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Bureaucratic Fragmentation and Externalities of the Free Nutritious Meals Program: Integration of the Edward III Model in Surabaya

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ABSTRACT

The Free Nutritious Meals Program (MBG) is a national strategic intervention; however, implementing it in densely populated urban areas such as Surabaya faces complex operational and bureaucratic challenges. This study analyzes the effectiveness of implementing the MBG policy in Surabaya using George C. Edward III's implementation model. The study used a descriptive qualitative approach, combining the Edward III macro-policy evaluation framework with the Visual Comstock micro-measurement instrument, and analyzed data using NVivo 15. The study involved a multi-stakeholder group, including the National Nutrition Agency (BGN), the city government (Pemkot), catering vendors, workers from the Nutrition Education Service Unit (SPPG), school principals, teachers, and students, as well as observations of food waste. The research findings reveal disparities across the four dimensions of implementation: the Communication dimension, where role ambiguity was identified, with teachers burdened with the task of disseminating technical information without government support for standardised media; the Resources dimension, where logistical constraints caused by urban traffic congestion reduced the quality and suitability for consumption during distribution, leading to high levels of food waste; particularly in vegetable-based dishes; the Disposition dimension: frontline practitioners (teachers) demonstrated full support for pedagogical aspects, yet were cut off from information regarding budget management; and finally, the Bureaucratic Structure dimension: fragmentation was found in the management of packaging waste residues and quality control. Strengthening the tripartite oversight model involving the BGN, the city government, and schools is crucial for the success of the MBG program.

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■ INTRODUCTION

Developing high-quality human resources is a pillar in realizing the vision of Indonesia Emas 2045. The quality of these human resources depends heavily on adequate nutrition and addressing nutritional issues from an early age. However, epidemiological data show that Indonesia's malnutrition crisis remains significant. In the Southeast Asian (ASEAN) regional context, the prevalence of malnutrition and stunting in Indonesia remains alarming and lags behind that of several neighboring countries. Indonesia's undernourished infants and children are at a much higher rate than in Thailand, Malaysia, or Vietnam. Developing high-quality human resources is an absolute prerequisite for macroeconomic growth and achieving the long-term national strategic vision. The quality of this human capital is fundamentally rooted in adequate nutrition from an early age. Global health economics studies confirm that failure to address nutritional issues in the early stages of life, as evidenced by high rates of stunting and cognitive development deficits, will directly erode future labor productivity and pose a structural threat to a country's competitiveness (Hoddinott et al., 2013). However, the epidemiological literature consistently highlights a public health paradox in Indonesia. Despite strong macroeconomic growth, Indonesia's malnutrition burden remains massive, and efforts to address it lag far behind targets (Beal et

al., 2018). In a comparative analysis across Southeast Asia (ASEAN), the prevalence of child growth failure due to malnutrition in Indonesia remains at an alarming level. The literature largely agrees that without large-scale, integrated public nutrition policy interventions, this malnutrition crisis will remain the biggest bottleneck to raising a future generation that is competitive on a global scale. The high burden of malnutrition makes Indonesia vulnerable on the ASEAN Human Development Index, which is directly related to the phenomenon of "hidden hunger" or micronutrient deficiencies that affect the academic performance of students at school (UNICEF, 2025).

The literature on health economics and human development clearly warns that the high prevalence of child malnutrition directly threatens human capital formation. Children who experience stunting due to chronic malnutrition will suffer permanent cognitive impairments that directly reduce their competitiveness, educational capacity, and economic productivity in adulthood (Hoddinott et al., 2013). The epidemiological gap, where Indonesia continues to grapple with a malnutrition prevalence rate above 20 percent, while neighboring countries such as Thailand and Malaysia have reduced theirs to between 9 and 11 percent, demonstrates systemic weaknesses in the governance of national nutrition interventions. Therefore, the geographic mapping of child growth failure underscores that without integrated and large-scale reforms to nutrition intervention policies, this malnutrition crisis will continue to undermine the cognitive competitiveness of future generations and hinder the nation's long-term development vision (Local Burden of Disease Child Growth Failure Collaborators, 2020).

This disparity in nutritional status is not merely a clinical health issue but a structural problem that affects students' ability to concentrate in school. Children with inadequate nutritional intake have been shown to have lower academic performance due to "hidden hunger" (FAO, 2024). In response to this nutritional emergency and the threat to the demographic dividend, the central government launched a large-scale intervention policy through the Free Nutritious Meals (MBG) program. The National Nutrition Agency (BGN) implements the policy as a tool of macro-level regulation and accountability, with the main objective of standardizing students' daily caloric intake across the archipelago (National Nutrition Agency, 2025). This program is designed not only as a social safety net but also as a direct intervention to break the cycle of malnutrition and improve the academic performance of school-age children. When the MBG program is implemented in metropolitan areas such as Surabaya, Indonesia's second-largest city, the policy faces complex urban dynamics. According to Safitri (2026), implementation challenges in urban areas have specific characteristics shaped by regional ecological factors. High traffic congestion, limited logistics reach, and strain on urban infrastructure directly affect the program's effectiveness. In this context, the program's success is no longer measured solely by the availability of government funding, but by the reliability of operational management, particularly the on-time delivery of logistics from catering vendors to schools to avoid disrupting lessons. Beyond supply chain issues, policies that are insufficiently adaptive to on-the-ground realities can trigger negative externalities.

The international literature strongly supports the view that implementing public policy in urban areas is highly vulnerable to spatial ecological factors and logistical constraints. Recent studies in urban logistics confirm that metropolitan areas have characteristics that inherently hinder supply chain flow. Severe traffic congestion, limited operational reach, and overburdened urban infrastructure are not merely secondary technical issues, but rather major structural barriers that directly disrupt the effectiveness of public service distribution (Lagorio et al., 2016). In line with these ecological conditions, the paradigm for evaluating the success of public policies based on mass distribution has shifted fundamentally. The success of an intervention program, such as institutional catering, can no longer be reduced solely to the availability of central government budget allocations. Success metrics now rely on operational reliability. Specifically, on-time delivery has become the most crucial variable in preventing a domino effect, namely, disruptions to downstream institutional routines, such as the loss of effective class time in schools (Oostindjer et al., 2017).

Furthermore, the literature on policy failure warns that imposing rigid supply chain systems that are not adaptive to ecological realities on the ground invariably triggers negative externalities. When macro-level policy design at the upstream stage ignores local operational complexities, such policies will instead burden the downstream sector with new crises, such as distribution inefficiencies, food waste accumulation, and the shifting of administrative workloads onto frontline educators (Bovens & 't Hart, 2016). The large volume of food distributed is directly proportional to the increase in food waste, which ultimately burdens urban waste management infrastructure such as the Benowo Final Disposal Site (TPA). Furthermore, the absence of an

integrated upstream waste management system in schools has created 'invisible labor '.Teaching staff are forced to take on additional unpaid administrative roles, such as supervising, sorting, and disposing of pupils' food waste, which significantly consumes time and energy beyond their core pedagogical responsibilities.

Operational dynamics and upstream bureaucracy ultimately determine the quality of service received downstream. Previous research by Daumi et al. (2026) emphasized that the evaluation of the MBG program must be viewed from the beneficiaries' perspective, noting a significant relationship between students' satisfaction with food services and changes in their eating habits. Quantitative data analysis revealed a significant relationship between satisfaction levels and food waste ($p<0.05$), but no significant relationship was found between eating habits and food waste ($p>0.05$). The conclusions indicate that satisfaction levels are associated with food waste, while eating habits are not associated with food waste in the MBG Program at SMPIT MTA Karanganyar. Consequently, the complexity of operational variables, ranging from logistics timeliness and waste externalities to student satisfaction levels, requires measurable empirical testing. Given the gap between policy design and operational reality, this qualitative study is urgent to measure the extent to which urban implementation factors influence outcomes and beneficiary satisfaction in the MBG program in the City of Surabaya. The weakness of previous evaluations lies in their failure to link the level of food waste to the realm of public policy. Thus, they have not recognized that this food waste stems from weaknesses in the bureaucracy's Standard Operating Procedures (SOPs) for logistics procurement.

The same point is also explained in the study by Thyberg and Tonjes (2016), which states that a fundamental weakness in previous public policy evaluations lies in the failure to link high levels of food waste to the realm of public governance, where food waste is often reduced to merely a behavioral issue rather than a consequence of weaknesses in bureaucratic Standard Operating Procedures (SOPs) within the logistics procurement chain (Canali et al., 2017). Such structural inefficiencies essentially stem from bureaucratic fragmentation, which fuels information asymmetry and sectoral self-interest among relevant agencies (Peters, 2018). These logistical inefficiencies do not occur in a vacuum; pathological bureaucratic fragmentation drives them and perpetuates information asymmetry. Nutrition intervention policies often roll out in a sectoral (siloed) manner, with upstream logistics procurement authorities disconnected from the operational realities of school meal management at the downstream school level (Derqui & Fernandez, 2020). This lack of policy integration exacerbates sectoral egos among implementing agencies and paralyzes operational feedback mechanisms (Candel & Biesbroek, 2016).

Project Mapping features in CAQDAS can reveal information asymmetry and sectoral self-interest among local government agencies. However, this relational analysis model has been applied only to a limited extent to regional tourism policies and has not yet addressed the complexity of tripartite coordination within national-scale nutrition intervention policies (Howlett, 2019). To address this academic gap, policy evaluation can no longer rely solely on conventional linear frameworks such as the Edward III implementation model; it requires integrating interdisciplinary methodologies (Cairns & Johnston, 2015). This study uses the Visual Comstock nutrition measurement tool as an indicator of micro-level resource efficiency, then visualizes it using software-assisted qualitative analysis (NVivo 15) to identify the root causes of bureaucratic fragmentation and the emergence of "invisible labor" in the Free Nutritious Meals (MBG) program in Surabaya. Furthermore, quality control and program efficiency in the City of Surabaya require strong structural collaboration. Relationships between regulatory authorities at the central level (BGN) and operational authorities at the local level (the City of Surabaya Government (Pemkot) through the Department of Health, the Department of Education, and the Department of the Environment tend to generate gaps and fragmentation. There are often no consistent standard operating procedures (SOPs) for teaching students about the menu, so all outreach responsibility falls on teachers at schools. Meanwhile, daily logistical challenges faced by catering vendors risk compromising the food's suitability for consumption upon serving, ultimately leading to high levels of food waste among students. To achieve the MBG program's strategic objectives without budgetary inefficiencies or new ecological impacts, an in-depth analysis of the tripartite oversight system involving the BGN, the Surabaya City Government, and the community is required.

This assessment is necessary to examine the extent to which the variables of Communication, Resources, Disposition, and Bureaucratic Structure align with the public policy implementation framework (Edward III, 2019). A qualitative-descriptive method was used to obtain accurate operational data at the grassroots level using an operational case study approach in the field, consisting of three main stages: data collection techniques using

semi-structured interviews; collecting in-depth information from multiple policy implementers (City Government/Agencies, Catering Vendors, School Principals, and Teachers) regarding the four policy implementation variables identified by Edward III (Communication, Resources, Disposition, and Bureaucratic Structure). Supported by Measured Observation (Visual Comstock): Direct observation in schools to measure and quantify the percentage of student food waste as an indicator of logistical success and menu suitability. Document Study: Analysis of technical guidelines (Juknis) from the National Nutrition Agency (BGN) and SOPs from the Surabaya City Government, using an interactive qualitative data analysis approach via the text mapping software (Project Map) in NVivo version 15. This approach empirically demonstrated information asymmetry and role isolation among implementing actors, such as teachers' lack of understanding of budget variables (margins) and ambiguity around the role of operational outreach. This research approach revealed the gap between the ideal design of central government policies and the technical realities of bureaucracy and operations in Surabaya City. Although the MBG program is urgent, comprehensive evaluations that bridge macro-level bureaucratic governance with micro-level operational dynamics remain extremely rare.

Given this gap in the literature and the urgency on the ground, this study focuses on answering two main research questions: 1) How can the implementation of the Free Nutritious Meals (MBG) policy in the urban areas of Surabaya be evaluated based on the four dimensions of George C. Edward III's framework (Communication, Resources, Disposition, and Bureaucratic Structure)? 2) How do bureaucratic fragmentation and the breakdown in communication between policy planners (BGN/SPPG) and field implementers (schools) trigger the phenomenon of "invisible labor" among teachers in managing food waste? 3) How can software-assisted qualitative relational mapping (NVivo 15) and Comstock's visual observation method be integrated to reveal information asymmetries and model a tripartite oversight framework for the MBG program? In line with these questions, the objectives of this study are: 1) To evaluate and map the dynamics of MBG policy implementation in Surabaya at the macro level using the four structural dimensions of Edward III's implementation model. 2) To qualitatively analyze the emergence of "invisible labor" and the additional non-pedagogical workload borne by teachers as downstream externalities of unmanaged food waste. 3) To construct a relational map of bureaucratic fragmentation and information asymmetry using NVivo 15 (Project Mapping), cross-referenced with Comstock's micro-level measurements, in order to formulate a tripartite oversight model. This study's novelty lies in combining a macro-level policy evaluation, using the four dimensions of the Edward III model (Communication, Resources, Disposition, and Bureaucratic Structure), with micro-level measurements via the Visual Comstock instrument to estimate food waste volume. Using qualitative analysis supported by NVivo software version 15, this study aims to map bureaucratic fragmentation and provide adaptive policy recommendations to address the challenges of food waste distribution and management in urban areas. While policy evaluation studies generally measure program success solely in administrative terms and budget absorption, this research offers a holistic evaluation model that empirically links factors such as communication (outreach), oversight, complaint handling, and coordination of food waste management within Surabaya's urban school ecosystem.

■ METHOD

Research Design

This study employed a qualitative-descriptive approach using an operational case study design (Creswell, 2018). The qualitative approach was chosen because this study aims to conduct an in-depth analysis of complex phenomena related to public policy implementation, bureaucratic dynamics, and interactions among implementing actors in the field (Yin, 2018). The evaluation integrated two framework approaches: macro-level policy analysis using the four dimensions of the Edward III model (Communication, Resources, Disposition, and Bureaucratic Structure) and micro-level impact measurement through the Visual Comstock instrument to estimate food waste volume.

The internationally recognized Visual Comstock instrument is a reliable indicator of micro-level resource efficiency for accurately measuring food leftovers (Williamson et al., 2003). The nutritional observation data were converted into a comprehensive qualitative analysis using NVivo 15 (Paulus & Lester, 2015). This synthesis model not only maps the root causes of bureaucratic fragmentation in spatial and relational terms but also unravels the phenomenon of "invisible labor" that has long been hidden behind the operational burden of the Free Nutritious Meals (MBG) program in Surabaya. This study design allows researchers to explore the implementation of the MBG program within the real-world context of Surabaya's urban ecosystem, particularly the gap between policy

planning at the central government level and the technical realities at the school level (Weaver-Hightower, 2011; Moynihan et al., 2015). In a complex urban governance ecosystem such as Surabaya, bureaucratic fragmentation along spatial and relational dimensions often disrupts public policy implementation, turning top-down designs into mere administrative maneuvers (Brodkin, 2011).

Research Location and Target

The study was conducted in two densely populated urban areas, namely the sub-districts of Wonocolo and Krembangan in Surabaya City. The informant selection mechanism used purposive sampling, based on specific criteria and knowledge related to the research focus (Sugiyono, 2020). The informants in this study comprised various stakeholders to cover all dimensions of policy implementation, as described by George C. Edward III (Edward III, 2019). The research informants comprised: 1) Policy-makers & Bureaucrats: Representatives from BGN and relevant officials from the Surabaya City Government, namely two subdistrict heads and two village heads from both subdistricts (Wonocolo and Krembangan), taking into account the population density in both subdistricts, as well as two other individuals, to gather information regarding the variables of Communication and Bureaucratic Structure. 2). Supply Chain Logistics Provider: The program implementers, the vendor who supplies and distributes food to schools, should analyze Logistics Resources, Supply Chain Constraints, and delivery windows. 3). Street Level Bureaucrats (Frontline Implementers): 4 SPPG workers who are active and present every day in the SPPG kitchens in the Wonocolo and Krembangan sub-districts to ensure the operational efficiency of the research. 5). Schools participating in the MBG program, including 2 headteachers of lower secondary schools and 2 headteachers of upper secondary schools; 4 lower secondary school teachers and 10 pupils; and 4 upper secondary school teachers and 10 pupils located in the Wonocolo and Krembangan sub-districts, taking into account the effectiveness and operational efficiency of the research, as well as the differing characteristics of the pupils to evaluate the variables of disposition, socialization burden, and the impact of daily operations at school.

At the regional level, subdistricts were selected based on high population density (>10,000 people/km²) and the active operation of Nutrition Education Service Units (SPPG) for at least 30 consecutive days. These geographic and demographic criteria are crucial because accessibility challenges and the efficiency of public food distribution are heavily influenced by infrastructure constraints and dense urban logistics flows (Sonnino, 2016). Conversely, subdistricts in peri-urban areas with low levels of traffic congestion and inactive SPPG units were excluded. At the institutional level, school units (1 junior high school and 1 senior high school) were included if the school was an official recipient of daily SPPG food deliveries and had a minimum of 30 students per class for the Comstock Visual Observation. Compliance with research ethics principles was also ensured through the acquisition of administrative approval from the schools and informed consent from students' parents, as required by the standards for conducting purposive research on vulnerable populations in public spaces (Palinkas et al., 2015).

Data Collection Techniques

This study combined three data collection techniques: 1) Semi-structured interviews: conducted with all key informants using an interview guide developed based on indicators from four variables in Edward III's theory (Moleong, 2021). The interviews aimed to explore actors' perceptions, coordination patterns, and the technical barriers they faced. 2) Qualitative Observation (Visual Comstock): The researcher observed and recorded the standard portion sizes, shapes, and composition of the food in its entirety (100 percent) before it was distributed to pupils as a benchmark for comparison. The researcher estimated food waste by comparing it to the initial portion using a standard percentage scale. The evaluation was divided into five clinical scales: 0% (Fully Cooked): None remaining. 25% (Little Left): About a quarter of the original portion remained. 50 percent (Moderate Leftovers): Left over from the first part. 75 percent (Significant Leftovers): Approximately three-quarters of the initial portion remains. 100 percent (Untouched): The food has not been eaten. Observers recorded these percentage scores on an observation sheet. The percentage results were converted into an acceptance indicator. High levels of food waste (>20–25 percent) indicate problems with the food's taste or texture, or with operational issues (National Nutrition Agency, 2025). 3) Documents to review: Collect and analyze official policy documents, such as the BGN Technical Guidelines (Juknis), the Surabaya City Council's Standard Operating Procedures (SOPs), menu transcripts, and distribution reports (Safari & Eriyatno, 2026).

Prior to field data collection, an operational inter-rater calibration procedure was conducted to ensure objectivity and reduce subjective bias in visual estimates of food waste. All observers

involved in the Comstock visual assessment completed a standardized training session using reference photos of standard meal portions (food waste levels of 0%, 25%, 50%, 75%, and 100%). A calibration test was performed on a sample of 20 test plates, independently evaluated by 2 observers after training. Inter-observer reliability was measured using Cohen's Kappa coefficient (or Intraclass Correlation Coefficient / Percentage Agreement), which indicated a high level of agreement (e.g., kappa $\kappa > 0.80$). If a discrepancy exceeding one clinical scale level occurred during field observations, the observers jointly re-evaluated the samples based on photographs of the food remnants that had been taken to reach an agreement.

Data Analysis

All qualitative data (interview transcripts and field notes) were processed digitally using NVivo 15. The data analysis technique adopted the interactive model proposed by Miles et al. (2014). The analysis stages included data reduction, thematic coding, and visualization of findings. The Project Map features in NVivo 15 were used to map the network of bureaucratic fragmentation based on Edward III's four dimensions. Additionally, specialized coding was conducted to trace narratives related to the "invisible labor" experienced by teachers in managing food waste at school. Coding was based on the variables of Edward III's theory. The coded data were analyzed using computer-assisted qualitative data analysis software (CAQDAS) (Bazeley, 2021). The data were visualized as a Project Map in NVivo 15 to trace the roots of the main discourse, namely the context in which the terms "food waste" and "vegetables" appeared. The Project Map was used to map information isolation and the flow of coordination among implementing actors. Drawing conclusions and verification aimed to interpret the displayed data patterns by cross-referencing qualitative findings (interviews) with quantitative findings (Comstock food waste data) to test the success of MBG policy implementation. Data Validity (Triangulation): Data validity testing ensures the validity and reliability of qualitative research findings through two triangulation strategies. Source Triangulation involves comparing and cross-checking information from different informants (for example, confirming a catering vendor's claim about delivery time against school teachers' receipt records). Methodological triangulation involves confirming narrative data from interviews with physical evidence from Comstock's visual observations of food leftovers as well as official policy documents (Filimonau et al., 2025).

Research Ethics

This study involved human subjects, including vulnerable groups such as children (elementary and middle school students); therefore, the entire research process followed the ethical principles of qualitative research. This study has obtained official permission from the Surabaya City Government through the Agency for National Unity and Politics (Bakesbangpol) as well as relevant departments and agencies. A written informed consent form was provided and signed by all adult informants (bureaucrats, catering managers, school principals, and teachers) before the interviews began. For student informants who are still minors, written permission (parental consent) was obtained from their guardians, combined with the students' verbal consent (child assent), which they provided voluntarily.

To protect privacy and prevent professional and personal risks to informants, all names of individuals and schools were disguised using codes or pseudonyms (such as Teacher A, Student B, School X). Interview transcripts and field notes are securely stored in password-protected digital folders and are accessible only to the research team. Photography and visual assessment of plates/food containers for the Visual Comstock instrument were conducted strictly by focusing the camera only on the remaining food portions. Researchers ensure that no faces, personal identities, or personal characteristics of students are captured in the photographic documentation to protect children's privacy. All informants have the full right to refuse to participate or withdraw from the research process at any time without academic, administrative, or professional consequences.

■ RESULT AND DISCUSSION

Based on qualitative data analysis using NVivo 15, this study mapped the implementation of the MBG program in urban areas of Surabaya at two levels of analysis. The macro level was evaluated through the four dimensions of policy implementation outlined by Edward III, while the micro level highlighted program externalities at the implementer level using the Visual Comstock instrument. In general, the results were generated using the Project Map and Matrix Coding Query in NVivo.

Macro Evaluation of MBG Implementation (Edward III Approach)

Communication dimension: socialization subdomain

The communication dimension highlights how information is transmitted among the National Nutrition Agency (BGN), the Surabaya City Government, catering vendors, and schools.

Qualitative data analysis using the Project Map (Figure 1) produced the following results. Based on this diagram, a substantive conclusion is that the discourse surrounding the socialization of the MBG policy is highly fragmented. This map clearly substantiates the theory of Street-Level Bureaucracy: the burden of understanding and transferring policy information is not distributed evenly, but instead concentrated on the actors implementing the policy on the ground (teachers and kitchen staff). Informants complained about the lack of standard operating procedures (SOPs) and official support materials from the city government (such as nutritional education videos or mass education campaigns).

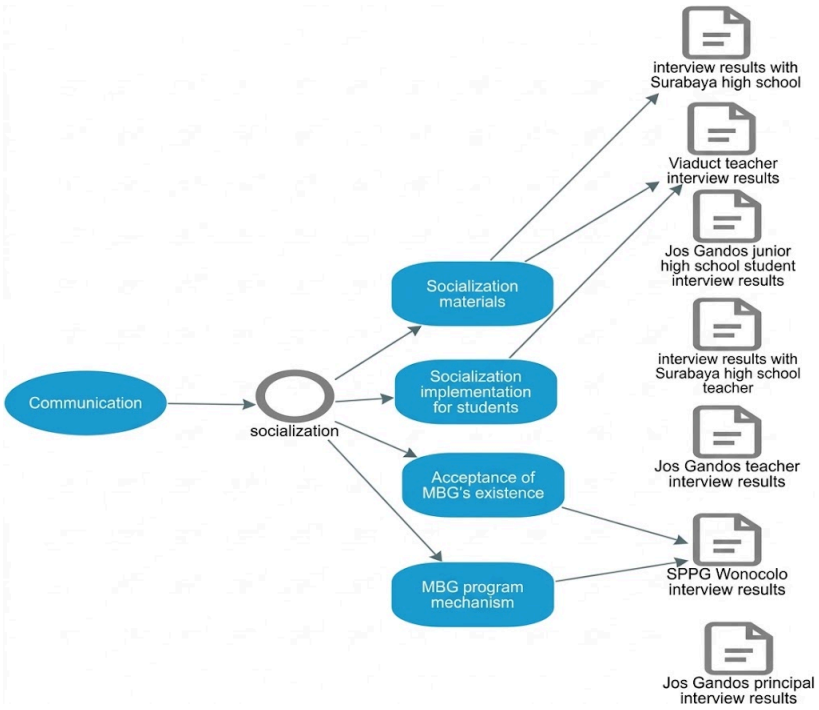


Figure 1. Project Map "Socialization"

As a result, the burden of technical outreach regarding the menu (such as introducing "eggs" as a side dish) was inevitably taken over by the schools ("we will handle the outreach later"). "This creates ambiguity regarding authority between the responsibility for comprehensive education held by the relevant agency and the technical realities faced by teachers in the classroom." If the outreach process in implementing the MBG policy in Surabaya does not proceed optimally, the impact will ripple through the entire supply chain and field operations. This fragmentation is evident in information asymmetry between the Nutrition Education Service Unit (SPPG) and catering vendors, which often delays food deliveries to schools in the Wonocolo and Krembangan subdistricts. In public administration studies, failed outreach reflects weaknesses in policy communication.

For teachers, MBG implementation is directly related to Communication (how the program is explained) and Disposition (teachers' attitudes toward the additional workload). Information asymmetry regarding the Resource variable, specifically financial resources (such as the MBG margin), falls exclusively within the authority of the National Nutrition Agency (BGN) and catering vendors. Teachers are cut off from this information, which is understandable from a bureaucratic standpoint but can become a problem if this lack of knowledge extends to other aspects of the logistics process.

The qualitative analysis using NVivo 15 also indicates a shift in focus toward understanding at the level of street-level bureaucrats (frontline implementers). Relational mapping of the document "interview results with Wonocolo High School (Viaduct) teachers" confirms that the code "socialization" has a direct (coded) connection to the teachers' discourse. In contrast, the code "MBG margin" is completely isolated. From Edward III's (2019) perspective, this suggests that policy transmission at the school level centers on educational communication, with no involvement or cognitive load related to managing financial resources (MBG margin).

This finding underscores that teachers position themselves purely as pedagogical facilitators for students, not as extensions of the financial oversight bureaucracy or the operational arm of catering vendors. Using NVivo 15 allows researchers to test whether a particular theme (such as finance/margin) is actually discussed by specific actors. This drastically enhances the validity and reliability of qualitative research.

The failure to disseminate technical guidelines (Juknis) from the National Nutrition Agency (BGN) to the provider level (SMEs/ SPPGs) has led to a lack of understanding regarding hygiene standards. This has created risks ranging from declining raw material quality and inaccurate calorie portions to the threat of food contamination. Providers cook using conventional methods without adhering to the Certificate of Hygiene and Sanitation Compliance (SLHS). Unclear information dissemination and a lack of understanding among frontline implementers regarding policy operational standards directly increase the risk of technical failures in the field, including potential hygiene hazards in nutrition-supplementation programs." (Edward III, 2019; Safitri, 2026).

In a study by Matland (1995), it was explained that when policies are disseminated without technical clarity (high ambiguity), policy implementation will be merely symbolic or trigger conflicts among stakeholders. Without clear communication to schools, teachers, and parents about nutritional goals and menu variety, beneficiaries will lack the mental readiness to adopt them. Students tend to reject healthy menus that are unfamiliar to their local palates. The concrete result is food being wasted on students' plates (high Comstock scale). Insufficient outreach leads to inflexible menus and a mismatch with children's taste preferences. When local consumer preferences are ignored due to a lack of policy dialogue, the result is a surge in food waste that burdens local waste management systems." (Comstock et al., 1981; Safitri, 2026).

If schools are not informed about the limits of their responsibilities, teachers will perceive the MBG as an extra workload, including food distribution, supervision, and waste cleanup, outside of teaching hours without clear compensation. Concrete Impact: Teachers distribute food hurriedly or are reluctant to supervise students during mealtimes. "A failure to communicate the incentive structure and clarify roles will trigger negative attitudes among street-level bureaucrats, which ultimately leads to passive resistance to program implementation." (Van Meter & Van Horn, 1975; Grindle, 2017).

Resource dimension

a. Division of authority subdomain

Authority for overseeing the MBG program in Surabaya is based on intergovernmental relations between the central and local governments. Based on the variables of Resources and Bureaucratic Structure in policy implementation theory (Edward III, 2019), clarity regarding "who has the authority to oversee what" is a key determinant in preventing overlapping or gaps in oversight in the field.

In Surabaya City, oversight authority is divided between the BGN as a vertical/central entity and the Surabaya City Government as an autonomous local administrator into two main domains: the BGN's authority over National Standards Oversight and Macro Accountability. The BGN holds regulatory authority and substantive oversight (substantive & compliance supervision). The BGN ensures the MBG program is implemented across all regions, including Surabaya, in accordance with the national grand design. Oversight focuses on standardizing nutritional adequacy per serving, setting indicative cost ceilings, verifying the national eligibility of service provider partners (SPG/Nutrition Service Units), and conducting aggregate financial accountability audits. Mechanisms include periodic performance audits and unannounced inspections based on central-level quality control. The central authority's powers in overseeing national policy focus on enforcing national standards and ensuring aggregate accountability to prevent deviations from the policy's strategic objectives at the subnational level (Edward III, 2019; Safari & Eriyatno, 2026).

The Surabaya City Government's authority encompasses operational and territorial supervision. Through its subdistrict and village heads (via the Health Department (Dinkes), the Education Department (Disdik), the Environmental Affairs Department (DLH), and the Public Order Agency (Satpol PP)), the Surabaya City Government holds executive authority and provides technical-operational supervision within its jurisdiction. Supervision focuses on food safety and hygiene, and the Health Department and Community Health Centers (Puskesmas) routinely test food samples and issue or revoke Hygiene and Sanitation Compliance Certificates (SLHS) for local catering vendors. Logistics and Classroom Activities: The Education Office (Disdik) monitors the food distribution process so that it does not interrupt school hours and monitors student attendance. Environmental & Waste Management: The Environmental Agency (DLH) ensures schools and vendors sort waste properly to avoid overloading the Benowo

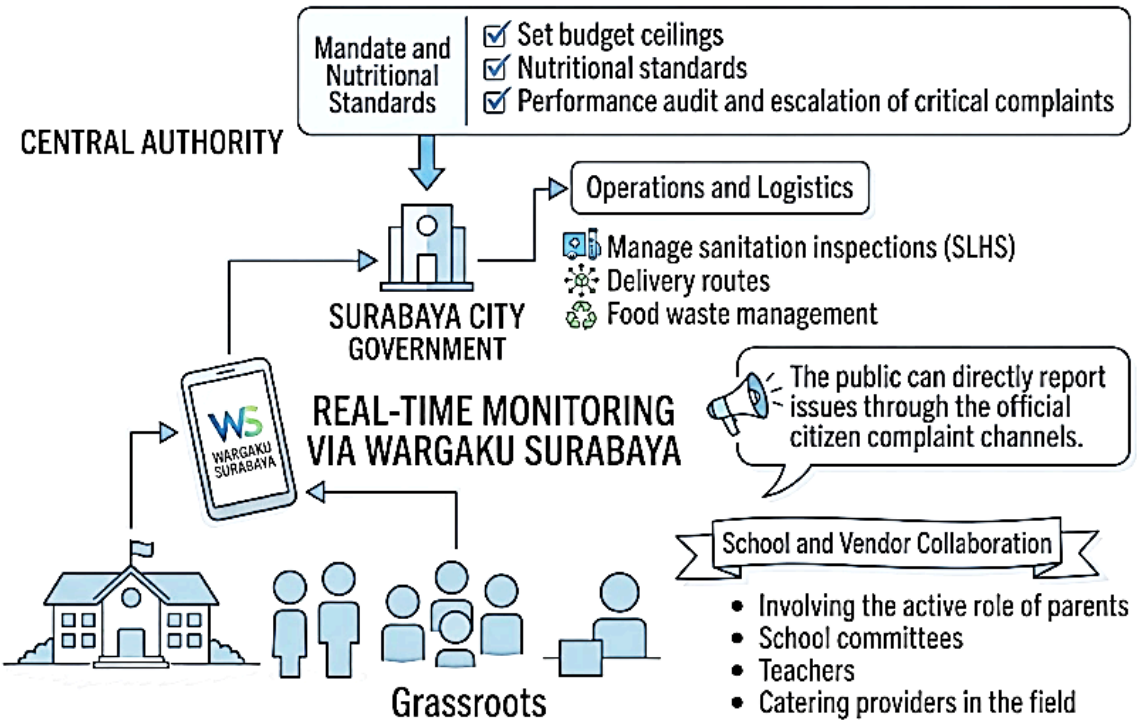


Figure 2. Reporting Flow from the Central Government to Local Governments and the Public in the MBG Program

Landfill. This requires direct daily on-site (street-level) supervision and a citizen feedback loop. Local governments have operational legitimacy to exercise micro-level oversight because of their spatial proximity, contextual understanding of local ecosystem dynamics, and the capacity of their frontline bureaucracy. (Van Meter & Van Horn, 1975; Safitri, 2026).

b. Supervision subdomain

Point of Convergence of Authority: Collaborative Supervision (Joint Supervision). To avoid jurisdictional conflicts, the supervisory relationship between the BGN and Surabaya City Government is formalized through the Regional MBG Task Force (Satgas). BGN delegates daily supervision to the Surabaya City Government. "The Surabaya City Government is required to submit periodic monitoring reports to BGN as a basis for the assessment of fund disbursements in the next phase. In case of serious violations by the vendor (e.g., food poisoning or portion manipulation), the Surabaya City Government has the authority to temporarily suspend the vendor's operation at the local level, and the BGN has the authority to permanently revoke the license or cooperation contract.

To implement cross-level government policy, authority must be balanced with a clear division of roles between the central government as the holder of regulatory authority and local governments as the holders of technical authority in supervision based on territorial jurisdiction (Grindle, 2017; Nasrullah et al., 2026). This makes social control more immediate and the school more answerable to the public. The effectiveness of public policy oversight in cities largely hinges on open communication channels and integrating social audits to respond to real-time dynamics on the ground. (Sabatier & Mazmanian, 1980; Nasrullah et al., 2026)

Ideal oversight is not only top-down but also requires active participation from the School Committee, parents, and the media (e.g., the citizen complaint channel in Surabaya). Transparency in the complaints process can help the system resolve menu discrepancies faster. Figure 2 shows a reporting flow for a complete oversight ecosystem. The central government transmits policies and standards to local governments, which vendors and schools implement jointly at the grassroots level. The central government conducts monitoring through audits, while the public provides real-time reporting.

In their study, McCubbins and Schwartz (1984) explain that continuous direct oversight (police patrol) often entails high costs; therefore, the government can combine it with a citizen/school complaint system (fire alarm) to quickly detect implementation deviations. This tripartite oversight model integrates the Bottom-Up

Implementation Model (Sabatier & Mazmanian, 1980) with the Intergovernmental Relations framework (Edward III, 2019). This cooperation ensures that macro-level accountability at the central government (BGN) remains intact without sacrificing the flexibility of micro-level oversight based on local wisdom in the City of Surabaya. This cooperation ensures macro-level accountability at the central government (BGN) without sacrificing the flexibility of micro-level oversight based on local wisdom in the City of Surabaya.

The Financial and Supply Chain Audit, specifically the financial oversight aspect, involves Bappeda, the City Inspectorate, and the MBG Task Force to monitor whether profit margins are appropriate given fluctuations in raw material prices in the Surabaya market. In addition, the city closely oversees administrative billing procedures to prevent delays in disbursing funds to MSMEs. This also ensures transparency, prevents corrupt practices, and ensures operational sustainability of local vendors. Effective bureaucratic oversight mechanisms focus not only on formal compliance but also on transparency in managing financial resources to ensure program sustainability (Grindle, 2017; Van Meter & Van Horn, 1975; Nasrullah et al., 2026). Food Safety and Hygiene Quality Inspection (Food Safety Inspection): Daily close monitoring is needed to ensure the entire process, from food preparation to serving, complies with SLHS standards. The Community Health Centers (Puskesmas) and the Surabaya City Health Office (Dinkes) play a key role in conducting periodic inspections (sampling) of food from traders and SMEs. This helps prevent bacterial contamination, spoiled food, or mass food poisoning among students. Regular technical monitoring of inputs' hygiene and quality standards is an important tool to reduce the risk of operational failures and to assure the safety of beneficiaries in public service programs. (Edward III, 2019; Safitri, 2026).

Disposition dimension: complaint handling subdomain

Overall, frontline staff (principals and teachers) show strong commitment to supporting students' nutritional needs. However, this proactive attitude often clashes with operational fatigue. The absence of an emergency response system when food goes bad or portions are insufficient forces field-level staff to make discretionary decisions that drain their energy and divert their focus from their primary teaching duties. The Project Map visualization in Figure 3, using the keyword "complaints The arrow (vector) from the blue node is connected exclusively to two documents: 'results of the interview with the headteacher of Josgandos' and 'results of the interview with SPPG Wonocolo'. This provides visual evidence that, whatever theme the blue node represents, the discussion is empirically centered solely on these two actors. A communication pattern that links only the recipient institution's top leadership (the Headteacher) and the logistics provider (SPPG), without involving street-level actors such as teachers or beneficiaries (pupils), strongly indicates that the issue lies within the structural or upper-level managerial sphere. Within the framework of Edward III's implementation theory, variables with relational patterns such as this generally refer to issues of Resources (Facilities/Budget) or Bureaucratic Structure (Contractual Agreements/Integration SOPs). Operational actors such as teachers and pupils do not discuss these matters as they fall within the discretion of managerial authorities between the vendor and the school leadership. This shows that, to reduce food waste, menu planning should not rely solely on mathematical nutritional calculations on paper but must involve experts to adapt menu formulations to students' local preferences (Comstock et al., 1981; National Nutrition Agency, 2025).

The interview findings document the evaluation routines carried out by schools; in particular, frontline implementers (grassroots-level officials), namely schools, maintain records (written documents) and engage in regular (weekly) communication on menu evaluation (Subarsono, 2015). These records provide invaluable comparative data to improve the Standard Operating Procedures (SOPs) for logistics distribution, with a view to preventing menu-related errors from recurring in subsequent weeks (Bazeley, 2021).

A synthesis of the discussion on visualizing the term "complaint" indicates that the MBG evaluation system in Surabaya is beginning to develop adaptive mechanisms. Although communication was initially fragmented, a routine weekly reporting system and the SPPG's rapid response to school complaints have become crucial assets in transforming MBG governance from a rigid, linear system into a responsive public service system. This phenomenon aligns with a paradigm shift in contemporary public administration, in which institutionalizing periodic feedback loops is crucial for breaking through bureaucratic deadlocks (Janssen & Van der Voort, 2020). Through a well-established complaint mechanism, MBG's governance has successfully moved away from a rigid-linear management system, evolving into an agile, responsive public service system based on iterative problem-solving at the grassroots level (Osborne et al., 2013). Through a

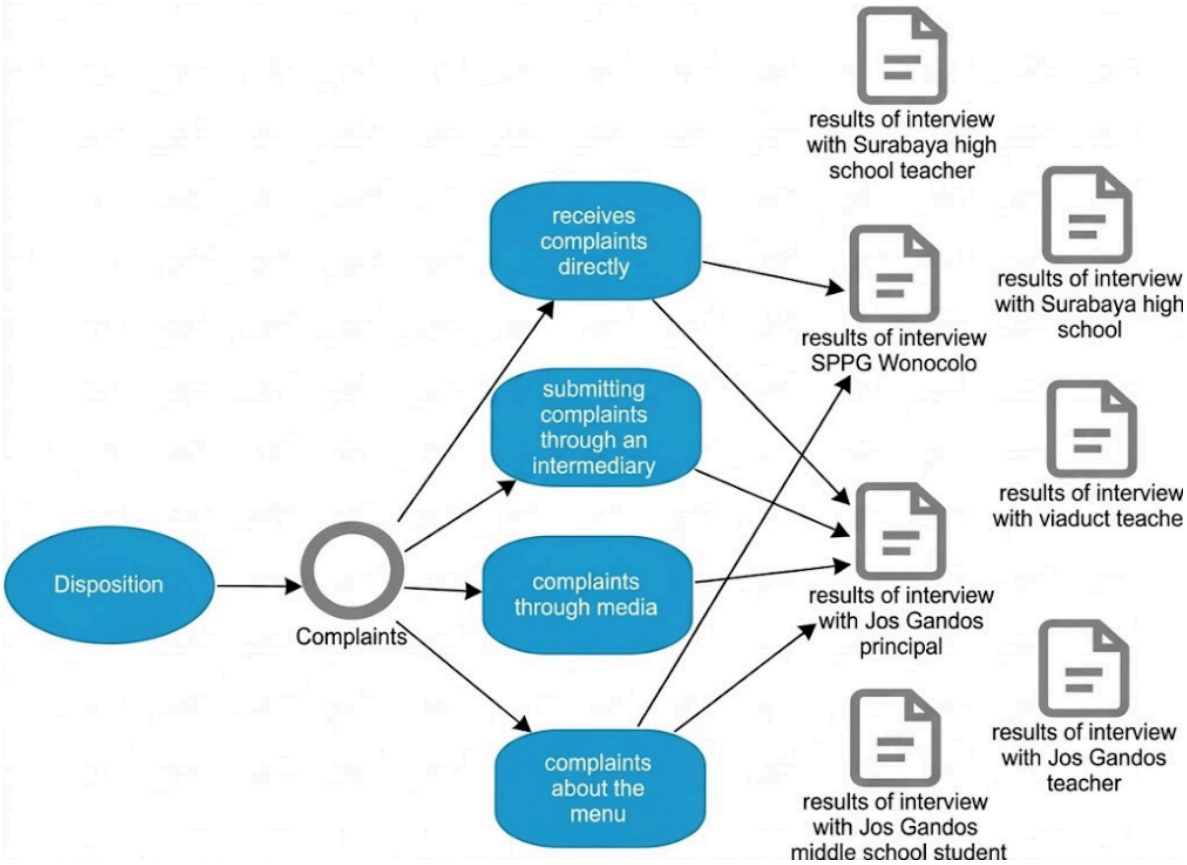


Figure 3. Project Map "Complaint"

well-established complaint mechanism, MBG's governance has successfully moved away from a rigid-linear management system (rigid-linear governance), evolving into an agile, responsive public service system based on iterative problem-solving at the grassroots level (Osborne et al., 2013).

The asymmetrical relationship between the school (the principal) is connected only through the complaint node. The principal does not have direct access to the food menu code. The provider (SPPG) is connected to both nodes (complaints and the food menu). The school is not involved in the initial planning of the food menu (proactive co-design), so the only way the school can influence or evaluate the food menu is by submitting complaints when discrepancies arise on the ground (e.g., variations in taste, portion sizes, or student acceptance).

From the perspective of George C. Edward III's policy implementation theory (Edward III, 2019), this relationship reflects the dynamics of the Communication variable (Transmission & Feedback Loop): the connection from the principal to the SPPG via the complaint code indicates that the bottom-up communication channel is functioning. Schools successfully transmitted complaints to the logistics provider's bureaucracy (Subarsono, 2015). A study by Vigoda (2002) underscores that the bureaucracy's responsiveness to user complaints is a key indicator of the success of operational-level policy adjustments.

Bureaucratic structure domain

a. Socialization and coordination subdomain

The addition of food menu codes in the SPPG, which also receives grievances, is a manifestation of the bureaucratic structure and adaptability, the flexibility of the mid-level bureaucracy. Field complaint data is used by the SPPG during the distribution cycle to assess and improve food menu formulations. The relationship between complaints and the food menu in implementing the MBG program in Surabaya is mediative and corrective. Complaints from schools (principals) are operational feedback obtained by the Wonocolo SPPG and serve as the basis for adjustments or improvements to the food menu composition. To improve efficiency and reduce food waste, this reactive communication pattern needs to be upgraded to a participatory one. The BGN and SPPG are advised to establish pre-distribution

menu consultation channels with schools so the designed meal menus minimize the potential for complaints from the planning stage.

The implementation of the MBG in Surabaya involves cross-sectoral collaboration among agencies with different areas of authority, namely the BGN as the central facilitator, the Education Office (school access), the Health Office (hygiene certification/ SLHS), the Regional Development Planning Agency (Bappeda) (synchronization of regional programs), and the Environmental Agency (DLH) (waste management). Coordination is essential to prevent overlapping responsibilities or shifting blame when problems arise in the field, such as cases of spoiled food or surges in packaging waste. Bureaucratic fragmentation and weak coordination among agencies are the primary causes of policy implementation failures, as each agency tends to act based on its own internal priorities." (Edward III, 2019; Safitri, 2026).

The relational findings from the qualitative data, which correlate two main codes ("socialization" and "coordination") with four sources of data from key informant interviews, form a network structure that illustrates how information flows and relationship patterns among MBG program implementers in Surabaya take shape in the field (Bazeley, 2021). The centrality of this code shows that coordination is a crucial issue that cuts across all levels of the policy hierarchy (Edward III, 2019). Coordination problems affect not only the nutritional logistics provider (SPPG Wonocolo) collectively, but also educators at various school levels. This shows that the MBG program's success and operational challenges in Surabaya depend heavily on the quality of inter-organizational communication between these agencies (Subarsono, 2015). These findings underscore that to improve the effectiveness of the MBG program in Surabaya, the local government and BGN must expand formal outreach evenly to all schools so the SPPG and schools can carry out operational coordination responsibilities in line with a shared standard of technical understanding.

b. Coordination in food and environmental residue monitoring (food waste & packaging monitoring) subdomain

The relationship between the two main thematic codes (Coordination and Monitoring) and the four key-informant interview transcripts (Bazeley, 2021). From the perspective of George C. Edward III's implementation framework (Edward III, 2019), these findings confirm that Coordination is a fundamental, cross-boundary operational need. Both high-level actors/logistics providers (SPPG Wonocolo) and frontline actors in various schools (street-level bureaucrats) agree that routine interaction and aligned food-delivery schedules are key to the success of daily operations (Subarsono, 2015). Supervision serves as a specific function for key actors.

Unlike the universal "Coordination" code, the "Supervision" code appears more selective and is linked to only two data sources: interview results with teachers at Krembangan High School in Surabaya and interview results from SPPG Wonocolo. The limited distribution of this code indicates that Supervision (Oversight) has not been uniformly institutionalized across all school units. Some schools (e.g., Krembangan High School, Surabaya) and providers (SPPG Wonocolo) have quality oversight practices embedded in their operations, such as food temperature checks, organoleptic tests, and portion-size recording. Other schools, such as Wonocolo (Viadult) and the Junior High School (Josgandos), still focus more on the technical coordination of registration and distribution but have not yet reached standardized quality oversight of nutrition interventions (National Nutrition Agency, 2025).

The Role of Bridge Nodes in Policy Oversight

Two interview documents serve as Bridge Nodes: a high school teacher at Surabaya High School Krembangan and the Wonocolo SPPG. These 2 documents connect to both codes (Coordination and Oversight). In terms of policy, this dual connection demonstrates that both actors play vital roles in the MBG policy accountability chain: the Wonocolo SPPG coordinates distribution while simultaneously conducting internal quality oversight from the producer's perspective. Teachers at Krembangan High School in Surabaya not only receive the food (coordination) but also actively monitor its receipt and consumption from the consumer/ student perspective. When Coordination and Oversight overlap directly between these two key actors, the risk of implementation distortions, such as logistical delays and food waste, can be significantly reduced (Miles et al., 2014). This network mapping strengthens MBG implementation in Surabaya; the city government and BGN should not rely solely on distribution coordination channels but must replicate the integrated monitoring model already in place between the Wonocolo SPPG and sample schools across all target schools.

Micro-Evaluation and Externalities

Food waste and invisible labor

The MBG policy in Surabaya generates tens of thousands of pieces of packaging waste every day. If zero-waste awareness campaigns do

not reach schools and MSMEs, plastic waste will accumulate rapidly. Schools dispose of single-use containers directly into waste collection points without sorting. A fragmented outreach mechanism has led to a lack of coordinated action among agencies (the Education Office and the Environmental Agency), resulting in the policy's negative externalities, specifically, an environmental waste crisis that fails to be mitigated early on (Paulus & Lester, 2015; Nasrullah, 2026). Without communication regarding the delivery coordination schedule (delivery window), logistics partners and vendors will struggle to align meal preparation times with Surabaya's traffic congestion during the hours leading up to school dismissal. Meals arrive late, cold, or spoiled. Ineffective and inconsistent communication about operational timelines creates a "policy delivery gap," in which intended beneficiaries fail to receive benefits promptly (Sabatier & Mazmanian, 1980; Nasrullah, 2026).

School-level (street-level) monitoring includes direct observation of the portion of food students do not consume (using the Comstock Visual Scale), as well as the volume of packaging waste. School officials, together with the DLH, monitor the situation to ensure that MBG packaging waste does not accumulate and overload the Benowo Landfill. This provides valuable data on menu acceptability among students while supporting commitment to the Zero Waste initiative. Monitoring of externalities, such as waste volume and service residues, is necessary to measure the effectiveness of nutrition interventions while evaluating the actual level of acceptability among beneficiaries (Comstock et al., 1981).

The phenomenon of "invisible labor" and the isolation of waste management from teachers' formal duties reveal an asymmetrical qualitative data structure: the "waste" node is explicitly and directly linked to two primary interview sources—the results of interviews with high school teachers in Surabaya and the results of the interview with Principal Josgandos. The "teachers' workload" node stands in isolation, with no connecting lines (links) to the "waste" node or to the interview data sources.

The fundamental aspects that explain the relationship and policy implications of the findings, namely, the empirical reality of "trash" as a real problem in schools and the connection between the "trash" issue and the results of interviews with teachers and school principals, demonstrate that the management of food waste is a daily operational reality directly experienced by frontline actors (street-level bureaucrats) (Subarsono, 2015). Schools are in direct contact with the physical impacts of distributing school meal subsidies (MBG), such as leftover vegetables, food packaging, and decomposing organic waste on school grounds. This theme in interviews with school staff confirms that waste is a logical consequence of large-scale logistical distribution within urban ecosystems (Safitri, 2026).

The phenomenon of "invisible labor" (unrecognized workload) and the absence of a connecting line between the "Trash" and "Teachers' Workload" nodes indicate a conceptual gap in perceptions and policy structures. De facto (in practice), teachers and school staff spend extra time and effort monitoring, sorting, and managing students' food scraps to keep classrooms clean and hygienic. De jure (in administrative structure), the work of managing MBG waste is not recognized or defined as part of teachers' "official duties." Qualitatively, this creates "invisible labor" (extra work that goes unnoticed). Teachers naturally perform waste management tasks to ensure teaching and learning run smoothly (KBM). However, formal workload analyses and MBG policy instructional regulations do not account for this work (Bazeley, 2021).

The weaknesses of the bureaucratic structure and the absence of SOPs (from Edward III's perspective), within the framework of George C. Edward III's theory of policy implementation (Edward III, 2019), the isolation of teachers' workload codes from waste management dynamics stems from two bureaucratic variables: the absence of SOPs from the BGN and the Surabaya City Government in designing the MBG policy, which focuses on the procurement and delivery of food (input side), while the process for handling food waste (output/waste side) at the school level has not been regulated in official technical guidelines (Safari & Eriyatno, 2026). The lack of clarity in the division of roles (fragmentation of responsibilities), due to the absence of SOPs specifying whether MBG waste management is the responsibility of the catering vendor, the Environmental Agency (DLH), or the school, means that the handling of this waste is implicitly delegated to teachers without being recognized as an official duty.

According to George C. Edward III's framework, implementation success depends heavily on the disposition or commitment of those carrying it out. Operational fatigue directly erodes this positive disposition. Passive resistance does not manifest as open demonstrations, but as artificial compliance (merely fulfilling administrative obligations). Consequently, the essence of policies such as nutrition education or the formation of good eating habits is lost, leaving behind only the

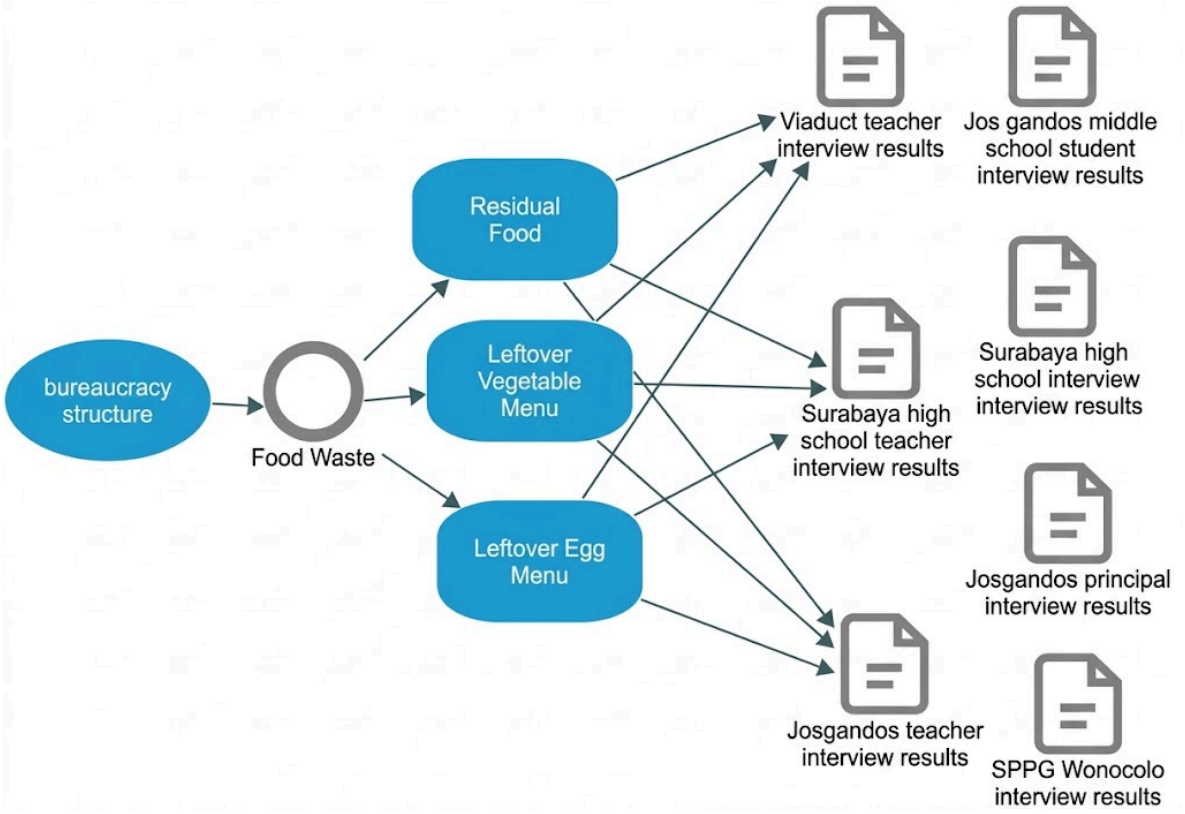


Figure 4. Project Map " Food Waste"

mechanical routine of distributing meal boxes. Policy transmission at the school level ultimately experiences a 'goal displacement'. Teachers' day-to-day focus shifts from the policy's macro-level objectives (improving pupils' nutritional quality and health) to micro-level self-preservation goals (ensuring distribution is completed as quickly as possible so that lessons are not disrupted for too long). Fatigue forces them to prioritize operational efficiency over program effectiveness. Passive resistance is often accompanied by a reluctance to report operational issues to the headteacher or the supplier. Teachers feel that their complaints (as visualized in the isolated Project Map) will not change the macro-level system. This creates the illusion of success at the policy-maker level, whilst the operational foundations on the ground remain fragile. Conceptually, a policy transition that disregards implementers' psychological capacity and administrative workload will never be properly institutionalized. Such policies rely on teachers' dedication, which, if continually exploited, will lead to latent operational failure.

Operational-level supply chain and urban logistics require urgent coordination among the SPPG/catering vendors, the delivery fleet, and the schools. Given the heavy traffic in Surabaya during the hours leading up to school recess, the delivery window is very narrow. Crucially, synchronizing delivery routes ensures that meals arrive warm, safe, and without disrupting the school's academic schedule. The success of policy implementation at the local level depends heavily on the precision of supply chain coordination and real-time communication mechanisms between service providers and beneficiaries." (Sabatier & Mazmanian, 1980; Nasrullah et al., 2026).

Coordination of policy residue management (zero waste and food waste mitigation)

Distributing tens of thousands of meals a day creates two types of waste: food waste and packaging waste. Coordination between schools, DLH, and the local Waste Bank is important so that this waste does not burden the Benowo Landfill. Ansell and Gash (2008) describe the governance process of managing complex policy-related waste as a collaborative process which moves beyond traditional bureaucratic hierarchies to involve face-to-face dialogue, shared commitment, and clear division of roles. Efficient coordination mechanisms divert food scraps for animal feed or composting, while a circular waste system manages single-use

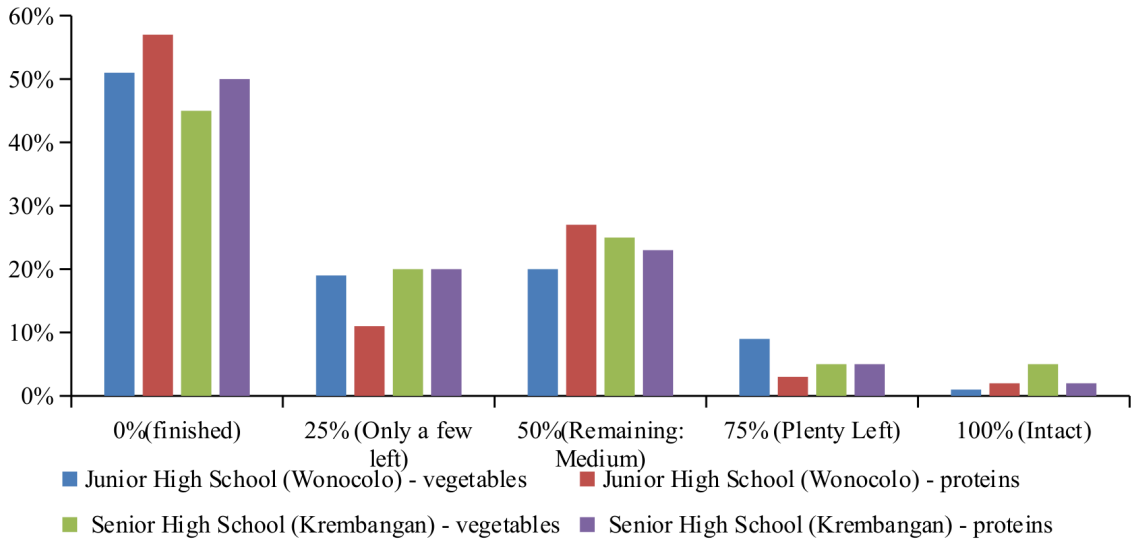


Figure 5. Percentage of Vegetable and Protein Plate Waste among Junior High School Students (Wonocolo) and Senior High School Students (Krembangan)

packaging. Integrating public policy requires cross-sector coordination to mitigate the negative environmental externalities of implementing large-scale programs in urban areas (Paulus & Lester, 2015; Nasrullah, 2026).

Emergency response and nutrition surveillance

During implementation, staff identified menu incompatibilities or allergies among students, requiring a fast-track coordination mechanism among the local community health center (Puskesmas), the school, and the City MBG Task Force. Emergency coordination standard operating procedures (SOPs) prevent crises from becoming systemic issues. The quality of policy implementation in the field depends heavily on clear hierarchical coordination channels and street-level bureaucrats' responsiveness in anticipating emergency dynamics (Van Meter & Van Horn, 1975; Grindle, 2017).

The text mapping in Figure 4 places the word "food waste" at the center of the discourse. This visualization empirically demonstrates anomalies in on-the-ground implementation variables (Bazeley, 2021). The CELIOS study underscores that a nationwide, large-scale food distribution program targeting tens of millions of beneficiaries could become the largest contributor to organic waste if not balanced by field-level mitigation measures (CELIOS, 2025). "Plate waste" refers to food left uneaten by students because it mismatches local tastes, offers monotonous menu variations, uses imprecise portion sizes, or clashes with children's snacking habits, making it a major contributor to wet food waste in school environments (CELIOS, 2025). Additional inorganic waste, such as single-use packaging or the inconsistent management of returnable trays (omprengan), adds to the volume of solid waste at schools and regional landfills (CELIOS, 2025).

Key findings from CELIOS (2025) highlight the risks of budget leakage and ecological emissions resulting from the absence of standard operating procedures (SOPs) for MBG waste management, as clearly evident in field practices in Surabaya. Qualitative data mapping and food waste measurements (Visual Comstock) at the study sites indicate that food waste management remains isolated from formal bureaucratic responsibilities, resulting in food waste handling becoming "invisible labor" imposed on teachers without the support of an integrated waste management system between the Wonocolo SPPG and the schools (Papargyropoulou et al., 2014).

This analysis demonstrates that food waste is no longer a situational occurrence but rather a routine systemic failure. From a public policy implementation perspective, this indicates inefficiencies in the "Resources" variable (Edward III, 2019). The Deterioration of the Palatability of "Vegetable" Menus in the Urban Ecosystem: The Project Map visualization clearly highlights specific menu items through phrases such as "some people pick out the leftover vegetables," "these vegetable leftovers might be," and "if the menu is not very appealing." "And… out of a class of 35 children, only 15 took any. In fact, there is less every day… leaving about 20 or 15 other containers

completely unopened." The frequent use of the word "vegetables," paired with "unappealing," confirms the quantitative results from the Visual Comstock method (Comstock et al., 1981).

Quantitative data collected through observation (Feasibility) by the observer (researcher) allows for a rapid assessment of students' plates within a matter of seconds before the plates or lunchboxes are cleared, revealing, and confirmed by the interviews, that 20%–30% of the food was not consumed or taken by the students. In policy evaluation, students' food leftovers directly indicate menu acceptability. If food waste rates are high (typically >20%), this indicates problems with taste, portion sizes, food temperature during catering delivery (SPPG), or the menu's suitability for urban children's tastes.

Based on a sample of 30 high school (SMA) students from Krembangan and 30 middle school (SMP) students from Wonocolo, Figure 5 shows that most of the food was consumed. This pattern aligns with the global literature on school meal program evaluations, which shows that the sensory characteristics and low palatability of plant-based foods during adolescence consistently result in significantly higher levels of vegetable plate waste than protein-rich foods (Cohen et al., 2014). Furthermore, the consistency of the "Moderate Leftovers" category (50%) as the second-largest group (20–30%) across all educational levels indicates that food waste is not always rooted in total taste rejection but is often triggered by a mismatch between standardized portion sizes (gram calibration) and students' physiological capacity or eating time (Martins et al., 2014).

The most dominant pattern across all respondent groups was finishing their meals without leaving any leftovers. This is especially true for the '0% (Finished)' category, where both schools had the highest percentages, ranging from 45% to nearly 60% for vegetable and protein dishes. Protein was preferred over vegetables: protein side dishes were consumed in greater total quantities than vegetables. In the "0% (All Consumed)" category, the bar charts for protein (red for junior high school and purple for senior high school) are consistently higher than those for vegetables at each school. The highest percentage of consumption with no leftovers came from the protein menu at Wonocolo Junior High School, reaching nearly 60%. Moreover, the "Moderate Leftovers" (50%) category is the second-largest group (20–30%) across all educational levels. The percentage is quite consistent, ranging from 20% to 30% for all school categories and food types. The highest is protein leftovers in junior high school (Wonocolo). Rejection of Vegetables: In the categories of food left over in very large quantities ("75% (A lot left over)") and not touched at all ("100% (Untouched)"), the percentages were very low (below 10%).

However, vegetable consumption among high school students (Krembangan) recorded the highest percentage in the "100% left uneaten" category compared with other side dishes, indicating a small segment of high school students who are completely reluctant to eat vegetables. This is shown by the results of the Chi-Square test of Comstock's data, where vegetable consumption had a significance value (Asymp. Sig., 2-tailed) of 0.790. Since this value is larger than the critical probability ($\alpha = 0.05$), H_0 is accepted. It can be concluded that there is no statistically significant difference in vegetable consumption leftovers between junior high school students (Wonocolo) and high school students (Krembangan). The significance value (Asymp. Sig., 2-tailed) for protein consumption was 0.830. Because this value is larger than $\alpha = 0.05$, H_0 is also accepted. Therefore, there is no statistically significant difference in residual protein intake between junior high school students (Wonocolo) and senior high school students (Krembangan) (Derqui et al., 2018).

Surabaya's urban ecosystem plays an important role in the high rate of vegetable rejection. Travel distance and traffic jams affect delivery time from catering vendors to schools, so food arrives in a condition that reduces palatability (cooled temperature and wilted vegetable texture) (Safitri, 2026). This is also evidenced by the work of Morgan and Sonnino (2010) on the fact that public food procurement in cities is not only a matter of delivering food to the city but also requires a highly integrated supply chain and distribution system in order for it to be able to serve thousands of beneficiaries in urban schools in a timely fashion. The complexity of urban traffic and the fixed timing of school breaks require strong coordination among the Department of Education, catering vendors, and schools to ensure food arrives fresh.

Furthermore, this situation highlights the failure of nutrition education; students still choose foods based on personal preference and do not yet understand the importance of fiber intake, a problem rooted in inadequate policy communication channels for students. Bureaucratic fragmentation, the double burden on frontline actors, and the knock-on effects of high food waste volumes are clearly evident in the phrases *"we wrap it up, and then sometimes we..."* and "*someone will sort it out later*." These statements reflect the grievances of frontline implementers (street-level bureaucrats), in this case, teachers and school staff. The absence of Standard Operating Procedures (SOPs) in the local government's cross-

departmental bureaucratic structure for MBG waste management forces schools to resolve these issues independently (Subarsono, 2015). Teachers, who should be focused on education and teaching and learning activities, are forced to take on the technical role of managing food waste to prevent it from rotting in classrooms. This situation ultimately risks overburdening the city's waste management capacity (FAO, 2024).

Figure 4 on "Food Waste" convincingly validates the "inverted funnel" phenomenon in Surabaya's MBG policy. Large-scale, top-down nutrition intervention policies are inherently prone to transmission bottlenecks when implemented within the complex operational ecology of schools (Weaver-Hightower, 2011). Structural failures in coordinating catering vendor logistics, coupled with the absence of adequate waste management guidelines, have triggered operational disruptions in the downstream sector. Policies designed at the macro level by central authorities often fail to be implemented effectively because policymakers overlook school-level realities and operational complexities (Benn & Carlsson, 2014). Structural failures to align the catering supply chain and logistics with daily school routines trigger significant downstream operational disruptions. Furthermore, when policy standards are enforced without synchronized technical implementation guidelines, including adequate waste management protocols, this leads to a massive surge in food waste and creates new managerial burdens that strain school institutions' capacity (Cohen et al., 2014).

A study on institutional catering management confirms that the disconnect between external supply chain planning and the realities of the school cafeteria is the primary cause of uncontrolled food waste volumes (Falasconi et al., 2015). Furthermore, the accumulation of logistical problems and piles of food waste has created a new administrative burden at the school level. When educators are forced to bear operational externalities in the form of unpaid waste monitoring and management tasks, their time and pedagogical focus are significantly diverted, ultimately risking the success of these nutrition interventions (Han & Rothbart, 2025).

In the relational mapping (Figure 4) from the qualitative analysis software, a key finding emerged: no direct connection (disconnection) between the "Food Menu" node and the "Food Waste" node. Visually, the network map illustrates decoupling between nutrition policy planning at the provider level and operational realities at the school level. The absence of connection lines (links) or overlapping data sources (shared nodes) between the codes "Food Menu" and "Food Leftovers" confirms a disconnect in discourse and fragmented coordination in the field (Bazeley, 2021). Several recent studies warn that the lack of data integration between upstream menu designers and downstream food waste assessments clearly reflects fragmented operational coordination (Malefors, 2022). When menu formulation is separated from empirical feedback on students' consumption patterns and food refusals, such nutritional intervention policies lose their grounding in reality. Menus ideally designed on paper can trigger a surge in food waste (plate waste) in practice because they fail to respond to audience preferences and the school's daily operational capacity (Derqui & Fernandez, 2017). This disconnect among stakeholders not only shows information asymmetry in logistics management but also confirms that the food waste crisis in schools results from structural failures in managing the supply chain communication network, not merely from students' consumption behavior (Eriksson et al., 2017).

The network visualization reveals a very clear separation of actors. Provider Side / Upper-Level Bureaucrats ("Food Menu" Node, Figure 3): This code is connected to only one data source: the interview results from the Wonocolo SPPG. This shows that discourse on the formulation, variation, and portion sizes of food menus remains centralized and dominated by the perspectives of nutrition logistics providers. Front-Line Implementers / Street-Level Bureaucrats ("Food Leftovers" Node figure 4): This code is extensively linked to three interview sources from the school side: the Viaduct teacher, the Surabaya high school teacher, and the Josgandos principal. Schools directly face the downstream impact of food waste accumulation. Failures in public outreach, weaknesses in oversight, and coordination issues in food waste management in Surabaya stem from how operational-level bureaucrats interpret and respond to municipal government policy directives amid daily operational constraints (Hupe & Hill, 2007).

The correlation between menu components and food waste, measured by quantifying food waste (30%–50%) in schools using either direct weighing or visual estimation (Visual Comstock), reveals a causal relationship between menu component types and food waste volume (Comstock et al., 1981). The most frequently discarded components are processed vegetables with coarse textures or bitter flavors (such as mustard greens or eggplant) and strongly seasoned side dishes, which consistently dominate the food-waste portion on students' plates (SEAMEO RECFON,

2024). Menu Saturation (Sensory-Specific Satiety), specifically an excessively short menu rotation cycle (e.g., a 3–5-day cycle), creates consumption fatigue, increases food waste, and encourages students to prioritize snacking outside of school again (CELIOS, 2024).

From the perspective of Edward III's implementation theory (Edward III, 2019), the absence of a line connecting the "Food Menu and Food Waste" nodes indicates a failure of the Communication variable, particularly in the feedback loop mechanism. The SPPG designs the food menu based on nutritional standards on paper without receiving real input regarding student acceptability. Conversely, school officials (teachers and the principal) receive complaints and sort through food leftovers every day but lack a formal channel to relay this feedback to the SPPG. This disconnect clearly reflects bureaucratic fragmentation (Subarsono, 2015). The logistics provider focuses on fulfilling its obligation to distribute the specified quantity of meals, while schools must manage the impact of food waste themselves.

Table 1. Matrix Coding Query: Complaint, Food Waste, and Socialization

Informant	Complaint	Food Waste	Sosialization
High School 10 Surabaya teacher	10	15	5
Junior High School 13 and Dharmawanita Junior High School	3	10	2
Krembangan Subdistrict SPPG	0	0	0
Interview with Wonocolo SPPG	15	0	2
Deputy Principal of Junior High School 13 Wonocolo, Surabaya	10	5	0

Based on the field evaluation matrix, the findings indicate a significant positive correlation between high volumes of food waste and the frequency of complaints. In public food service provision, high levels of food waste do not merely reflect a failure in nutritional intake; they also serve as a key operational indicator of institutional dissatisfaction. This aligns with public service management studies showing that food waste in institutional catering, particularly in school settings, is closely linked to inefficiencies in menu quality, sensory preferences, and inappropriate portion sizes, which ultimately reduce the program's acceptability and value (Derqui & Fernandez, 2017). In contrast, the low frequency of the "Socialization" code suggests a gap in policy communication. Asymmetric information transmission and communication in public policy implementation have consistently been shown to predict an implementation gap, where policies fail to achieve compliance targets at the grassroots level (Hudson et al., 2019).

This lack of outreach can be an upstream factor that exacerbates downstream complaints. If the program's objectives, nutrition education, or implementation mechanisms are not effectively communicated to the program's target audience (students, teachers, and implementers), resistance to the menu or reluctance to consume the food will increase. Data clustering also indicates that problem escalation is concentrated in certain SPPG units, which face far greater operational challenges than elementary school management levels or other units, where complaints are relatively minimal. This phenomenon has been empirically validated by the latest international literature on the effectiveness of the school food environment, which concludes that providing food without integrated communication and nutrition education strategies will lead to beneficiary alienation, reduce consumption levels, and ultimately result in a drastic increase in food refusal (Micha et al., 2018).

Using such segmentation and clustering data is crucial for designing adaptive public administration, where resource allocation, logistics improvements, and operational adjustments target units with the worst performance to improve policy efficiency (Giest, 2017). A lack of policy outreach and communication in the upstream phase is a key catalyst that exacerbates downstream implementation challenges. When the rationale behind a program, such as the urgency of nutrition education and its operational mechanisms, is not effectively communicated to the target group, the likelihood of resistance, manifested as reluctance to consume or high

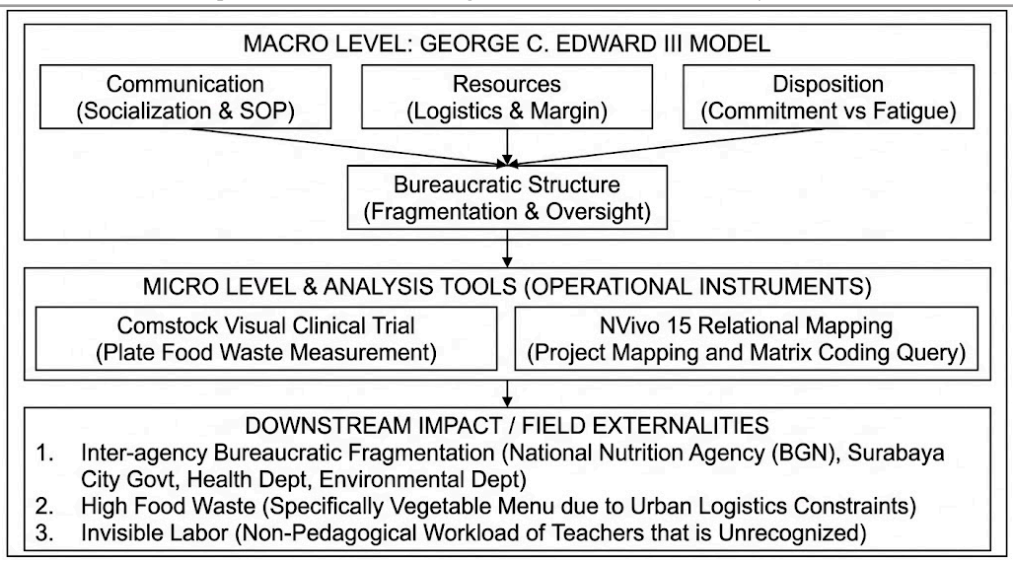


Figure 6. Theoretical framework

levels of food waste, increases significantly (Howlett, 2019; Weaver, 2010). Meanwhile, data clustering findings showing a concentration of escalating problems in specific implementing units confirm asymmetries in administrative capacity among local actors in managing the program's technical workload (Hupe & Hill, 2016). This situation underscores that evaluative data segmentation is not merely a reporting tool, but an essential instrument for designing adaptive public administration. Through a data-driven approach, the government can precisely reallocate resources and formulate corrective interventions responsive to varying managerial challenges on the ground (Ansell et al., 2021; Janssen & Helbig, 2018). This points to the need for asymmetric policy interventions that improve distribution management and adjust menus at SPPG units with the highest complaint rates.

The lack of an integrative forum between menu planners (SPPG) and consumption monitors (schools) allows the food waste problem to persist without solutions to improve menu formulation at its source. This Project Map (figure:4) visualization shows that the primary cause of high "food waste" is not merely student preferences, but the result of isolated communication channels between "Menu" planners (SPPG) and those responsible at the school (teachers/principals). To address the high volume of food waste, the Surabaya City Government and BGN must bridge this communication gap by establishing standard operating procedures (SOPs) for daily food waste reporting from schools, directly integrated into the SPPG menu revision system in real time. An integrated daily reporting system will create a closed-loop feedback mechanism, which the literature shows is crucial for iterative decision-making to sustainably reduce food waste in schools (Malefors et al., 2022).

The synthesis of theory and field findings in Figure 6: Theoretical Framework flows from the macro level to produce downstream findings: A) Macro Level (Theory): Applying George C. Edward III's model, which evaluates implementation through the variables of Communication (Socialization & SOPs), Resources (Logistics & Margin), Disposition (Commitment vs. Burnout), and Bureaucratic Structure. B) Micro Level (Analytical Tools): This theoretical framework was operationalized using Comstock's visual clinical test to measure food waste and NVivo 15 Relational Mapping. C) Field Findings (Downstream Impacts): The application of this theory and these analytical tools revealed three key realities or externalities in the field: 1) The occurrence of inter-institutional bureaucratic fragmentation, involving the National Nutrition Agency (BGN), the Surabaya City Government, the Health Department, and the Environmental Affairs Department. 2) High levels of food waste, particularly in vegetable-based meals, caused by urban logistical constraints. 3) The emergence of "invisible labor" in the form of unrecognized non-pedagogical workloads for teachers.

■ CONCLUSION

The Free Nutritious Meals (MBG) program has been implemented in Surabaya in general but has not been fully effective. Several gaps remain at the grassroots implementation level due to the complexity of the urban ecosystem and the immaturity of subnational operational designs. The results of macro and micro analyses form the basis for this study's conclusions about MBG implementation in Surabaya's urban areas.

Macro Evaluation (Edward III Framework): MBG implementation at the bureaucratic level remains fragmented. In the Communication dimension, information asymmetry and unclear technical guidelines persist among the National Nutrition Agency (BGN), local governments, vendors, and schools. In the Resources dimension, urban logistical challenges in densely populated areas such as Krembangan and Wonocolo delay distribution. From the Disposition dimension, although teachers and school principals are highly committed, the lack of an emergency response mechanism has led to operational fatigue. From the Bureaucratic Structure dimension, existing SOPs remain rigid and do not yet clearly divide roles in managing food waste.

Micro-evaluation (Visual Comstock and Invisible Labor), or micro-measurements, reveals significant food waste, with the average portion left uneaten ranging from 25% to 50% (particularly for vegetable and plant-based protein dishes). This situation creates a negative externality in the form of "invisible labor" for teachers. Educators are asked to sacrifice break time and academic energy for non-pedagogical tasks such as supervising students. At the same time, they eat, clean classroom areas, and sort food waste, often without pay or formal regulations governing these duties.

Overall, the greatest challenge in implementing the MBG in Surabaya is not the availability of macro-level funding from the National Nutrition Agency (BGN), but rather the lack of technical harmonization between central and local authorities. The long-term success of this program requires strengthening the tripartite oversight system that bridges the BGN's regulatory authority, the Surabaya City Government's operational control, and the community's active participation as frontline monitors.

Development of Standard Operating Procedures (SOPs) for Integrated Waste Management, where the local government, together with the BGN, needs to formulate subsidiary SOPs that not only regulate the logistical aspects of delivery but also the management of food waste and emergency response mechanisms (for example, if food is delayed or spoiled).

Mitigation of Teachers' "Invisible Labor": The management of food scraps and cleanliness within the school environment should be integrated with the Environmental Agency (DLH) or involve specialized operational staff (cleaning services or local waste banks). This step is crucial to relieve teachers of non-academic burdens so that their pedagogical functions remain intact. Adaptive Menu Planning for catering vendors, in collaboration with nutritionists, should periodically evaluate menu variety, taking children's preferences into account without compromising nutritional value, to reduce food waste.

■ DECLARATION OF GENERATIVE AI USAGE IN THE WRITING PROCESS

During the writing of this manuscript, the author used AI (Gemini) to assist with the line of reasoning, language refinement, and structural editing. This AI tool was specifically used to: (a) improve the clarity and academic style of the sentences; (b) provide structural suggestions regarding the organization of the discussion section; and (c) check grammar. The author formulated all substantive and theoretical analyses, normative arguments, conclusions, and recommendations independently. The author has reviewed and edited all content generated by this tool and assumes full responsibility for the content of the published article.

■ REFERENCES

Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory, 18*(4). https://doi.org/10.1093/jopart/mum032

Ansell, C., Soørensen, E., & Torfing, J. (2021). The COVID-19 Pandemic as a Game Changer for Public Administration and Leadership? The Need for Robust Governance Responses to Turbulent Problems. *Public Management Review, 23*(7). https://doi.org/10.1080/14719037.2020.1820272

Bazeley, P. (2021). *Thinking and working qualitatively. In Thinking and working qualitatively* (2nd ed.). SAGE Publications Ltd, https://doi.org/10.4135/9781036233808.n1 https://sk.sagepub.com/book/mono/qualitative-data-analysis-practical-strategies-2e/chpt/1-thinking-working-qualitatively#

Beal, T., Tumilowicz, A., Sutrisna, A., Izwardy, D., & Neufeld, L. M. (2018). A review of child stunting determinants in Indonesia. *Maternal & Child Nutrition, 14*(4), e12617. https://doi.org/10.1111/mcn.12617

Benn, J., & Carlsson, M. (2014). Learning through school meals? *Appetite*, *78*, 23–31. https://doi.org/10.1016/j.appet.2014.03.008

Bovens, M., & 't Hart, P. (2016). Revisiting the study of policy failures. *Journal of European Public Policy*, *23*(5), 653–666. https://doi.org/10.1080/13501763.2015.1127273

Brodkin, E. Z. (2011). Policy work: Street-level organizations under new managerialism. *Journal of Public Administration Research and Theory*, *21*(suppl_2). https://doi.org/10.1093/jopart/muq093

Cairns, K., & Johnston, J. (2015). Choosing health: Embodied neoliberalism, postfeminism, and the "do-diet". *Theory and Society, 44*(2). https://doi.org/10.1007/s11186-015-9242-y

Canali, M., Amani, P., Aramyan, L., Gheoldus, M., Moates, G., Östergren, K., Silvennoinen, K., Smigielska, M., & Vittuari, M. (2017). Food waste drivers in Europe, from identification to possible interventions. *Sustainability, 9*(1), 37. https://doi.org/10.3390/su9010037

Candel, J. J. L., & Biesbroek, R. (2016). Toward a processual understanding of policy integration. *Policy Sciences, 49*(3), 211–231. https://doi.org/10.1007/s11077-016-9248-y https://link.springer.com/article/10.1007/s11077-016-9248-y

CELIOS. (2025). *Yang Lapar Siapa? Yang Kenyang Siapa? Mitigasi Risiko Program Makan Bergizi Gratis.* Center of Economic and Law Studies. https://celios.co.id/wp-content/uploads/2024/12/CELIOS-Laporan-MBG.pdf

Cohen, J. F. W., Richardson, S., Parker, E., Catalano, P. J., & Rimm, E. B. (2014). Impact of the new US Department of Agriculture school meal standards on food selection, consumption, and waste. *American Journal of Preventive Medicine, 46*(4), 388–394. https://doi.org/10.1016/j.amepre.2013.11.013

Comstock, E. M., St Pierre, R. G., & Mackiernan, Y. V. (1981). Measuring individual plate waste in school lunch programs: Visual estimation versus physical measurement. *Journal of the American Dietetic Association, 79*(3). https://doi.org/10.1016/S0002-8223(21)39368-3

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications. https://sim.uniqhba.ac.id/assets/upload/ebook/Research_Design_Qualitative,_Quantitative,_and_Mixed_Methods_Approaches_(John_W._Creswell_J._David_Creswell)_.pdf

Daumi, N., Mufidah, I., Pibriyanti, K., & Lutfiya, L. (2026). *Hubungan Tingkat Kepuasan dan Kebiasaan Makan Siswa Terhadap Program Makan Bergizi Gratis* [The Relationship between Students' Satisfaction Levels and Eating Habits with the Free Nutritional Meal Program]. *Jurnal Profesi Kesehatan Masyarakat, 7*(1). https://doi.org/10.47575/jpkm.v7i1.925 https://jurnal.stikes-bhm.ac.id/index.php/jpkm/article/view/925

Derqui, B., Fernandez, V., & Fayos, T. (2018). Towards more sustainable food systems. Addressing food waste at school canteens. *Appetite, 1*(129). https://doi.org/10.1016/j.appet.2018.06.022

Derqui, B., & Fernandez, V. (2017). The opportunity of tracking food waste in school canteens: Guidelines for self-assessment. *Waste Management*, *69*, 431–444. https://doi.org/10.1016/j.wasman.2017.07.030

Derqui, B., Grimaldi, D., & Fernandez, V. (2020). Building and managing sustainable schools: The case of food waste. *Journal of Cleaner Production, 243*. https://doi.org/10.1016/j.jclepro.2019.118533

Edward III, G. C. (2019). *Implementing Public Policy.* Washington DC: Congressional Quarterly Press. https://inlislite.ipdn.ac.id/opac/detail-opac?id=3392

Eriksson, M., Osowski, C.P., Malefors, C., Björkman, J., & Eriksson, E. (2017). Quantification of food waste in public catering services: A case study from a Swedish municipality. *Waste Management*, *61,* 415–422. https://doi.org/10.1016/j.wasman.2017.01.035

Falasconi, L., Vittuari, M., Politano, A., & Segrè, A. (2015). Food waste in school catering: An Italian case study. *Sustainability, 7*(11), 14745–14760. https://doi.org/10.3390/su71114745

FAO, IFAD, UNICEF, WFP, & WHO. (2024). *The state of food security and nutrition in the world 2024: Financing to end hunger, food insecurity and all forms of malnutrition.* Rome. Food and Agriculture Organization (FAO). https://doi.org/10.4060/cd1254en

Filimonau, V., Matute, J., Sezerel, H., & Balyalı, T. Ö. (2026). Food waste in group dining: the interplay of shame and conflict aversion in the "last piece of food" dilemma. *Journal of Sustainable Tourism, 34*(1), 60–85. https://doi.org/10.1080/09669582.2025.2453689

Giest, S. (2017). Big data for policymaking: fad or fast track?. *Policy Sci, 50*. https://doi.org/10.1007/s11077-017-9293-1

Grindle, M. S. (2017). *Politics and policy implementation in the Third World.* Princeton University Press. https://api.pageplace.de/preview/DT0400.9781400886081_A29559370/preview-9781400886081_A29559370.pdf

Han, J., & Rothbart, M. W. (2025). Administrative burden in the cafeteria:

Evidence from school meal participation in shared buildings. *The American Review of Public Administration, 55*(2), 126-140. https://doi.org/10.1177/02750740241292073

Hoddinott, J., Alderman, H., Behrman, J. R., Haddad, L., & Horton, S. (2013). The economic rationale for investing in stunting reduction. *Maternal & Child Nutrition, 9*(S2), 69–82. https://doi.org/10.1111/mcn.12080

Howlett, M. (2019). Moving policy implementation theory forward: A multiple streams/critical juncture approach. *Public Policy and Administration, 34*(4). https://doi.org/10.1177/0952076718775791

Hudson, B., Hunter, D., & Peckham, S. (2019). Policy failure and the policy-implementation gap: can policy support programs help?. *Policy Design and Practice, 2*(1). https://doi.org/10.1080/25741292.2018.1540378

Hupe, P., & Hill, M. (2007). Street-level bureaucracy and public accountability. *Public Administration, 85*(2). https://doi.org/10.1111/j.1467-9299.2007.00650.x

Hupe, P., & Hill, M. (2016). 'And the rest is implementation.' Comparing approaches to what happens in policy processes beyond Great Expectations. *Public Policy and Administration, 31*(2), 103–121. DOI:10.1177/0952076715598828

Janssen, M., & Helbig, N. (2018). Innovating and changing the policy-cycle: Policy-makers be ware!. *Government Information Quarterly, 35*(4), 189–195. DOI:10.1016/j.giq.2015.11.009

Janssen, M., & Van der Voort, H. (2020). Agile and adaptive governance in crisis response: Lessons from the COVID-19 pandemic. *International Journal of Information Management*, *55*, 102180**.** https://doi.org/10.1016/j.ijinfomgt.2020.102180

Lagorio, A., Pinto, R., & Golini, R. (2016). Research in city logistics: A systematic literature review. *International Journal of Physical Distribution & Logistics Management, 46*(10), 908–931. https://doi.org/10.1108/IJPDLM-01-2016-0008

Local Burden of Disease Child Growth Failure Collaborators. (2020). Mapping child growth failure across low- and middle-income countries. *Nature, 577*, 231–234. https://doi.org/10.1038/s41586-019-1878-8

Malefors, C., Sundin, N., Tromp, M., & Eriksson, M. (2022). Testing interventions to reduce food waste in school catering. *Resources, Conservation and Recycling, 177*. DOI:10.1016/j.resconrec.2021.105997

Martins, M. L., Cunha, L. M., Rodrigues, S. S. P., & Rocha, A. (2014). Determination of plate waste in primary school lunches by weighing and visual estimation methods: a validation study. *Waste Management, 34*(8), 1362–1368. https://doi.org/10.1016/j.wasman.2014.03.020

Matland, R. E. (1995). Synthesizing the implementation literature: The ambiguity-conflict model of policy implementation. *Journal of Public Administration Research and Theory, 5*(2). https://doi.org/10.1093/oxfordjournals.jpart.a037242

Micha, R., Karageorgou, D., Bakogianni, I., Trichia, E., Whitsel, L. P., Story, M., Peñalvo, J. L., & Mozaffarian, D. (2018). Effectiveness of school food environment policies on children's dietary behaviors: A systematic review and meta-analysis. *PLoS ONE, 13*(3), e0194555. https://doi.org/10.1371/journal.pone.0194555

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE Publications. https://doi.org/10.1177/239700221402800402

Moleong, L. J. (2021). *Metodologi penelitian kualitatif*. PT Remaja Rosdakarya.

Morgan, K., & Sonnino, R. (2010). The urban foodscape: world cities and the new food equation. *Cambridge Journal of Regions, Economy and Society, 3*(2). https://doi.org/10.1093/cjres/rsq007

Moynihan, D., Herd, P., & Harvey, H. (2015). Administrative burden: Learning, psychological, and compliance costs in citizen-state interactions. *Journal of Public Administration Research and Theory, 25*(1), 43–69. https://doi.org/10.1093/jopart/muu009

McCubbins, M. D., & Schwartz, T. (1984). Congressional oversight overlooked: Police patrols versus fire alarms. *American Journal of Political Science, 28*(1). https://doi.org/10.2307/2110792

Nasrullah, H., Fajri, C., & Ayu, I.A. (2026, 19 Februari). *Pemprov Jatim evaluasi operasional SPPG MBG*. ANTARA News.com. https://www.antaranews.com/video/5425690/pemprov-jatim-evaluasi-operasional-sppg-mbg.

National Nutrition Agency. (2025). *Petunjuk Teknis Tata Kelola Penyelenggaraan Program Makan Bergizi Gratis. Badan Gizi Nasional (BGN)*. https://cdn-web.bgn.go.id/juknis/01KFZQGR85YKY1HRMNDK4RRM1P.pdf

Oostindjer, M., Aschemann-Witzel, J., Wang, Q., Skuland, S. E., Egelandsdal, B., Amdam, G. V., Schjøll, A., & Varela,

P. (2017). Are school meals a viable and sustainable tool to improve the healthiness and sustainability of children's diet and food consumption? A cross-national comparative perspective. *Critical Reviews in Food Science and Nutrition, 57*(18), 3942–3958. https://doi.org/10.1080/10408398.2016.1197180

Osborne, S. P., Radnor, Z., & Nasi, G. (2013). A new theory for public service management? Toward a (public) service-dominant approach. *The American Review of Public Administration*, *43*(2), 135–158. https://doi.org/10.1177/0275074012466935

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed-methods implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(5). https://doi.org/10.1007/s10488-013-0528-y.

Papargyropoulou, E., Lozano, R., Steinberger, J. K., Wright, N., & Ujang, Z. (2014). The food waste hierarchy as a framework for the management of food surplus and food waste. *Journal of Cleaner Production*, *76*, 106–115. https://doi.org/10.1016/j.jclepro.2014.04.020

Paulus, T. M., & Lester, J. N. (2015). ATLAS.ti and NVivo for conversation and discourse analysis. *International Journal of Social Research Methodology, 19*(4). https://doi.org/10.1080/13645579.2015.1021949

Peters, B. G. (2018). The challenge of policy coordination. *Policy Design and Practice*, *1*(1), 1–11. https://doi.org/10.1080/25741292.2018.1437946

Sabatier, P., & Mazmanian, D. (1980). The implementation of public policy: A framework of analysis. *Policy Studies Journal, 8*(4). https://doi.org/10.1111/j.1541-0072.1980.tb01266.x

Safari, A., & Eriyatno. (2026). *Merancang Sistem Pembinaan Keamanan Pangan Berkelanjutan untuk Program Makanan Bergizi Gratis Nasional di Indonesia: Pendekatan Soft System Methodology* [Designing a Sustainable Food Security Development System for the National Free Nutritional Food Program in Indonesia: A Soft System Methodology Approach]. *Bappenas Working Papers. 9*(3). https://doi.org/10.47266/bwp.v9i3.597

Safitri, S. (2026). *Efektivitas program makan bergizi gratis terhadap konsentrasi belajar, perilaku makan, dan status gizi anak sekolah* [The effectiveness of the free nutritious meal program on learning concentration, eating behavior, and nutritional status of school children]. *Skripsi*. UIN Sunan Ampel Surabaya. https://digilib.uinsa.ac.id/id/eprint/87392/

Sonnino, R. (2016). The new geography of food security: exploring the potential of urban food strategies. *The Geographical Journal, 182*(2). https://doi.org/10.1111/geoj.12129.

Subarsono, A. G. (2015). *Analisis kebijakan publik: Konsep, teori, dan aplikasi*. Yogyakarta. Pustaka Pelajar.

Sugiyono. (2020). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Alfabeta.

Thyberg, K. L., & Tonjes, D. J. (2016). Drivers of food waste and their implications for sustainable policy development. *Resources, Conservation and Recycling, 106*. https://doi.org/10.1016/j.resconrec.2015.11.016

UNICEF. (2025). *Indonesia Annual Report 2025*. Summary of results from the Government of Indonesia–UNICEF Cooperation Programme 2021–2025. https://www.unicef.org/indonesia/id/laporan/laporan-tahunan-2025-unicef-indonesia.

Van Meter, D. S., & Van Horn, C. E. (1975). The policy implementation process: A conceptual framework. *Administration & Society, 6*(4). https://doi.org/10.1177/009539977500600404.

Vigoda, E. (2002). From responsiveness to collaboration: Governance, citizens, and the next generation of public administration. *Public Administration Review*, *62*(5), 527–540. https://doi.org/10.1111/1540-6210.00235

Weaver-Hightower, M. B. (2011). Why education researchers should take school food seriously. *Educational Researcher, 40*(1), 15–21. https://doi.org/10.3102/0013189X10397043

Weaver, R. K. (2010). *But will it work? Implementation analysis to improve government performance*. Issues in Governance Studies: Brookings Institution Press. https://www.brookings.edu/wp-content/uploads/2016/06/02_implementation_analysis_weaver.pdf

Williamson, D. A., Allen, H. R., Martin, P. D., Alfonso, A. J., Gerald, B., & Hunt, A. (2003). Comparison of digital photography to weighed and visual estimation of portion sizes. *Journal of the American Dietetic Association, 103*(9). https://doi.org/10.1016/s0002-8223(03)00974-x .