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When Context Maters: A Multi-level Analysis of Food Security Policy Implementation in Kotawaringin Timur's Sub-district

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ABSTRACT

This study aims to analyze the implementation of food security policies at the sub-district level in Kotawaringin Timur Regency. The research employs a qualitative method with a case study approach across 17 sub-districts. Data were collected through in-depth interviews, field observations, and document analysis. The findings reveal that food security policy implementation varies among sub-districts, influenced by regional characteristics, resource availability, and local leadership. Program Stabilisasi Pasokan dan Harga Pangan (SPHP), Gerakan Pangan Masyarakat (GPM), and Cadangan Pangan Pemerintah Daerah (CPPD) have been implemented with varying levels of effectiveness. Sub-districts with urban characteristics and trading centers demonstrate more effective implementation compared to rural sub-districts. Major challenges include limited human resources, budget constraints, and infrastructure limitations. The study recommends institutional strengthening, integrated information system development, and enhanced stakeholder coordination to improve the effectiveness of food security policy implementation at the sub-district level.

Keyword:
Policy Implementation, Food Security, Pangan

INTRODUCTION

Food security constitutes a fundamental component in achieving sustainable development. This is reflected in the Sustainable Development Goals (SDGs), particularly SDG 2, Zero Hunger, which targets the elimination of hunger, achievement of food security and improved nutrition, as well as the promotion of sustainable agriculture by 2030 (United Nations, 2015). The achievement of SDG 2 not only directly impacts community welfare but

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also contributes to the attainment of other sustainable development goals such as poverty eradication (SDG 1), good health (SDG 3), and economic growth (SDG 8) (FAO, 2019; Béné et al., 2019).

In the Asian context, food security challenges demonstrate diverse patterns while sharing fundamental commonalities. Timmer (2014) identifies three principal food security challenges in Asia: economic structural transformation shifting labor away from agriculture, changing consumption patterns due to urbanization and rising incomes, and climate change impacts on agricultural productivity. Meanwhile, Zhang et al. (2013) emphasize that Asian countries face trade-offs between food self-sufficiency and economic efficiency, where protectionist policies often contradict comparative advantage principles. A comparative study by Headey (2013) shows that Indonesia, compared to other Asian countries such as Vietnam and Thailand, faces unique challenges related to geographical fragmentation and significant regional disparities.

In Indonesia, food security has become a national strategic issue integrated into the development agenda. Undang-Undang Nomor 18 Tahun 2012 on Food defines food security as the condition of food fulfillment for the state down to the individual level, reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, equitable, and affordable, and not contradicting the religion, beliefs, and culture of the community to enable healthy, active, and sustainably productive living. This comprehensive definition demonstrates the complexity of achieving food security, which requires multi-dimensional approaches and multi-level governance (Suryana, 2014; Ariani et al., 2018).

The disparity in food security between Java and non-Java regions has become a critical issue in the Indonesian context. Research by Warr and Yusuf (2014) shows that although Java comprises only 7% of Indonesia's area, the island produces more than 50% of national rice production and possesses far superior food distribution infrastructure. Conversely, Eastern Indonesia, including Kalimantan, faces structural challenges including infrastructure limitations, high logistics costs, and dependence on supplies from Java (McCarthy and Obidzinski, 2017). Rosegrant et al. (2016) add that this inequality is exacerbated by differences in public investment in the agricultural sector, where Java receives a disproportionate share of investment relative to its size.

The contestation of thought regarding food security strategies outside Java reveals debates between centralistic versus decentralistic approaches. Neilson and Wright (2017) argue that the centralistic approach focusing on distribution from Java is unsustainable and creates regional dependency. Instead, they advocate for the development of more autonomous local food systems. However, Simatupang and Timmer (2008) question the effectiveness of purely decentralistic approaches, given the limited production capacity in many regions outside Java. They propose a "hub and spoke" model that combines local production with efficient regional distribution.

A specific study in Kalimantan by Rondhi et al. (2019) reveals that food security challenges in this region include: (1) conversion of agricultural land to oil palm plantations reducing local food availability; (2) environmental degradation due to unsustainable agricultural practices; (3) marginalization of smallholder farmers in modern food value chains; and (4) lack of investment in agricultural infrastructure. These findings are reinforced by Schoneveld et al. (2019), who document how oil palm expansion in Kalimantan has transformed the local food landscape and created dependence on food imports from other regions.

Kotawaringin Timur Regency, as one of the food-producing areas in Central Kalimantan, holds a strategic position in the regional food security system. With 17 sub-districts

possessing diverse characteristics—ranging from agricultural centers and regional trade hubs to remote rural areas—this regency represents the complexity of food security policy implementation at the local level (BPS Kotawaringin Timur, 2022). This geographical, demographic, and socio-economic diversity creates unique dynamics in efforts to achieve food security in the region.

Sub-districts play a crucial role as the frontline of policy implementation at the local level. As government units directly interfacing with communities, sub-districts serve as vital connectors between policies formulated at central and regional levels and field realities. In the food security context, sub-districts function in program coordination, monitoring food distribution and prices, facilitating farmer groups, and addressing food security issues within their territories (Suradisastra, 2008; Syahyuti, 2016). The effectiveness of sub-districts in executing these roles significantly determines the success of food security achievement at the grassroots level.

Food security policy implementation at the sub-district level faces various complex challenges. First, local food availability challenges influenced by agricultural productivity, land availability, and agricultural technology. Second, distribution issues encompassing transportation infrastructure, supply chains, and market accessibility. Third, climate change impacts threatening food production stability through changing rainfall patterns, increased natural disaster frequency, and emergence of new pests and diseases (Vermeulen et al., 2012; Wheeler & von Braun, 2013). Fourth, limited human resource capacity both from government apparatus and agricultural business actors. Fifth, varying levels of community participation in food security programs. Sixth, budget limitations and financial resources for program implementation (Darwanto, 2005; Rachmat, 2015; Hapsari & Rudiarto, 2017).

The complexity of these challenges requires deep understanding of how food security policies are actually implemented at the sub-district level. Empirical studies analyzing policy implementation, identifying success and obstacle factors, and documenting field best practices become critically important. Such research not only contributes to policy implementation theory development but also produces practical recommendations for policy and program improvement (Grindle, 1980; Mazmanian & Sabatier, 1983; Lipsky, 2010).

This research aims to fill this knowledge gap by: (1) analyzing food security program implementation at the sub-district level in Kotawaringin Timur; (2) identifying challenges and obstacles in implementation; (3) formulating strategies to enhance food security policy implementation effectiveness at the sub-district level. Through an in-depth qualitative approach, this research is expected to provide significant contributions to the development of more effective and contextual food security policies.

METHODS

This study using a qualitative approach with a case study method to analyze the implementation of food security policies at the sub-district level. The research was conducted in 7 sub-districts out of a total of 17 sub-districts in Kotawaringin Timur Regency, Central Kalimantan. Site selection utilized purposive sampling technique, considering the representation of geographical characteristics, accessibility levels, and diversity of dominant economic activities.

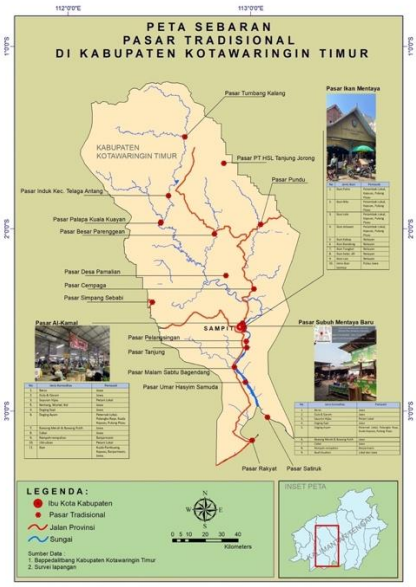
The selected sub-districts comprised: (1) Mentawa Baru Ketapang and Parenggean as regional trade centers; (2) Kota Besi and Teluk Sampit as rice production centers; (3) Baamang representing coastal areas; (4) Cempaga Hulu representing remote rural areas; and (5) Mentaya Hilir Selatan with combined agricultural and trade characteristics. The research was conducted during the 2023-2024 period with intensive visits during the dry season.

Research coverage limitations included the inability to access 10 sub-districts (60%) due to factors of accessibility, security, budget, time constraints, and data availability. Mitigation strategies were implemented through secondary data collection from district offices, telephone interviews with unreachable sub-district officials, and document analysis at the district level.

Data collection techniques included: (1) semi-structured in-depth interviews lasting 45-90 minutes for on-site informants and 30-45 minutes for telephone interviews; (2) non-participant observation at traditional markets, program sites, and sub-district offices; (3) document study of program reports, statistical data, and policy documents. Data analysis was conducted through three stages: (1) individual case analysis for the 7 sub-districts; (2) cross-case analysis to identify implementation patterns; and (3) limited extrapolation with secondary data validation. Analysis techniques employed included thematic analysis, content analysis, comparative analysis, and spatial analysis. Research validity was maintained through data triangulation, member checking, and audit trail. This study acknowledges the limitation of geographical coverage reaching only 40% of sub-districts, thus generalization of findings was conducted cautiously with consideration of local contexts.

RESULT AND DISCUSSIONS

Mapping of Traditional Markets and Sub-district Characteristics



Source: Syahirul Alam, M., Rhama, B., Setiawan, F., Utami Irwan, A., & Selvia, F., 2024

Figure 1. Distribution Map of Traditional Markets in Kotawaringin Timur

The mapping of 17 traditional markets in Kotawaringin Timur Regency employs a spatial-geographic approach combined with socio-economic characteristic analysis of each sub-district. The mapping results reveal an interesting distribution pattern where 16 out of 17 sub-districts possess at least one traditional market, demonstrating governmental efforts to ensure equitable access to basic trading facilities. However, significant variations exist in the scale, function, and economic impact of these markets.

Sub-districts with agricultural characteristics, such as Antang Kalang with Tumbang Kalang Market, exhibit trading patterns dominated by local agricultural and plantation commodities. This market functions as a collection point for agricultural produce from surrounding villages before distribution to larger markets. Daily trading volumes reach 5-10

tons for vegetable commodities and 2-3 tons for plantation products such as rubber and fresh oil palm fruit bunches. In contrast, coastal sub-districts like Baamang with Sejumput Market demonstrate dual trading characteristics between fisheries and agriculture. The geographic location along the Mentaya River provides direct access to freshwater and marine fishery products. This market serves as a fresh fish distribution node supplying animal protein needs for inland sub-districts. This commodity diversification provides enhanced economic resilience by not depending on a single sector.

Sub-districts with regional markets such as Mentawa Baru Ketapang, Parenggean, and Telaga Antang possess fundamentally different characteristics. These markets not only serve local needs but function as regional distribution hubs connecting producers with consumers from various sub-districts. Daily trading volumes can reach 50-100 tons for various commodities, with more comprehensive infrastructure including storage facilities, loading-unloading areas, and other supporting facilities. The mapping also identifies sub-districts with unique characteristics such as Bukit Santuai, which combines tourism and agricultural sectors. Betang Kuayan Market in this sub-district demonstrates adaptation to tourist needs by providing local products as souvenirs while maintaining its basic function as a supplier of local community staples. This phenomenon illustrates the traditional market's capacity to adapt to local economic changes.

Spatial analysis indicates that inter-market distances range from 10-30 kilometers, with highly variable accessibility. Northern sub-districts such as Cempaga Hulu with Pundu Market face significant accessibility challenges, particularly during the rainy season. This impacts commodity prices, which tend to be higher, and product variety, which is more limited compared to markets in more accessible sub-districts. Market distribution patterns also reflect regional development history. Markets in established sub-districts like Parenggean tend to be larger and more established, while markets in newly formed sub-districts such as Teluk Sampit remain in developmental stages. Understanding this dynamic is crucial in the context of food security planning as it determines investment priorities and policy interventions. Sub-district characterization based on dominant economic activities provides important insights for food security strategies. Rice production centers such as Kota Besi, Mentaya Hilir Selatan, and Teluk Sampit possess rice surpluses but deficits in other commodities. Conversely, sub-districts with diversified economies tend to have better food security due to alternative income and food sources.

Program Stabilisasi Pasokan dan Harga Pangan (SPHP)

The implementation of SPHP in Kotawaringin Timur Regency demonstrates high complexity with significant variations in effectiveness across sub-districts. This program, designed to maintain price stability and availability of staple foods, faces different structural challenges in each sub-district. In-depth analysis reveals that implementation success is determined not only by technical factors but also by local socio-economic dynamics.

In sub-districts with regional markets such as Mentawa Baru Ketapang, SPHP implementation shows high levels of effectiveness. Trading volumes reaching 500-1000 transactions per day provide a robust database for price monitoring. Adequate market infrastructure with digital recording systems facilitates real-time price surveillance by officials. Coordination with the Food Security Agency is conducted through an integrated daily reporting system connected to provincial and national monitoring dashboards. The operational mechanism of SPHP in regional markets involves a joint team from the Food Security Agency, Trade Agency, and Civil Service Police Unit. This team conducts routine inspections to ensure no hoarding practices or price manipulation occur. When abnormal

price spikes are detected, the team can intervene directly through market operations or coordination with distributors to increase supply. This effectiveness is evidenced by the ability to maintain price fluctuations below 10% for staple commodities during the 2023-2024 period.

In contrast to the situation in rural sub-districts such as Cempaga Hulu and Telawang, SPHP implementation faces complex structural obstacles. Limited transportation access increases distribution costs by up to 30-40% of base prices. Trading volumes of only 50-100 transactions per day make price monitoring less representative. Dependence on 2-3 collecting traders creates an oligopolistic market structure vulnerable to price manipulation. "SPHP becomes the main task of the food security agency, including affordability, distribution, and utilization. We typically coordinate with the Agriculture Agency if there is a supply deficit in supporting production," stated Mr. Subiyanto, Head of Food Availability and Distribution Division (Author's Interview, 2023). This statement demonstrates the holistic approach taken, though field implementation shows significant gaps.

Local adaptation emerges as key to SPHP success in several sub-districts. In Pulau Hanaut Sub-district, for instance, the monitoring system operates through cooperation with community leaders who report price movements via WhatsApp. Although simple, this approach proves effective in providing early warning for potential shortages or price surges. Such innovations highlight the importance of flexibility in policy implementation. Effectiveness evaluation of SPHP reveals that the program is most successful for rice and sugar commodities, with price stabilization rates reaching 85-90%. However, for perishable commodities such as vegetables and fresh fish, effectiveness only reaches 60-65%. This difference is caused by distribution chain complexity and storage infrastructure limitations, particularly in remote sub-districts.

Gerakan Pangan Murah

The Gerakan Pangan Murah as a policy instrument to enhance community access to quality food at affordable prices demonstrates highly contextual implementation across sub-districts. This program, designed to shorten the distribution chain, has varying impacts depending on geographical, demographic, and economic characteristics of each sub-district.

In urban sub-districts such as Mentawa Baru Ketapang and Parenggean, GPM is implemented on a large scale at strategic traditional market locations. GPM events at Mentaya Market, for example, can involve 50-100 traders and producers with transaction volumes reaching 10-15 tons of various commodities in a single day. Implementation frequency of 2-3 times per year is adjusted to momentum such as pre-holiday periods or the beginning of the school year. Locations easily accessible by public transportation ensure high community participation.

The operational mechanism of GPM in urban sub-districts involves complex coordination among various stakeholders. The Food Security Agency serves as the main coordinator, collaborating with the Trade Agency for participant curation, Transportation Agency for traffic management, and Civil Service Police Unit for security. Producers and distributors are directly invited to participate with incentives including venue rental fee exemptions and free promotion through government social media channels. "There is no subsidy in the Gerakan Pangan Murah: this program only shortens the distribution chain by bringing distributors or fish farmers directly or livestock farmers directly to consumers," explained a source from the Food Security Agency (Author's Interview, 2023). This model enables prices 20-30% lower than regular market prices without burdening the regional

budget with direct subsidies. This efficiency is achieved through elimination of 2-3 levels of intermediary traders typically present in normal distribution chains.

In contrast to implementation in rural sub-districts such as Cempaga Hulu and Pulau Hanaut, GPM is executed with a simpler approach tailored to local conditions. Events are held at sub-district offices or village halls involving 10-20 local traders. Transaction volumes are significantly smaller, only 1-2 tons per event, yet the impact remains significant for communities with limited market access. Frequency of 1-2 times per year is adjusted to coordination capabilities and limited operational budgets.

In urban sub-districts, GPM participants are predominantly lower-middle-class communities (70%) who are price-sensitive. Meanwhile, in rural sub-districts, participation is more evenly distributed across all economic strata due to limited shopping alternatives. Major challenges for GPM include program sustainability without subsidies, particularly when commodity prices at the producer level are high. Several sub-districts attempt to address this by developing long-term partnership schemes between local producers and consumer groups, creating a more stable and sustainable trading ecosystem.

Cadangan Pangan Pemerintah Daerah (CPPD)

The implementation of the Regional Government Food Reserve in Kotawaringin Timur Regency demonstrates a strategic approach focused on strengthening food security at the grassroots level through 16 Lumbung Pangan Masyarakat (LPM). This program, regulated through Peraturan Daerah No. 6 Tahun 2022, represents an evolution from a centralistic approach toward decentralized food reserve management with active community participation.

The distribution of LPMs concentrated in rice production centers such as Kota Besi, Bapinang (Pulau Hanaut), Mentaya Hilir Selatan, and Teluk Sampit demonstrates a pragmatic approach that places food reserves at production locations. This strategy reduces logistics costs and ensures the quality of stored rice due to the short distance from rice fields to storage facilities. Each LPM has a storage capacity of 20-50 tons of rice with a rotation system to maintain quality.

"The CPPD exists at the regency level as an anticipatory measure for emergency situations or to conduct interventions in food-vulnerable areas, but it focuses on rice. We already have the regional regulation, Perda No. 6 Tahun 2022," explained a source from the Food Security Agency (Author's Interview, 2023). The focus on rice as a single commodity reflects the reality that rice remains the primary staple food with a consumption rate of 100-120 kg per capita per year in this region.

The CPPD operational mechanism involves a multi-layered system from regency to village levels. At the regency level, the Food Security Agency manages a central reserve of 100-150 tons stored in Bulog warehouses or regency-owned facilities. At the sub-district level, LPMs function as buffer stock that can be accessed more quickly when needed. This system enables tiered responses to various levels of food crises.

LPM management is conducted by specially formed community groups with an organizational structure comprising a chairperson, secretary, treasurer, and operational sections. Group members are typically active farmers who understand production cycles and food reserve requirements. Training in warehouse management, recording systems, and warehouse pest control is provided periodically to ensure professional management.

The CPPD stock rotation system employs the First In First Out (FIFO) principle with a maximum storage period of 6 months before rice is rotated to the market and replaced with new stock. This mechanism ensures rice quality is maintained and prevents losses due to

quality deterioration. Rotated rice is sold at slightly below market prices as an incentive for the community, and sales proceeds are used for LPM operational costs.

CPPD activation for emergency conditions follows strict protocols. Sub-district levels can access up to 30% of LPM stock with sub-district head approval for local emergencies such as floods or crop failures in several villages. For broader emergencies, regent approval is required to access regency reserves. During the 2023-2024 period, the CPPD was activated three times to address flood impacts in North Mentaya Hilir Sub-district and crop failures in parts of Cempaga Hulu Sub-district.

Key challenges for the CPPD include budget limitations for storage infrastructure maintenance, particularly during the rainy season when the risk of damage due to high humidity increases. Several LPMs experienced 5-10% losses due to warehouse pest infestations caused by delayed fumigation. Human resource capacity issues are also a concern due to high management turnover and inadequate regeneration. Innovations in CPPD implementation include the development of a WhatsApp-based information system for real-time monitoring of stock at each LPM. This simple system enables the regency Food Security Agency to have visibility of food reserve availability across all sub-districts. Several sub-districts have also developed "food savings" schemes where farmers can store part of their harvest at LPMs and withdraw it when needed through a profit-sharing system.

The effectiveness evaluation of the CPPD shows that this program has successfully dampened rice price fluctuations by 15-20% during temporary shortages. The presence of LPMs also provides bargaining power to farmers when dealing with middlemen who often suppress prices during harvest seasons. However, the limited coverage of rice as the sole commodity represents a constraint in the context of comprehensive food security.

Food Commodity Distribution Channels

The distribution of food commodities in Kotawaringin Timur Regency involves multiple stakeholders, channels, and transportation modes that have evolved organically following geographical conditions, infrastructure, and market dynamics.

Table 1. Commodity Distribution Patterns by Sub-district

Sub-district Category	Local Commodities	External Commodities	Distribution Characteristics
Agricultural Centers	Green vegetables (70%), Pond fish (60%)	Javanese rice (80%), Sugar & Salt (100%)	Direct farmer-to-market distribution
Regional Trade Centers	Green vegetables (30%), Fish (40%)	Majority of commodities (70-90%)	Distribution hub to other sub-districts
Remote Rural Areas	Local vegetables (80%), River fish (70%)	Processed commodities (60-80%)	Dependency on mobile traders

Source: Author's Analysis (2023)

In agricultural center sub-districts such as Kota Besi and Teluk Sampit, the distribution of local vegetables operates relatively simply and efficiently. Small-scale farmers sell their harvest to collectors who then directly distribute to markets within close proximity, enabling vegetables to reach consumers within less than one day while maintaining freshness and ensuring fair value distribution for all stakeholders. For pond fish commodities in sub-districts like Baamang, the distribution channel is more complex due to limited refrigeration infrastructure. Fish must be harvested in the early morning and rapidly transported to

markets, typically through informal auction centers and vehicles equipped with basic cooling systems.

Conversely, the distribution of rice and other essential commodities such as sugar and salt, all sourced from outside the region, follows a hierarchical channel from major importers in Sampit to retail traders. This extended supply chain incurs substantial distribution costs, ultimately affecting consumer prices. Sub-districts such as Mentawa Baru Ketapang and Parenggean, functioning as regional trade centers, maintain relatively efficient distribution systems supported by superior infrastructure and stronger trader capital. These centers serve as distribution hubs for more remote sub-districts.

However, in rural areas such as Cempaga Hulu, distribution presents significant challenges. Residents depend on mobile traders who visit weekly using small vehicles. Commodity prices can double due to poor road conditions, small trading volumes, and prolonged capital turnover. Seasonal variations significantly impact distribution patterns. During the rainy season, many unpaved roads deteriorate severely, disrupting distribution, increasing costs, and potentially isolating some villages. Conversely, the dry season facilitates smoother and more cost-effective distribution.

These distribution patterns profoundly influence food security. Sub-districts with efficient distribution channels generally maintain stable supplies and more affordable prices. Meanwhile, areas with disrupted distribution frequently experience temporary shortages and price spikes. Furthermore, the diversity of available food in each sub-district is determined by distribution channel quality well-connected areas enjoy greater variety, while isolated regions rely on limited staple commodities.

Implementation Challenges at the Sub-district level

The implementation of food security policies at the sub-district level faces systemic challenges that are interconnected and mutually reinforcing. The primary challenge concerns human resource (HR) limitations encompassing issues of quantity, quality, and sustainability. The ratio of agricultural extension workers to farmers in densely agricultural sub-districts is severely inadequate, exemplified by Cempaga Hulu Sub-district, which maintains one extension worker for 3,000 farming households, far below recommended standards. Beyond quantity, HR quality fails to meet field requirements. The majority of extension workers are over 45 years old and possess educational backgrounds limited to conventional agriculture, rendering them inadequately prepared to adopt modern agricultural technologies or more relevant participatory methods. Infrequent refresher training programs, constrained budgets, and often misaligned content with specific sub-district needs prevent extension workers from effectively disseminating current information and innovations to farmers. This phenomenon is exacerbated by young generation's declining interest in farming, attributed to income uncertainty, low social status, and physically demanding labor, thereby worsening agricultural sector labor shortages. This condition also drives brain drain, where village youth obtaining higher education prefer urban migration, creating leadership vacuums at local levels.

Additionally, sub-districts confront budget constraints that impede food security program implementation. Budget allocations for food security programs at the sub-district level remain minimal, approximately 3-5% of total regional budgets, while physical infrastructure development dominates with 60-70% allocation. This results in suboptimal food security policy implementation, with existing programs frequently constrained by funding limitations. For instance, the food security program budget in Bukit Santuai Sub-district for 2024 amounts to only IDR 150 million, clearly insufficient to finance various operational needs and innovations. Prolonged budget disbursement processes also pose problems, as several market-responsive programs often lose momentum due to funding delays. Inter-sub-district budget allocation inequities compound difficulties, where sub-districts with politically influential or well-connected sub-district heads tend to receive larger allocations despite not always generating improved food security outcomes.

Another equally significant challenge involves infrastructure limitations and accessibility affecting food distribution effectiveness. Sub-districts with poor road

infrastructure, such as Cempaga Hulu, face substantial difficulties in commodity transportation and distribution, particularly during the rainy season when dirt roads become slippery and impassable. This causes food price increases due to elevated transportation costs. The absence of cold storage facilities for perishable commodities further exacerbates the situation, where agricultural products such as fish and vegetables deteriorate before reaching consumers. Traditional markets in poor condition, lacking basic facilities such as proper drainage systems or adequate toilets, further hamper food distribution efficiency. Moreover, insufficient public transportation access prevents residents in remote villages from obtaining nutritious food, thereby worsening food security in these areas. Weak digital infrastructure also impedes food security system digitalization efforts, such as applications for price monitoring or local e-commerce hampered by low internet penetration and device accessibility.

Overall, the challenges in implementing food security policies at the sub-district level are highly complex and require more holistic and integrated approaches to address them. These approaches must involve improvements in human resources, more equitable and effective budget allocation, and infrastructure enhancement supporting food distribution and access.

Effectiveness of Policy Implementation

Comprehensive evaluation of food security policy implementation at the subdistrict level reveals patterns consistent with Van Meter and Van Horn's (1975) policy implementation theory, albeit with unique local nuances. Urban and semi-urban subdistricts demonstrate superior performance with effectiveness scores of 70-85% compared to rural subdistricts, which only achieve 45-60%. This disparity is not simply a function of resource availability, but rather a complex interplay between leadership quality, institutional capacity, and social capital.

In-depth analysis shows that resource endowment alone does not guarantee effective implementation. Cempaga subdistrict, with its significant mining and plantation potential, has high locally-generated revenue but mediocre food security performance. Conversely, Teluk Sampit, with limited resources, achieves impressive results through community mobilization. This confirms that "street-level bureaucrat" quality and local leadership vision are more determining factors than budget size.

Policy design mismatch with local context emerges as a recurring theme. The one-size-fits-all approach from central government often clashes with unique geographical, cultural, and economic characteristics. The SPHP (Program Stabilisasi Pasokan dan Harga Pangan) design for monitoring daily prices makes sense in urban markets but is problematic in remote areas with weekly markets. GPM (Gerakan Pangan Murah) assumptions about transport infrastructure do not hold in island subdistricts. CPPD (Cadangan Pangan Pemerintah Daerah) focus on rice ignores diverse local dietary preferences.

Implementation structure fragmentation severely impacts effectiveness. Food security involves at minimum 8 departments/agencies, but coordination mechanisms are weak. Silo mentality prevails with each agency pursuing sectoral targets without an integrated view. Duplication is common - the Agriculture and Fisheries Departments both run nutrition education with similar content but different target audiences. Resource waste is estimated at 20-30% of the total food security budget.

Time lag between policy formulation and field implementation can reach 12-18 months. By the time programs reach subdistricts, the original context has changed. COVID-19 exemplifies this - food assistance programs designed pre-pandemic did not anticipate mobility restrictions and had to be redesigned on the fly with huge inefficiency. Adaptive capacity varies widely between subdistricts depending on leadership flexibility.

Political economy dynamics significantly shape implementation outcomes. Subdistricts with politically connected subdistrict heads tend to receive priority resources and flexibility in implementation. Electoral cycles influence program intensity-activity surges before elections and drops drastically post-election. This boom-bust cycle disrupts program

continuity and reduces long-term impact. Communities become cynical, viewing programs as political tools rather than genuine development efforts.

Inter-Subdisctrict Disparities

Spatial inequality in food security outcomes reflects deeper structural inequality in development trajectories. Remote subdistricts face compound disadvantages - poor infrastructure limits market access, low education reduces innovation capacity, youth exodus weakens human capital, and limited economic opportunities perpetuate poverty. This vicious cycle is extremely difficult to break without massive targeted intervention.

Access inequality is not only physical but also informational and institutional. Urban subdistricts benefit from proximity to information sources, regular interaction with higher-level government, and exposure to innovation. Rural subdistricts operate in an information vacuum, rely on outdated practices, and miss opportunity windows. The digital divide exacerbates this - internet penetration shows a 0.85 correlation with the food security index.

Infrastructure gaps demonstrate the Matthew Effect - the "rich get richer" phenomenon. Subdistricts with good infrastructure attract more investment, both public and private. Better roads encourage traders to penetrate markets, creating competition and efficiency. Poor infrastructure subdistricts are stuck with monopolistic traders, high transaction costs, and limited product variety. Infrastructure investment returns are 3-4 times higher in already developed subdistricts.

Human capital disparity is self-reinforcing. Educated youth from rural subdistricts migrate for better opportunities, accelerating brain drain. Urban subdistricts benefit from reverse migration - urban dwellers return with capital and knowledge. The education quality gap widens - teachers prefer urban postings, facilities are better, and peer effects are positive. Rural student achievement gaps increase over time.

Institutional capacity variance is extreme. Parenggean subdistrict office resembles a modern corporation - computerized, professional staff, systematic processes. This contrasts with Cempaga Hulu, which still operates like a 1990s bureaucracy - paper-based, aging staff, ad-hoc processes. Capacity building programs ironically often benefit those already capable - those who can write proposals, have internet access, and understand the system.

Market structure differences create an uneven playing field. Urban subdistricts enjoy competitive markets with multiple buyers/sellers, efficient price discovery, and smooth information flow. Rural subdistricts face oligopolistic structures - few traders dominate, price manipulation is common, and information asymmetry is severe. These market failures require intervention but are often neglected in neo-liberal policy frameworks.

Social capital distribution is also uneven. Strong traditional institutions in rural areas sometimes compensate for weak formal institutions. However, modernization erodes traditional safety nets without adequate replacement. Urban areas develop new forms of social capital - professional associations, hobby groups, online communities. Rural areas are stuck in transition - traditional mechanisms weakening, modern ones not yet established.

CONCLUSION

This study fills critical knowledge gaps in food security policy implementation by revealing that sub-district variations stem not merely from resource disparities but fundamentally from differences in governance capacity, social capital, and historical trajectories - findings that both challenge traditional top-down implementation models and validate contemporary governance theory's emphasis on network collaboration over pure hierarchy in complex multi-stakeholder environments. The research demonstrates that while

bottom-up approaches show superiority, pure localization leads to fragmentation and inequality, necessitating a hybrid model where central government shifts from commander to facilitator while maintaining strategic direction alongside local tactical flexibility - a finding strongly supported by the context primacy validation in implementation science which shows that universal best practices must be abandoned for nuanced situational approaches incorporating local variables of geography, culture, social structure, and historical institutional arrangements. The study unveils previously under-theorized network effects showing sub-districts' success is influenced by neighboring performance through spill-over effects and competitive pressures, while institutional path dependency analysis reveals how colonial legacy, New Order structures, and reformation evolution create constraints and opportunities shaping current implementation patterns. These findings extend implementation theory by demonstrating that successful food security governance requires not technical solutions alone but fundamental shifts in bureaucratic culture and institutional arrangements embracing network governance, adaptive management, and collaborative approaches as essential elements for navigating complex challenges - though the study's cross-sectional nature limiting seasonal variation capture, partial geographical coverage of only 30% sub-districts, and methodological constraints in data collection suggest the need for longitudinal research spanning full agricultural cycles, comparative regional studies, and strengthened quantitative analysis to further advance our understanding of resilient food security systems that can adapt to various shocks while ensuring equitable outcomes.

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