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Analysis of The Accounting Information System for The Procurement of Food Raw Materials at Nutritional Support Units (SPPG) Under The Free Nutritious Meals Program: A Multi-Site Case Study in West Java

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ABSTRACT

The Free Nutritious Meals Program (Program Makan Bergizi Gratis/MBG), administered by Indonesia's National Nutrition Agency (Badan Gizi Nasional/BGN), positions Nutritional Support Units (Satuan Pelayanan Pemenuhan Gizi/SPPG) as technical implementers responsible for large-scale daily procurement of fresh food ingredients. This study aimed to analyze the conditions, constraints, and effectiveness of internal controls within the food ingredient procurement accounting information system (AIS) at five SPPG units in West Java. The study employed a qualitative approach using a multi-site descriptive case study design involving SPPG Cililin, Cileunyi, Cijaura, Padasuka Cimahi, and Sukamenak. Primary data were collected through semi-structured in-depth interviews with 14 informants, complemented by accounting document reviews and field observations, and analyzed using the interactive model of Miles, Huberman, and Saldaña (2014). The findings indicate that four of the five SPPG units had implemented relatively well-organized procurement AIS practices with varying levels of maturity, whereas SPPG Cililin experienced systemic challenges due to limited human resources. The main determinants of AIS quality were compliance with BGN's official standard operating procedures, disciplined routine reconciliation processes, and the administrative quality of partner cooperatives. The study also found that BGN had established formal standards and reporting systems that encouraged SPPG reporting compliance through a fund-disbursement incentive mechanism. Based on the COSO (2013) framework, internal controls over procurement at four SPPG units were considered relatively adequate due to layered authorization procedures, although a fully independent verification function had not yet been formally implemented. The study recommends strengthening the dissemination of BGN's existing AIS standards, enforcing segregation of duties at the SPPG level, and standardizing documentation practices among partner cooperatives.

INTRODUCTION

The Free Nutritious Meals Program (MBG) is one of the central government's strategic initiatives aimed at improving human resource quality through early-age nutritional fulfillment. The program, administered by the National Nutrition Agency (BGN) based on Presidential Regulation Number 83 of 2024, targets students from early childhood education (Pendidikan Anak Usia Dini/PAUD) to senior high school levels, as well as vulnerable groups. In the West Java region, the Nutrition Fulfillment Service Unit (Satuan Pelayanan Pemenuhan Gizi/SPPG) functions as a technical implementation unit responsible for producing and distributing thousands of nutritious meal portions daily, with a total capacity of 9,829 portions across the five SPPG units examined in this study (Kiftiyah et al., 2025; Wardoyo et al., 2025).

Given this extensive operational scale, the procurement of fresh and perishable food raw materials is conducted daily with a high volume of transactions (Bolívar et al., 2025). Each procurement transaction must be recorded, reconciled, and reported to BGN as a form of accountability for the utilization of state funds (Islam, 2025). Therefore, the accounting information system (AIS) for food raw material procurement serves as a fundamental mechanism supporting the accountability of the MBG Program at the implementation unit level (Hari et al., 2026; Ramadhani et al., 2025; Weshah et al., 2025). Initial observations conducted by the researcher at five SPPG units in West Java identified several phenomena indicating weaknesses in the procurement AIS, including incomplete and inconsistent procurement accounting documents that hinder the consistent implementation of the three-way matching process (Hall, 2016); delayed document reconciliation in several units, ranging from 10 to 21 working days; potential inaccuracies in cost-per-portion calculations; and weak procurement internal controls due to the absence of clear segregation of duties.

Romney and Steinbart (2018) define AIS as a system that collects, records, stores, and processes accounting data to produce relevant, reliable, timely, and complete information. When these effectiveness criteria are not fulfilled in the procurement process of SPPG food raw materials, accountability for state budget utilization within the MBG Program becomes difficult to verify. This finding is consistent with Hyndman and Lapsley (2016), who stated that weaknesses in accounting systems within public fund management organizations can contribute to budget inefficiency and reduced accountability in government programs. Research on food raw material procurement in large-scale public food programs in Indonesia, particularly at technical implementation units such as SPPG operating under consumer cooperative schemes, remains limited. Existing studies generally focus on AIS implementation in broader contexts or public procurement from a macro-policy perspective (Mlinga, 2019; Purwantini et al., 2022; Thai, 2017). This study addresses this research gap by analyzing AIS implementation in food raw material procurement at the micro-operational level of SPPG units in West Java.

The novelty of this research lies in its focus on the micro-operational level of SPPG units in West Java, which has not been extensively examined in previous studies. This research provides a comprehensive analysis of AIS implementation for food ingredient procurement within the MBG Program context using a multi-site case study approach that enables comparisons among units. Unlike previous studies that primarily relied on survey or quantitative methods, this research employed in-depth interviews, document reviews, and field observations to capture the practical realities of AIS implementation at the SPPG level. The application of the COSO (2013) framework to evaluate internal controls within this specific context provides a contribution to the literature on public sector accounting and accountability in Indonesia. Furthermore, this study identifies factors influencing variations in AIS quality among SPPG units and provides practical insights for developing targeted improvement strategies.

Based on the description above, this study aimed to: (1) analyze and map the condition of AIS implementation in food raw material procurement processes at SPPG units in West Java; (2) identify obstacles and weaknesses in food raw material procurement that affect accountability and budget efficiency within the MBG Program; and (3) provide strategic recommendations to strengthen internal controls and improve AIS effectiveness in food raw material procurement at SPPG units.

Romney and Steinbart (2018) define an accounting information system (AIS) as a system that collects, records, stores, and processes accounting and other relevant data to generate information useful for decision-making. AIS consists of several components, including people, procedures, data, software, information technology infrastructure, and internal controls. Bodnar and Hopwood (2013) explain that AIS effectiveness can be assessed based on four criteria: relevance, reliability, timeliness, and completeness. These criteria serve as the primary benchmarks in this study.

The expenditure cycle consists of four stages: purchasing, receiving, invoice approval, and payment (Romney & Steinbart, 2018). Three-way matching, which involves matching purchase orders (POs), receiving reports, and invoices, represents an important control mechanism within this cycle. Without this process, organizations face risks of paying for goods that were not ordered, not received, or did not meet required specifications (Hall, 2016). Internal control is defined by COSO (2013) as a process designed to provide reasonable assurance regarding the achievement of organizational objectives. In the context of procurement, key internal control components include segregation of duties, transaction authorization, adequate documentation, and independent verification (Romney & Steinbart, 2018). Nurhayati and Wahyudi (2021) found that effective internal controls positively influence the quality of financial reporting in public sector organizations.

In terms of policy implementation, the MBG Program is administered by BGN based on Presidential Regulation Number 83 of 2024, with SPPG units serving as operational units responsible for processes ranging from food raw material procurement to meal distribution. Yurchyk et al. (2024) emphasized that successful public food program implementation requires operational discipline and budget accountability. Similarly, Hyndman and Lapsley (2016) and Mlinga (2019) highlighted that weaknesses in information systems contribute to accountability challenges in public fund management across various contexts. Unlike previous studies, this research places the AIS framework and internal control mechanisms within the specific context of high-volume procurement of perishable food materials involving consumer cooperative schemes as primary suppliers.

METHOD

This study employed a qualitative approach with a multi-site descriptive case study design involving five SPPG units in West Java: SPPG Cililin (West Bandung Regency), SPPG Cileunyi (Bandung Regency), SPPG Cijaura (Bandung City), SPPG Padasuka Cimahi (Cimahi City), and SPPG Sukamenak (West Bandung Regency). All selected SPPG units implemented a consumer cooperative scheme as the main supplier of food raw materials. The case study design was selected based on Yin (2018), who stated that this approach is suitable for examining how and why phenomena occur within real-life contexts.

Primary data were collected through semi-structured in-depth interviews with 14 informants, including SPPG heads, kitchen accountants, procurement teams/field assistants, representatives of partner cooperatives, and BGN West Java supervisors/verifiers. The data collection was complemented by accounting document reviews and field observations. Data validity was ensured through source and method triangulation and analyzed using the interactive model of Miles, Huberman, and Saldaña (2014) through within-case and cross-case analyses. The research period covered procurement accounting data and documents from February to July 2026, while in-depth interviews were conducted in stages from March to July 2026.

RESULTS AND DISCUSSION

Conditions of SIA Procurement Based on Effectiveness Criteria

An evaluation of the four SIA effectiveness criteria (Bodnar & Hopwood, 2013) showed that these four criteria were generally met in four of the five SPPGs studied (Cileunyi, Cijaura, Padasuka Cimahi, and Sukamenak), with Cililin SPPG being the only unit that consistently did not meet these four criteria. In terms of timeliness, reconciliation at SPPG Cililin takes 14–21 working days, while the other four SPPGs range from 1–7 working days, with Sukamenak (1–2 days) and Cijaura (daily) as the fastest achievements. In terms of completeness, the proof of receipt of goods (BPB) is not consistent only at SPPG Cililin, while the other four SPPGs have applied it regularly, even equipped with checklists and photo documentation at SPPG Cijaura. The West Java BGN verifier confirmed that the report verification process becomes longer when the reported cost per portion is outside the reasonable range: "We match the reported cost per portion figure with the supporting documents. If there is an irregularity... we ask for clarification or additional documents before the report is approved" (West Java BGN Verifier, July 2026).

Internal Control Based on the COSO Framework

An evaluation of the five key internal control components showed that four of the five SPPGs had met most of these components, mainly through a tiered authorization mechanism (maker-checker) involving the foundation as the maker and the head of the kitchen as the checker. The most consistent component that has not been formally fulfilled throughout the unit is independent verification in the form of an internal audit function that is completely separate from the operational structure of the kitchen; the current mechanism is still internal-operational authorization, with BGN Verifiers as the only party to conduct independent verification, albeit externally and post-fact. The most critical condition is concentrated in SPPG Cililin, which has not met almost all key internal control components. The BGN verifier confirms: "A clear separation of duties at the kitchen level... That's the most urgent. Many small SPPGs still have concurrent roles due to human resource limitations" (West Java BGN Verifier, July 2026).

Partner Cooperative Perspectives and BGN Standards

Interviews with representatives of the Kurnia Mitra Nusantara Cooperative showed that the standard documentation in the form of a serial numbered invoice, complete with details of goods, signatures, and attachments to the road letter, is a best practice that is not yet owned by all other SPPG partner cooperatives. Late payments due to long reconciliation have a direct impact on the cash flow of the cooperative, as conveyed by Tetin Nur Halimah, S.E.: "The impact is the disruption of the cooperative's cash flow so that payments to suppliers are delayed and the operational capital for the next procurement of goods becomes limited" (Kurnia Mitra Nusantara Cooperative, July 10, 2026).

Another important finding of this study is that BGN actually has a fairly clear procurement SIA standard, disseminated through the Master 4 template and the SMO (Online

Monitoring System) online reporting system, different from the initial suspicion that the standard is still in the trial stage. High reporting compliance in the field is driven by a strict incentive mechanism: SPPG operational funds are not disbursed without SMO reporting, as explained by Ronny, Supervisor/Verifier of BGN West Java: "Reporting is always consistent because if there is no reporting in SMO, the funds will not come out" (July 13, 2026). Nevertheless, budget categorization errors remain a recurring finding during the verification of the SPPG report.

Cross-Case Analysis and Determinants

Cross-case analysis revealed one key pattern: Cililin SPPGs consistently outlied in almost all SIA dimensions, while the other four SPPGs showed relatively convergent patterns. Interestingly, recording media (manual, semi-digital, or digital) are no longer strongly correlated with the quality of reports — SPPGs Sukamenak and Cijaura remain orderly even though they are not fully digital. This study identifies three main factors that distinguish the quality of SIA between SPPGs: first, compliance with the official SOPs of the BGN Decree; second, the administrative quality of partner cooperatives; and third, routine reconciliation discipline — no longer just the availability of dedicated financial staff, because almost all SPPGs (except Cililin) already have their own accounting/financial supervisory role.

These findings provide nuance to Mlinga's (2019) argument regarding weak information systems as a structural barrier to public procurement in developing countries: in the case of the MBG Program in West Java, a standard framework from the regulator (BGN) is already available, but its implementation at the implementation unit level still depends on the capacity of local human resources. This also enriches the perspective of Thai (2017) that accountable public procurement requires the quality of information systems as a basic infrastructure — the infrastructure is already built at the BGN policy level, but its implementation in the field still requires strengthening human resources in certain units. The weaknesses of SIA found in SPPG Cililin have direct implications for the budget accountability of the MBG Program that uses state budget funds, although these risks can now be mapped as a more localized problem and can be intervened in a directed manner, in line with the emphasis of Hyndman and Lapsley (2016) that public sector organizations must demonstrate budget efficiency through quality information systems.

CONCLUSION

Based on these conclusions, this study recommends the following: (1) BGN should strengthen the dissemination and assistance of existing AIS standards (Master 4 and SMO), with priority given to SPPGs with limited human resource capacity, and incorporate AIS quality as an indicator in SPPG performance evaluations; (2) SPPG managers should immediately develop written accounting record procedures and implement a minimum segregation of duties between ordering and receiving functions; and (3) partner cooperatives should standardize invoice formats by referring to the best practices of the Kurnia Mitra Nusantara Cooperative. Further research is recommended to expand geographical coverage, apply a mixed-methods approach to quantitatively measure the influence of AIS quality on budget accountability, and conduct longitudinal studies to evaluate the effectiveness of AIS improvement interventions implemented by BGN.

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