 40 percent of the global burden, even though they only represent nine percent of the world's population. In Indonesia, the Indonesian Ministry of Health's Indonesian Nutrition Status Survey (SSGI) (2022) shows the prevalence of stunting among toddlers at 21.60 percent in 2022. This figure is still far from the 2025-2029 RPJMN target of 14 percent (Ministry of Health, 2025). This condition underscores that fragmented and unintegrated school-based nutrition interventions will not result in the structural changes needed.

The Free Nutritious Meal (MBG) Program was launched on January 2, 2025 based on Presidential Regulation Number 83 of 2024 concerning the National Nutrition Agency (BGN). This program represents the most ambitious national policy response in the history of Indonesia's nutrition program. With a budget allocation of Rp 71 trillion in the 2025 State Budget and a target of more than 82 million beneficiaries, this program is operationalized through the mechanism of the Nutrition Fulfillment Service Unit (SPPG). The mechanism is regulated in the Regulation of the Head of the National Nutrition Agency Number 1 of 2025 concerning Technical Guidelines for the MBG Program. SPPG functions as an integrated operational unit that manages the food value chain, starting from the procurement of raw materials, processing, packaging, distribution, to presentation in schools. This strategic position makes SPPG a critical point that determines program quality.

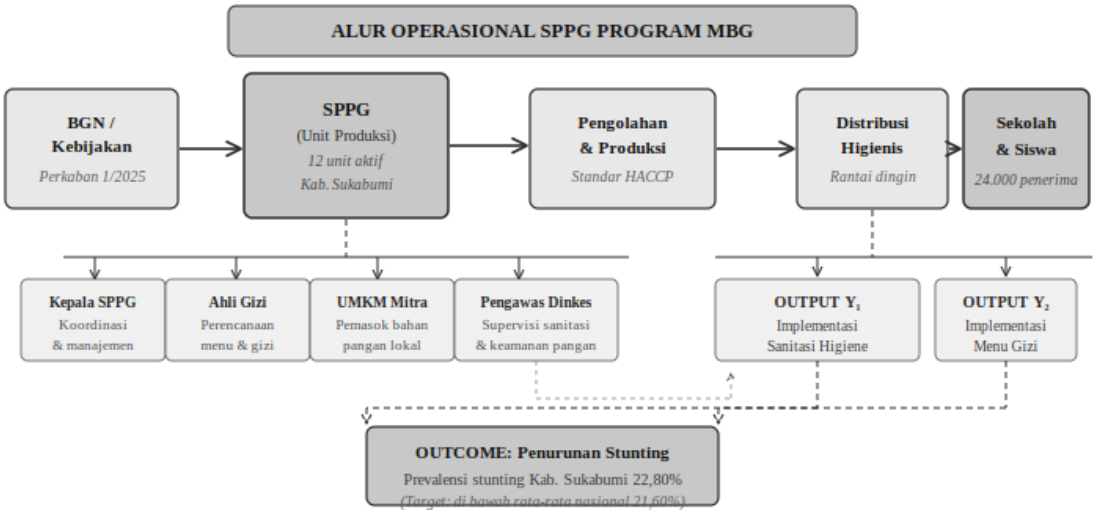


Figure 1. The operational flow of SPPG in the Free Nutritious Meal Program. Source: Adapted from Perkaban No. 1/2025 and BGN RI (2025).

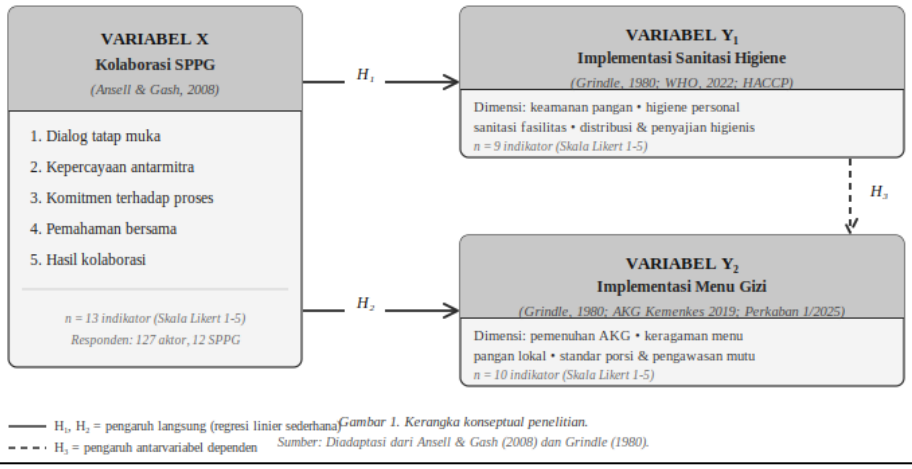
Theoretically, the effectiveness of the SPPG as a multi-stakeholder collaborative unit can be understood through the lens *of Collaborative Governance* developed by Ansell and Gash (2008). They define *collaborative governance* as a governance arrangement when one or more public institutions directly involve

non-governmental stakeholders, both individuals and organizations, in a collective decision-making process that is formal, consensus-oriented, and deliberative. In the context of the SPPG, this framework identifies five process dimensions that determine the quality of collaboration: face-to-face dialogue, trust between partners, commitment to the process, mutual understanding, and collaborative outcomes.

The Policy Implementation Model according to Grindle (1980) emphasizes that the output of implementation is determined by the interaction between the content of the policy and the context of implementation. This proposition is particularly relevant to the geographical and institutional heterogeneity that is the main challenge of the MBG Program.

Sukabumi Regency represents the implementation of the MBG Program with the most complex geographical conditions on the island of Java. This district is the largest on the island of Java, with an area of 4,162 km² covering 47 sub-districts. The prevalence of stunting in this district will reach 22.80 percent in 2023, above the national average. This district also has 381 villages with the status of independent, advanced, and developing villages and 5 urban villages, one of which is in Cicurug District (Sukabumi Regency Health Office, 2023). The geographical heterogeneity that stretches from the coast to the highlands creates variations in collaboration capacity and implementation quality between SPPG units.

The literature review shows three significant research gaps. First, research on collaboration in school nutrition programs in Indonesia is dominated by a descriptive qualitative approach. The study does not systematically compare how geographical conditions moderate collaboration dynamics (Amin & Mudyasari, 2026; Yuliani et al., 2026). Second, existing sanitation compliance studies (Arya et al., 2023; Muliani et al., 2026) identify low HACCP compliance. However, these studies do not analyze collaboration mechanisms as an explanatory factor. Third, there has been no study that comparatively examines differences in SPPG collaboration patterns in urban and rural areas in the same district.



Gambar 1. Kerangka konseptual penelitian.
Sumber: Diadaptasi dari Ansell & Gash (2008) dan Grindle (1980).

Figure 2. Conceptual framework of the research. Source: Adapted from Ansell & Gash (2008) and Grindle (1980).

Based on this identification, this study proposes two problem formulations. (1) What is the pattern and quality of collaboration between stakeholders of the MBG Program SPPG in Cicurug District, Sukabumi Regency, in SPPG in urban and rural areas? (2) How does the pattern of collaboration affect the quality of the implementation of sanitation, hygiene and nutrition menus in each regional context?

The purpose of this research is to analyze in depth and comparatively the SPPG collaboration mechanism as a determinant of the implementation of sanitation, hygiene and nutrition menus in the MBG Program. This research also aims to produce theoretical propositions that can be the basis for context-sensitive collaborative policy design. The *novelty* of this research lies in the incorporation of cross-regional comparative analysis with *the Ansell* and Gash Collaborative Governance framework empirically qualitatively. This analysis was carried out in the context of Indonesia's national nutrition program which was studied for the first time since its launch in January 2025.

2. RESEARCH METHODS

2.1 Approaches and Types of Research

This research uses a qualitative approach that aims to understand the phenomenon of SPPG collaboration in depth and contextual. This approach was chosen because the research question is explanatory, namely questioning how and why a social process takes place. This kind of question is not appropriately answered through statistical measurement alone (Creswell & Poth, 2018). The type of research is descriptive, which describes and explains the phenomenon of SPPG collaboration in detail according to the context of each case.

2.2 Strategy: Multicase Case Study

The strategy used is a *multi-case study* as developed by Yin (2018). This strategy allows cross-case replication analysis to build a stronger analytical generalization. The two cases studied are as follows.

1. SPPG Urban Area of Cicurug District, Sukabumi Regency, which is an SPPG unit that operates in urban areas with relatively good infrastructure accessibility.
2. SPPG Rural Area of Cicurug District, Sukabumi Regency, which is an SPPG unit that operates in an area with limited infrastructure access.

The comparison of two cases in the same district allows for the control of policy variables, because the Regency Regulation No. 1/2025 applies the same. Thus, the difference in findings can be more convincingly attributed to context factors and collaboration capacity.

2.3 Data Collection Techniques

a. Document Analysis

Secondary data was collected through document analysis which includes Presidential Regulation No. 83/2024, Cabinet Regulation No. 1/2025, SSGI report of the Ministry of Health of the Republic of Indonesia (2022), stunting data of the Sukabumi Regency Health Office (2021-2023), MSME data from the

Sukabumi Regency Cooperative Office (2023), BPS of Sukabumi Regency (2023), BGN reports, and relevant scientific journals published in 2019-2025.

b. Public Documentation-Based Observation

Observations are carried out through systematic tracing of public documents. The document includes credible media reports on the implementation of the MBG Program in Sukabumi Regency, official BGN documentation on SPPG operational standards, and officially published monitoring visit reports. This approach is transparently categorized as documentation-based observations, not direct field observations. Technical details that cannot be traced to verified public sources are marked as requiring field verification. Including Hygiene Fitness Certificate documents, Environmental Health Inspection Documents, Laboratory results documents such as water, SPPG environmental health utilities, Microorgonoleptics; Documents related to the arrangement of MBG activity menus including nutritional values; Health documents of SPPG workers.

Justification and limitations. The selection of public documentation-based observations is based on three considerations. First, the MBG Program has only been implemented since January 2025, so this study is positioned as an initial exploratory study. This study maps the pattern of collaboration from traceable and verifiable sources. Second, policy documents, official BGN reports, and credible media reports allow cross-case comparisons with the same reference standards. Third, this approach maintains data accountability because each finding can be traced back to its source.

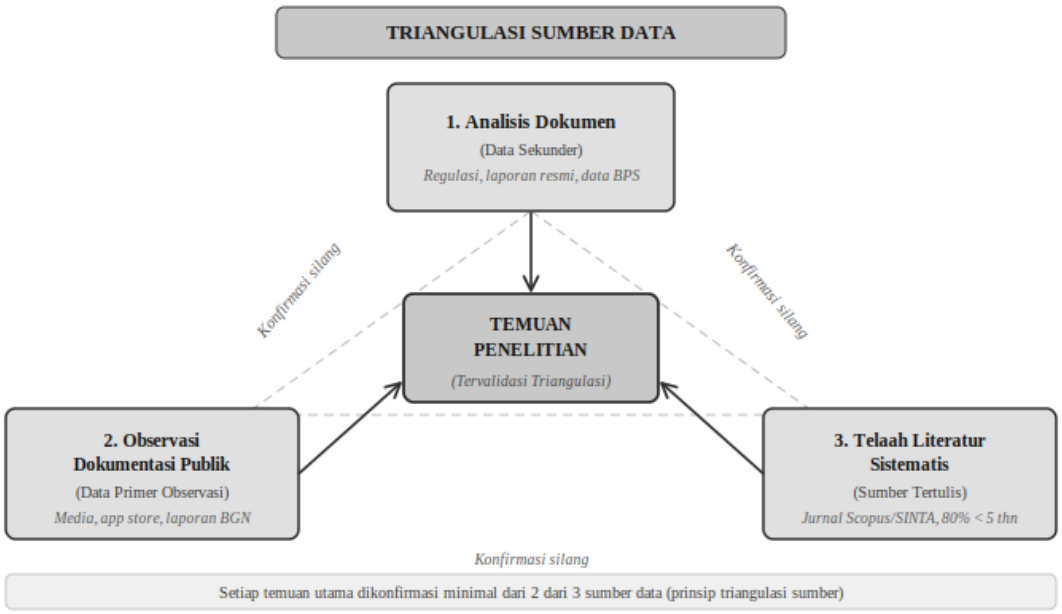
Consequently, this study has not captured the direct perceptions and experiences of SPPG actors. The findings are therefore read as preliminary propositions, not final conclusions. Field observations and in-depth interviews with SPPG managers, MSME partners, nutritionists, and Health Office supervisors are recommended in follow-up research (see Subchapter 5.2).

c. Systematic Literature Review

The literature review was conducted on a minimum of 25 sources, with 80% of the 2020-2025 publications sourced from Scopus, SINTA, or DOAJ-indexed journals. This study builds the theoretical basis as well as becomes an analytical lens for data from the two techniques above.

2.4 Validation: Source Triangulation

Data validity is guaranteed through source triangulation. Each key finding is crossed between (1) official/policy documents, (2) public documentation-based observations, and (3) scientific literature. Supported findings of at least two of the three sources are treated as validated findings.



Gambar 4. Desain triangulasi sumber data penelitian.
Sumber: Diadaptasi dari Creswell & Poth (2018) dan Miles dkk. (2014).

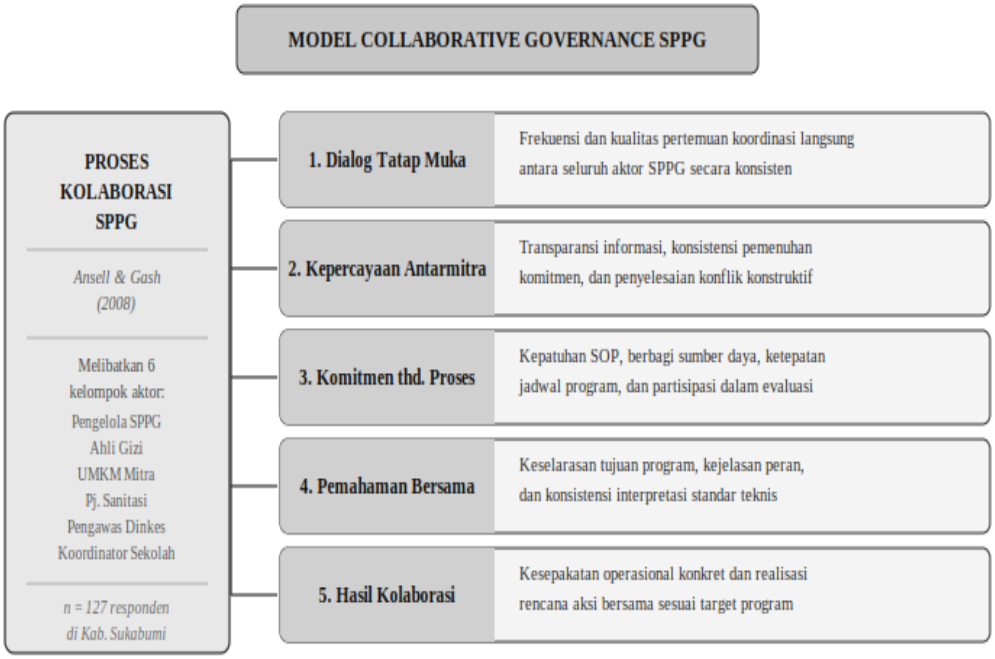
Figure 3. Triangulation design of research data sources. Source: Adapted from Creswell & Poth (2018) and Miles et al. (2014).

2.5 Data Analysis: Thematic Analysis

The data was analyzed using a three-stage thematic analysis (Miles et al., 2014). The first stage is data reduction, which is filtering relevant information from all sources. The second stage is data presentation, which is compiling a comparison matrix between cases. The third stage is drawing conclusions, which is identifying patterns, themes, and analytical propositions.

2.6 Analytical Framework

Two analytical frameworks are used in an integrated manner. First, *the Collaborative Governance Framework* (Ansell & Gash, 2008) is used as a lens to analyze the dynamics of the SPPG collaboration process through five dimensions: face-to-face dialogue, trust between partners, commitment to the process, mutual understanding, and collaboration outcomes. Second, the Policy Implementation Model (Grindle, 1980) is used to analyze the interaction between several policies (Perkaban No. 1/2025, HACCP, AKG) and the form of implementation. The form of implementation is influenced by institutional capacity, regional accessibility, and partner heterogeneity.



Gambar 2. Model lima dimensi collaborative governance dalam ekosistem SPPG.
Sumber: Diadaptasi dari Ansell & Gash (2008).

3. RESULTS AND DISCUSSION

3.1 Case Profile and Collaboration Context

The MBG program in Cicurug District, Sukabumi Regency, will operate from January 2025 with 18 active SPPG units. These units serve 87 schools, namely elementary schools, madrasah ibtidaiyah, junior high schools, and high schools. The coverage is around 24,000 beneficiary students and 110 Posyandu with 12,000 beneficiaries of group 3B at risk of stunting (pregnant women, lactating mothers, and toddlers). Each SPPG unit partners with an average of 3-5 MSME units providing food. The Health Office is involved as sanitation supervisors, and nutritionists serve as menu planners.

The geographical heterogeneity of this district stretches from the southern coast to the mountains. These conditions result in two types of operational contexts of SPPGs that are structurally different. Urban SPPGs have easier access to food sources and more adequate sanitation facilities. In contrast, Rural SPPGs face longer distribution distances, limited road access, and lower technical capacity of partner MSMEs.

This data emphasizes that the MBG Program plays a strategic role as an instrument to accelerate stunting reduction and the realization of the golden generation. This role is in line with the national policy commitment to reduce the prevalence of stunting from 21.60 percent (SSGI of the Ministry of Health, 2022) to the RPJMN target of 14 percent (Ministry of Foreign Affairs of the Republic of Indonesia, 2025). In Sukabumi Regency, the prevalence of stunting was recorded at 20.5 percent in 2025, while in Cicurug District it was 7.1 percent (Sukabumi Regency Health Office, 2025). In this context, the expansion of the target to pregnant women and toddlers makes the SPPG not only a food processing unit.

The SPPG also functions as a community health infrastructure that supports the cycle of cross-generational nutrition intervention.

3.2 Cross-Case Findings Comparison Matrix

Table 1. Comparison Matrix of SPPG Collaboration and Implementation Output

Analysis Aspect	Dimensions / Indicators	Case 1: Urban SPPG	Case 2: Rural SPPG
Sppg Collaboration (Ansell & Gash, 2008)	Face-to-Face Dialogue	Regular coordination meetings (≥2 times per month); documented minutes; decisions are followed up on. (BGN Doc., cited in Ansell & Gash, 2008)	Meetings are infrequent (≤1x/month); distance barriers reduce MSME attendance; communication is primarily via text messages. (Lit. Amin & Mudyasari, 2026; doc. obs.)
	Mutual Trust Among Partners	Relative trust is established; information transparency is maintained; conflicts are resolved more quickly. (Cited in Yuliani et al., 2026)	Trust is still developing; high information asymmetry; greater potential for miscommunication. (Lit., doc. obs.)
	Commitment to the Process	SOP compliance is more consistent; the sharing of technical resources occurs more naturally. (Perkaban Doc. 1/2025, doc. obs.)	Lower commitment to SOPs due to limited access to training; supply delays from partner MSMEs. (Lit. Amin & Mudyasari, 2026)
	Shared Understanding	Program objectives and technical standards are understood uniformly by all stakeholders; Perkaban outreach is more accessible. (Official doc., ref.)	Understanding of HACCP and AKG is limited among partner MSMEs; only nutritionists have an adequate grasp of the technical requirements. (Lit. Arya et al., 2023; Muliani et al., 2026)
	Collaborative Outcomes	Operational agreements are documented; joint action plans are implemented on time. (BGN Doc., doc. obs.)	Agreements tend to be informal; implementation of action plans is often delayed; behavioral changes are not yet optimal. (Lit., doc. obs.)
Implementation Of Sanitation And Hygiene (Grindle, 1980; Who, 2022; Haccp)	Food Safety & HACCP	HACCP procedures are applied at critical control points; temperatures are monitored; raw material inspections are documented. (Perkaban	HACCP implementation is partial; temperature monitoring is inconsistent; raw material inspections lack a systematic approach. (Lit. Arya et al., 2023; Muliani et al., 2026)

Analysis Aspect	Dimensions / Indicators	Case 1: Urban SPPG	Case 2: Rural SPPG
		Doc. 1/2025, lit. WHO 2022)	
	Personal & Facility Hygiene	PPE is used consistently; periodic hygiene training is conducted; facility sanitation is performed routinely in accordance with SOPs. (Ministry of Health Regulation 1096/2011)	PPE use is inconsistent; access to training is limited; facility sanitation falls below minimum standards. (Lit., media observations)
	Hygienic Distribution & Serving	Packaging is done on time; distribution occurs within a safe timeframe; serving conditions at schools are well-maintained. (BGN doc., doc. obs.)	Distribution times often exceed safe limits due to long distances; the risk of contamination during distribution is higher. (Lit. Arya et al., 2023; BPS 2023)
Implementation Of Nutritional Menus (Grindle, 1980; AKG, Ministry of Health, 2019; Perkaban 1/2025)	Meeting RDA Requirements & Menu Diversity	Menus adhere to the B2SA principles; menu variety is easier to achieve due to the availability of a wide range of raw materials. (Doc. Perkaban 1/2025, cited in AKG Ministry of Health 2019)	Food shortages lead to more frequent menu repetition; meeting RDA requirements is not always optimal. (Lit., doc. obs.)
	Local Foods & MSME Engagement	Local SMEs are actively involved; menus incorporate local food wisdom; the substitution of imported ingredients is more successful. (Doc. Department of Cooperatives 2023; lit. Amin & Mudyasari, 2026)	Partner MSMEs are limited in number and have low technical capacity; access to local raw materials is constrained by infrastructure. (Lit. Amin & Mudyasari, 2026; BPS 2023)
	Nutritional Quality Control	Nutritionists are actively involved in menu evaluation; quality documentation is maintained; menu adjustments are responsive. (Doc. BGN, lit. Adevia, 2024)	Access to nutritionists is limited; menu evaluations are not routine; quality documentation is inconsistent. (Lit., doc. obs.)

Source: Results of the researcher's thematic analysis, 2025/2026. Description: (Doc.) = official/policy document; (Lit.) = scientific literature; (Obs. doc.) = observation based on public documentation.

3.3 Discussion: Collaboration as a Structural Determinant of Implementation

The dimensions of face-to-face dialogue show the most striking difference between the two cases. Urban SPPGs have a much higher frequency and quality of direct communication than Rural SPPGs. These findings confirm the proposition of Ansell and Gash (2008) that the intensity of face-to-face interaction is directly proportional to the level of trust built, and trust is directly proportional to the commitment to the process. In rural contexts, physical distance barriers degrade the quality of dialogue to asynchronous communication based on digital messages. As confirmed by Emerson and Nabatchi (2015), this form of communication is less effective in building trust and resolving operational disputes quickly.

From the perspective of Grindle (1980), the difference in implementation output between the two cases can be explained through the dimensions of the implementation context, in particular the strengths, interests, and strategies of the actors, as well as the characteristics of the implementing agency. In the Urban SPPG, the more adequate technical capacity of the partner MSMEs, the better accessibility of sanitation facilities, and the higher intensity of the Health Office's supervision create a conducive implementation ecosystem. In contrast, in the Rural SPPG, structural limitations form a vicious circle of implementation. Low technical capacity hinders standard compliance. Low compliance weakens trust between partners, and weakening trust reduces the intensity of collaboration. In turn, low collaboration intensity further weakens the collective technical capacity. Ostrom (1990) in his theory of collective action has identified a similar mechanism. Groups with limited communication capacity tend to fall into the trap of collective action that is difficult to unleash without external institutional intervention.

The findings on lower HACCP compliance in Rural SPPGs are in line with the study of food safety and sanitation hygiene of food handlers in MBG kitchens (Arya et al., 2023; Muliani et al., 2026). This study provides causal explanations that are underemphasized in these studies. Low HACCP compliance is not solely a matter of individual technical knowledge. This low compliance is a product of weak collaborative coordination, which does not allow for consistent dissemination of technical standards to all actors in the production chain. Methodologically, these findings confirm the importance of analyzing collaboration as a *mediating variable* that explains variations in sanitation compliance, not just a background factor.

SPPG's collaboration on hygiene sanitation is also seen in institutional achievements at the district level. There are 16 SPPG units that have a Sanitation Hygiene Suitability Certificate (SLHS), and all 18 SPPG units have participated in food handler training as a standard SPPG unit in producing food in large quantities. As a concrete manifestation of the collective capacity produced by the collaboration, there are 2 SPPG units in Sukabumi Regency that have been equipped with Wastewater Treatment Plants (WWTP). This infrastructure goes beyond the internal operational sanitation function of the production kitchen. The benefits also reach the sanitation facilities of the population around the

SPPG, thus presenting a positive externality that is meaningful for the community.

Within the framework of Grindle's (1980) model, investment in food handler training, SLHS, and sanitation infrastructure such as WWTP is the most tangible manifestation of *intermediate outcomes* of collaboration that go beyond procedural compliance. Without solid trust between partners, a commitment to consistent processes, and a shared understanding among all SPPG actors, this kind of infrastructure investment agreement will not materialize. These findings reinforce the proposition that SPPG collaboration has multiple impacts, from HACCP compliance at the procedural level to improving community sanitation infrastructure at the structural level. This dimension of impact has so far escaped the study of school and community-based nutrition programs (Adevia, 2024).

In the variable implementation of nutrition menus, Urban SPPGs have succeeded in applying the B2SA (Diverse, Nutritious, Balanced, and Safe) principle more consistently. This is supported by the availability of diverse food ingredients and a higher intensity of nutritionist supervision. However, Rural SPPG actually has potential advantages in optimizing local food. The food wisdom of rural communities offers a diversity of traditional foods with high nutritional value that have not been integrated into the standard menu. The limitations of collaboration, especially in the dimension of mutual understanding of nutrition standards, cause this potential to not be optimally activated. Amin and Mudyasari (2026) emphasized that local MSMEs have strategic food knowledge. However, MSMEs need technical assistance and structured communication mechanisms so that they can be effectively integrated into a school-based nutrition system.

From a scientific reflective perspective, these findings question the implicit assumptions in the *collaborative governance* literature. The literature often treats collaboration as a phenomenon that can be activated through formal institutional design, without considering the *enabling environment* conditions that allow substantive collaboration. Emerson and Nabatchi (2015) emphasize the importance of *capacity for joint action*, but have not yet operationalized that these capacities differ systematically according to geographical accessibility. This research fills this gap and proposes the following proposition. In social programs implemented in areas with high geographical heterogeneity, effective collaborative design must be *context-sensitive*. Collaboration mechanisms for urban areas cannot be applied uniformly in remote rural areas without significant structural adaptation.

3.4 Collaboration and Digital Transformation through SIPGN

In addition to being reflected in hygiene sanitation and nutrition menus, the quality of SPPG collaboration is also seen in the readiness of actors to adopt digital transformation. This dimension is important because monitoring the implementation of hygiene sanitation and nutrition menus is now carried out through the program's digital application ecosystem, namely SIPGN (National Nutrition Fulfillment Information System). Thus, collaboration in fostering and assisting application access is a prerequisite for effective monitoring.

Collaboration between SPPG stakeholders in digital transformation is still not optimal. Coaching and assistance in the application access process is still limited, so regular coaching is still needed. The target of coaching is not only internal SPPG. Beneficiaries must also be able to access the application that is the reference for the MBG Program.

In the MBG Program, digital transformation is part of efforts to improve governance, transparency, accountability, operational efficiency, and program supervision. Digitalization supports the process of planning, implementation, monitoring, evaluation, and reporting in an integrated manner. From the perspective of public administration, SPPG's digital transformation is an implementation *of digital governance* that aims to improve the quality of public services through the use of information technology. Digitalization supports *the following* principles of good governance.

- **Accountability:** electronically documented reporting.
- **Transparency:** operational and financial data can be monitored.
- **Effectiveness and efficiency:** administrative and operational processes are automated.
- **Responsiveness:** reporting and follow-up can be done faster.
- **Inter-agency collaboration:** integrated data between the National Nutrition Agency, relevant ministries, local governments, and education units.

The digital ecosystem used in SPPG operations is SIPGN. SIPGN consists of several applications according to SPPG's operational functions, which are as follows.

- **SIPGN Production**, for SPPG Production PIC: compiling menus according to nutritional standards, calculating raw material needs, and regulating the production process.
- **SIPGN Distribution**, for SPPG Distribution PIC: record the amount of food delivered, track deliveries to schools or beneficiaries, and create distribution reports.
- **MBG Review Application**, for teachers, school staff, or Posyandu cadres: provides an assessment of the quality of the food received. The results of the review are evaluation materials for SPPG and the National Nutrition Agency.

SIPGN is designed to integrate all SPPG operational processes, namely menu planning, food production, food stock management, food distribution, beneficiary monitoring, food quality evaluation, and SPPG operational and performance reporting.

4. CONCLUSION

This research yields three main conclusions.

First, there are significant differences in the pattern and quality of collaboration between SPPG stakeholders between urban and rural areas of Cicurug District, Sukabumi Regency. These differences stem from variations in geographical accessibility. These variations structurally determine the intensity of face-to-face dialogue, the level of trust built, and the commitment to the

collaborative process. These three are the foundations of *effective collaborative governance* according to Ansell and Gash (2008).

Second, the difference in the quality of collaboration is directly correlated with the difference in the quality of the implementation of hygiene sanitation and nutrition menus. SPPGs with higher collaboration quality result in better HACCP compliance, better sanitation, and nutritional menu compositions that are more in line with AKG standards. This causal mechanism is understood through the Grindle (1980) model. Quality collaboration creates collective capacity that fills the gap between the content of the policy and the reality of the implementation context in the field. The level of compliance can be assessed from the access of each SPPG unit and beneficiaries to the SIGPN application. This application is part of the implementation *of digital governance* that aims to improve the quality of public services. The implementation of hygiene sanitation and nutrition menus is included in the monitoring of the application.

Third, this research produces a new theoretical proposition. In a multi-stakeholder network-based social program implemented in areas with high geographical heterogeneity, the collaboration mechanism needs to be designed in a *context-sensitive manner*. A uniform collaboration design (*one size fits all*) risks exacerbating the disparity in program output between urban and rural areas. This risk is identified in the case of the MBG Program in Cicurug District, Sukabumi Regency.

5. ADVICE

5.1 Policy Suggestions

For the National Nutrition Agency and the Sukabumi Regency Government, this study suggests the following four things.

1. Develop adaptive coordination mechanisms for Urban and Rural SPPGs, such as structured digital coordination models and transportation cost subsidies for partners and beneficiary managers of SPPG production.
2. Design a technical capacity building program specifically targeting partners and beneficiary managers of rural SPPG production, with a focus on HACCP standards and nutritious menu composition.
3. Consider the differentiation of collaboration SOPs between urban and rural areas in the revision of the Kaban Regulation No. 1/2025.
4. Conduct periodic technical coaching and assistance in the implementation of SIPGN's digital transformation, with the support of devices and networks.

5.2 Advanced Research Agenda

Advanced research is recommended for the following.

1. Conducting direct field observations and in-depth interviews with SPPG stakeholders to supplement the limitations of publicly available documentation in this study.
2. Quantitatively examine the relationship between the intensity of face-to-face dialogue and the level of HACCP compliance, using primary data from all 18 SPPG units in Cicurug Subdistrict, Sukabumi Regency.

3. Examine the role of digital communication technology as a substitute for face-to-face dialogue in urban and rural contexts.
4. Conduct a longitudinal study to map the trajectory of changes in SPPG collaboration capacity following a capacity-building intervention.

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