

Halal and Ṭayyib Governance in Indonesia's Free Nutritious Meal Programme: A Halal Supply Chain Perspective from South Sulawesi

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Abstract: The Free Nutritious Meal Programme (MBG), as a national public food policy, has been examined predominantly from nutritional, public health, and socio-economic perspectives, while the dimension of ḥalāl-ṭayyib governance across the entire supply chain remains largely underexplored. This gap is significant because ḥalāl-ṭayyib assurance constitutes an essential component of Muslim consumer protection and public welfare within the framework of Maqāṣid al-Sharī'ah. This study aims to analyse the implementation of ḥalāl-ṭayyib governance in the MBG supply chain in South Sulawesi, identify critical ḥalāl control points throughout the upstream and downstream supply chain, and develop an integrated ḥalāl governance model for public food programmes. Employing a multi-site qualitative case study with a socio-legal approach, the research draws upon in-depth interviews, non-participant observations, and document analysis conducted in Makassar, Gowa, Maros, and Bone Regencies. The data were analysed using the interactive model of Miles, Huberman, and Saldaña through systematic coding and thematic analysis. The study adopts the ḥalāl supply chain, the ḥalāl assurance system, and Maqāṣid al-Sharī'ah as integrated analytical frameworks. The findings reveal substantial governance deficiencies, reflected in inadequate supplier ḥalāl certification, limited ḥalāl traceability, insufficient ḥalāl audit mechanisms, risks of cross-contamination in Satuan Pelayanan Pemenuhan Gizi (SPPG) kitchens, and the absence of integrated ḥalāl logistics and digital monitoring systems. Furthermore, the programme has significantly contributed to ḥifẓ al-naḥs, ḥifẓ al-'aql, and ḥifẓ al-nasl through improved nutritional fulfilment and human development. However, ḥifẓ al-dīn remains inadequately safeguarded due to the absence of a comprehensive and systematic ḥalāl assurance framework. The principal contribution of this study is the development of an Integrated Ḥalāl-Ṭayyib Governance Model for Public Food Programmes, which integrates the ḥalāl supply chain, the ḥalāl assurance system, and Maqāṣid al-Sharī'ah within a comprehensive public food governance framework. The study advances the literature by extending ḥalāl governance beyond the commercial food industry into the domain of Islamic public food governance. It also offers practical policy recommendations by emphasising the importance of digital ḥalāl traceability, risk-based ḥalāl governance, and institutional coordination among the National Nutrition Agency (BGN), the Badan Penyelenggara Jaminan Produk Halal (BPJPH), the Majelis Ulama Indonesia (MUI), local governments, and supply chain stakeholders to strengthen sustainable ḥalāl public food governance.



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Introduction

The Free Nutritious Food (MBG) Program is one of the strategic policies of the Government of Indonesia designed to improve the quality of human resources through meeting the nutritional needs of the community, especially students and vulnerable groups. As a national-scale public food program, MBG not only aims to improve the nutritional status and public health, but also supports the development of education, stunting reduction, strengthening food security, and empowering the local economy. With a very wide range of beneficiaries and involving various actors in the food supply chain, the success of this program is highly determined by the effectiveness of a governance system that is able to ensure the quality, safety, and sustainability of food distributed to the community (Nispan 2018).

In the context of Indonesia as a country with the largest Muslim population in the world, public food governance cannot be separated from the principles of halal and tayyib. Halal assurance is part of the protection of people's right to obtain food in accordance with their religious beliefs, while the principle of tayyib emphasizes aspects of safety, cleanliness, quality, and feasibility of food consumption (Neio Demirci, Soon, and Wallace 2016). Therefore, the success of the Free Nutritious Food Program is not only measured by the fulfillment of the nutritional needs of the beneficiaries, but also by the program's ability to ensure the integrity of halal-tayyib in the entire food supply chain. In this perspective, halal-tayyib governance (*halal-tayyib governance*) is an important element that must be integrated in public food policy.

Concept *halal-tayyib governance* refers to a governance system that integrates regulations, institutions, certifications, supervision, traceability (*traceability*), risk management, and accountability mechanisms to ensure that the entire food supply process meets the principles of halal and tayyib in a sustainable manner (Hudaefi and Jaswir 2019a). This approach places halal not only as the legal status of a product, but also as a governance system that covers the entire supply chain from the procurement of raw materials, production processes, storage, distribution, to presentation to end consumers. Thus, halal assurance cannot be separated from the quality of overall food supply chain governance.

The development of halal studies in the last two decades shows a paradigm shift from a certification-based approach to a holistic supply chain governance approach (Tieman 2011). Explains that halal integrity must be maintained at all stages of the supply chain because failure at one point can affect the overall halal status of the product. Furthermore, (Tieman, Van Der Vorst, and Che Ghazali 2012) It shows that the greatest risks in the halal supply chain often arise in the logistics, storage, and distribution processes due to potential cross-contamination that can disrupt the integrity of halal products. The study then introduces the concept of *halal supply chain* which places the protection of halal integrity as the main goal in the management of the food supply chain.

Subsequent research further strengthens the importance of halal governance in the food supply chain. (Abd Rahman et al. 2017) found that successful implementation *halal*

assurance system is strongly influenced by institutional commitments, documentation systems, and effective audit mechanisms. (Susanty et al. 2025) indicates that the digital traceability system (*halal traceability*) plays an important role in increasing transparency and consumer trust in halal products. (Hudaefi and Jaswir 2019b) explained that the effectiveness of halal governance requires strong integration between regulations, certification, supervision, and coordination between institutions. In the operational aspect, (Kurniawati and Cakravastia 2023) emphasizing the importance of *halal logistics* in maintaining the integrity of halal products during the transportation and distribution process. Meanwhile, (Rusydiana, Ruhana, and As-Salafiyah 2023) It shows that weak institutional coordination is still one of the main causes of gaps in the implementation of the halal assurance system. On the other hand, (Ali et al. 2021) It found that the digitalization of the halal surveillance system was able to increase the effectiveness of monitoring, strengthen traceability, and reduce the risk of irregularities in the food supply chain. These findings show that modern halal governance no longer relies on certification alone, but requires integration between *halal assurance system*, supply chain governance, institutional coordination, and sustainable surveillance technologies.

Although the development of *halal governance* literature shows the importance of integrating governance, certification, supervision, and traceability in maintaining halal integrity, most of the studies still focus on the commercial food industry, slaughterhouses, halal logistics, halal tourism industry, micro and medium enterprises, and international trade. The main focus of the research is generally related to increasing the competitiveness of the halal industry, compliance with halal certification, and optimizing commercial supply chains. As a result, studies on the implementation of halal-thayyib governance in public food programs organized by the state are still relatively limited.

On the other hand, research on school meal programs (*school feeding programs*) and the Free Nutritious Food Program focus more on aspects of nutritional fulfillment, stunting reduction, improving the quality of education, policy effectiveness, strengthening the local economy, and food distribution governance. (Orta-Aleman et al. 2026) Highlighting the role of school food programs in strengthening food security and increasing community access to nutritious food. (Wang et al. 2021) Shows that school feeding programs contribute to improved learning concentration, student attendance, and quality of education. Meanwhile, (Sidaner, Balaban, and Burlandy 2013) explained that the public food program has the potential to be an instrument for local economic empowerment through strengthening community-based supply chains. These findings show that public food programs have a significant impact on the health, education, and economic aspects of the community.

Nevertheless, the success of a public food program is determined not only by the fulfillment of nutritional needs and the effectiveness of distribution, but also by the system's ability to ensure the safety, quality, and conformity of food with the religious values of the community. In the context of Indonesia as a country with the largest Muslim population in

the world, the halal-thayyib aspect is an integral part of public food governance. Therefore, the Free Nutritious Food Program is not only required to be able to meet nutrition and food safety standards, but also must ensure halal integrity in the entire supply chain starting from the procurement of raw materials, production processes, distribution, to presentation to beneficiaries.

In addition, studies that discuss halal in the context of the Free Nutritious Food Program are generally still limited to aspects of halal certification, normative compliance, or halal product assurance at a certain level. This approach has not been able to explain how halal integrity is maintained throughout the supply chain involving various actors, ranging from raw material suppliers, kitchen managers of the Nutrition Fulfillment Service Unit (SPPG), distributors, schools, to supervisory institutions. In fact, in a national-scale public food program, the risk of halal non-conformity can arise at every stage of the supply chain, so it requires an integrated governance system.

From the perspective of Islamic law, the importance of halal-thayyib governance can be analyzed through the framework *Maqasid al-Shari'ah*. This principle places religious protection (*hifz al-din*), life protection (*hifz al-nafs*), protection of reason (*Hifz Al-'AQL*), hereditary protection (*Hifz Al-Nasl*), and property protection (*Hifz Al-Mal*) as the main purpose of sharia.(Abdullah 2018) In the context of the Free Nutritious Food Program, the fulfillment of nutritional needs is closely related to the protection of life, intellect, and offspring, while halal guarantees are part of religious protection. Therefore, halal-thayyib governance not only has administrative and technical dimensions, but is also part of efforts to realize the public benefit as a whole.

Based on the literature review, there are three research *gaps* that are still unanswered. First, empirically, research on the Free Nutritious Food Program is still dominated by studies of nutrition, health, education, and economic impact, while the implementation of halal-thayyib governance in the entire program supply chain has not been extensively researched. Second, theoretically, the study of *halal supply chain*, *halal assurance system*, and *Maqasid al-Syari'ah* is still partially developed, so there is no integrative analytical framework that is able to explain the relationship between the three in the context of public food programs. Third, in terms of policy, there is no halal-thayyib governance model that can be used as a reference in strengthening halal integrity in national-scale public food programs involving many actors and complex supply chains.

Based on these gaps, this research offers three main novelties. First, this study is one of the initial studies that maps halal *critical points* in the Free Nutritious Food Program through an *end-to-end halal supply chain analysis approach* that covers all stages of the supply chain starting from the procurement of raw materials, the production process in the SPPG kitchen, distribution, to presentation to beneficiaries. Second, this study develops an integrative analysis framework that connects *halal supply chains*, *halal assurance systems*, and *Maqasid al-Syari'ah* to explain the occurrence of *halal governance gaps* in public food

programs. Third, this study offers the Integrated Halal-Thayyib Governance Model for Public Food Programs as a new conceptual model that can be used to strengthen halal governance in public food programs in Indonesia and other Muslim-majority countries.

Based on this description, this study seeks to answer three main questions. First, how is halal-thayyib governance implemented in the Free Nutritious Food Program through the food supply chain from upstream to downstream in South Sulawesi? Second, at what stages do *halal critical points* appear in the program's supply chain? Third, how can the halal-thayyib governance model strengthen the integrity of the halal supply chain in public food programs?

This study aims to comprehensively analyze the implementation of halal-thayyib governance in the Free Nutritious Food Program, identify halal critical points at each stage of the supply chain, and formulate a halal governance model that is able to strengthen the integrity of halal-thayyib in public food policy. Theoretically, this research contributes to the development of *halal governance* studies by expanding the application of *the halal supply chain* concept into the realm of public food policy. Practically, this research is expected to be the basis for strengthening the halal assurance system, developing *digital halal traceability*, integrating halal audits, and strengthening coordination between the National Nutrition Agency, BPJPH, the Indonesian Ulema Council, local governments, and all actors in the supply chain of the Free Nutritious Food Program. Thus, this research is not only relevant for the development of public food policy in Indonesia, but also contributes to the development of halal food governance models for Muslim-majority countries at the global level.

Research Methods

This study uses a multi-site qualitative case study design (Aspers and Corte 2021) with a socio-legal research approach to analyze the implementation of halal-thayyib governance in the Free Nutritious Food Program (MBG) in South Sulawesi.(Smits 2015) The research combines maqasid-based normative analysis and empirical studies to assess the suitability of the implementation of MBG with the principles of halal-thayyib, Islamic law, and halal supply chain governance.

The research was carried out in January-May 2026 in Makassar City, Gowa Regency, Maros Regency, and Bone Regency. The location was chosen purposively because it has implemented MBG, has diverse supply chain characteristics, and involves various relevant food provider actors to identify halal supply chain issues from upstream to downstream.(Fajrah, Putri, and Fatrias 2025)

The research informants totaled 32 people who were selected through purposive and snowball sampling, consisting of officials of the National Nutrition Agency and local governments, SPPG managers, food suppliers, cooperatives and MSMEs, schools, halal auditors, BPJPH, and the Indonesian Ulema Council.(Geddes, A 2020) The selection of informants is based on their involvement in the MBG supply chain. Data were collected through in-depth interviews, non-participatory observations, and document analysis.

Observations were made on the process of procuring raw materials, production in the SPPG kitchen, distribution, and serving food. The documents analyzed include MBG regulations, operational guidelines, procurement documents, halal certificates, distribution reports, food safety reports, and halal audit documents.(Busetto, Wick, and Gumbinger 2020)

The validity of the data is maintained through source triangulation, method triangulation, member checking, and peer debriefing.(Winda Purnama Sari Purba et al. 2025) Data analysis uses the interactive model of Miles, Huberman, and Saldana through the stages of data reduction, data presentation, and conclusion drawing supported by open coding, axial coding, and selective coding processes. This research uses three analytical frameworks, namely halal supply chain, halal assurance system, and Maqasid al-Syari'ah. The analysis focused on four main themes: (1) the implementation of the halal assurance system in MBG; (2) Identification *halal critical points* on the supply chain; (3) governance and institutional coordination; and (4) the contribution of halal-thayyib implementation to the public benefit based on the principle *hifz al-din, hifz al-nafs, Hifz Al-'AQL, Hifz Al-Nasl, and Hifz Al-Mal*.

As an element of methodological novelty, this study applies end-to-end halal traceability analysis, governance mapping, and risk-based halal assessment to identify halal critical points and governance *gaps* in public food programs. The entire research process is carried out with the principles of informed consent, confidentiality, and applicable social research ethics.

Result and Discussion

Implementation and Socio-Economic Impact of the Free Nutritious Meal Program in South Sulawesi

The results of the study show that the implementation of the Free Nutritious Food Program (MBG) in South Sulawesi has been carried out systematically through a food supply chain mechanism that covers the entire process from upstream to downstream, starting from the procurement of raw materials, food production in the kitchen of the Nutrition Fulfillment Service Unit (SPPG), distribution, storage, and presentation to beneficiaries. As one of the national priority programs, MBG is designed as an instrument of state intervention to improve the quality of human resources through the fulfillment of people's nutritional needs in a planned, measurable, and sustainable manner.(Ahsan and Alfaries 2025) This program is not only positioned as a food assistance program, but as part of a human development strategy that integrates aspects of health, education, social protection, food security, and community economic empowerment in one coordinated public policy system.

From an institutional aspect, the implementation of MBG involves various actors who have different functions and responsibilities at each stage of the supply chain.(Rejeb et al. 2021) At the national level, the National Nutrition Agency plays the role of the main institution responsible for planning, coordinating, supervising, and evaluating programs. At the regional level, provincial and district/city governments play a role in supporting implementation

through cross-sector coordination and facilitation of program needs. Operational implementation is carried out through the Nutrition Fulfillment Service Unit (SPPG) which is responsible for the food production and distribution process. In addition, the program also involves schools, cooperatives, Village-Owned Enterprises (BUMDes), micro, small and medium enterprises (MSMEs), farmer groups, farmer groups, farmer groups, fishermen, and beneficiary communities. The involvement of these various stakeholders shows that MBG is a program with complex governance and requires synergy between actors in ensuring the sustainability of its implementation. (Hidayat & Saputra, n.d.)

From a health aspect, research shows that MBG has made a positive contribution to increasing public access to nutritious food, especially for students and vulnerable groups. Regular provision of nutritious food helps meet daily nutritional needs that were previously difficult for some low-income families to meet. This condition contributes to the government's efforts to reduce the prevalence of stunting, improve children's nutritional status, and improve the quality of public health in general. (Fatimah et al. 2024) Field findings show that the existence of this program increases the affordability of nutritious food for target groups and strengthens efforts to prevent various nutritional problems that are still challenges for health development in Indonesia.

In addition to having a health impact, MBG also shows a significant contribution to the education sector. Fulfilling better nutritional needs affects increasing learning concentration, student participation in the learning process, and the quality of learning activities at school (Agustini 2025). Several informants from teachers and school managers said that students became more active in participating in learning activities after obtaining nutritious food regularly. These findings are in line with various international studies on *school feeding programs* which shows that nutritional adequacy is closely related to cognitive development, increased student attendance, and long-term educational achievement. Thus, MBG not only functions as a food fulfillment program, but also as an instrument of human resource investment through improving the quality of education.

In the social dimension, this program provides considerable benefits for beneficiary households. Providing nutritious food regularly helps reduce the burden of family expenses in meeting children's food needs. For low-income groups, the existence of this program provides space for households to allocate income to other needs that are also important for family welfare. Therefore, MBG not only functions as a nutrition fulfillment program, but also as a social protection instrument that supports improving community welfare and strengthening household food security.

From an economic perspective, research shows that MBG has a significant impact on strengthening the local economy through the development of community-based food supply chains. The raw material procurement system involving farmers, breeders, fishermen, cooperatives, BUMDes, and local MSMEs has created a multiplier effect (*multiplier effect*) in the form of increasing regional economic turnover, increasing demand for local products,

creating jobs, and increasing community income (Muchlashin 2026). The locally-based procurement approach also helps shorten distribution chains, improve supply efficiency, and strengthen the linkages between government programs and the regional food production sector. This condition shows that MBG functions not only as an instrument of food distribution, but also as an economic development instrument that is able to drive the agriculture, livestock, fisheries, and micro business sectors at the local level.

Furthermore, strengthening the local supply chain is one of the important achievements in the implementation of MBG in South Sulawesi. Through the involvement of local producers in the provision of raw materials, this program encourages the formation of a more inclusive and sustainable food ecosystem. The integration between program needs and local production capacity creates opportunities for regional economic development while strengthening domestic food security. In this context, MBG not only produces short-term benefits in the form of meeting the food needs of beneficiaries, but also provides a long-term impact through strengthening food production and distribution capacity at the local level (Hilmi 2026).

Overall, the findings of the study show that the implementation of MBG in South Sulawesi has had a positive impact on various dimensions of development, including increasing access to nutritious food, strengthening the quality of public health, improving the quality of education, social protection for vulnerable groups, and empowering the local economy through strengthening community-based food supply chains. This success shows that MBG has developed into a multidimensional human development policy and has a strategic contribution to the achievement of sustainable development goals. However, the complexity of the supply chain and the many actors involved in the program also pose new challenges, especially in ensuring that the entire food supply process not only meets nutrition and food safety standards, but also ensures the integrity of halal and tayyib as a whole. Therefore, an analysis of halal hotspots and halal-tayyib governance in the MBG supply chain is important to understand the extent to which halal principles can be integrated into the governance of public food programs.

Halal-Thayyib Critical Points in the MBG Supply Chain: Upstream, Production, and Distribution Analysis

Although the Free Nutritious Food (MBG) Program has shown success in increasing access to nutritious food and supporting human resource development, the results show that the halal-tayyib assurance system has not been fully integrated in the program's supply chain governance.(Manalu et al. 2025) These findings show that there is a gap between the success of nutritional fulfillment (*nutritional governance*) and the effectiveness of the halal assurance system (*halal governance*). In perspective *halal supply chain*, the existence of halal certification on the final product is not enough to guarantee halal integrity if the

procurement, production, distribution, and supervision processes are not connected in one integrated control system (Sari, Ratnasari, and Osman 2026).

The analysis of the study identified three groups of halal critical points (*halal critical points*), i.e. at the upstream stage (*upstream supply chain*), production process in SPPG kitchen (*production process*), and downstream level (*downstream distribution and halal logistics*). These three stages show weak integration *halal assurance system*, limitations of the halal tracking system (*halal traceability*), the lack of optimal halal audits, and there are still gaps in institutional coordination that have the potential to reduce the integrity of the halal-thayyib program (Hasnan and Kohda 2023).

a. Upstream Supply Chain: Supplier Certification, Traceability, and Halal Assurance Challenges

In theory *halal supply chain*, the upstream stage is the main foundation in maintaining halal integrity because the entire subsequent process is highly dependent on the halalness and traceability of the raw materials used. Tieman emphasized that halal integrity must be maintained from the starting point of the supply chain because failure to control in the early stages will have an impact on the entire subsequent process (Tieman 2011). Therefore, the procurement system must not only ensure the availability of foodstuffs, but also ensure the existence of mechanisms *Halal Insurance* which is able to control halal risks from the beginning of the supply chain.

The results of the study show that the procurement of MBG raw materials in South Sulawesi has succeeded in integrating farmers, breeders, fishermen, cooperatives, BUMDes, and local MSMEs into the program's supply chain. This model provides significant economic benefits through strengthening the local economy, increasing the absorption of community produce, and reducing long distribution chains. However, the economic success has not been fully followed by the strengthening of the halal assurance system.

The study found that not all suppliers have active halal certification, especially in processed products, food additives, mixed spices, and supporting products used in the food production process. Some suppliers still rely on the assumption that the ingredients used come from halal sources without being supported by adequate certification documents and verification systems. This condition shows that the halal aspect is still understood as a product attribute, not as a supply chain governance system that must be monitored on an ongoing basis.

The next problem is related to the *traceability system*. The results of the study show that the recording of the origin of raw materials, food additives, distribution processes, and product movements between supply chain points is still carried out manually and has not been integrated into the digital system. As a result, the tracking process becomes difficult to carry out when there are suspected halal violations, supplier changes, and food safety incidents. From a *halal traceability* perspective, this condition shows that an *end-to-end halal*

traceability system has not been formed that allows the identification of the origin of ingredients, handling processes, and distribution history quickly and accurately.

Another finding that is quite important is the weak supervision of *food additives*. In MBG implementation practices, more attention is paid to key ingredients such as rice, eggs, chicken, fish, and vegetables, while additives such as flavorings, emulsifiers, thickeners, dyes, and production aids have not received the same level of scrutiny. In fact, various halal supply chain studies show that food additives are one of the main sources of non-halal risk because they involve complex production chains and are often difficult to verify by end users.

In addition, research shows that halal audits of suppliers have not been carried out regularly. Supplier evaluations are more oriented towards price, product quality, supply capacity, and delivery timeliness. The aspect of compliance with the halal assurance system has not yet become the main indicator in the supplier evaluation process. In perspective *governance analysis*, this condition shows that halal governance has not been fully integrated into the MBG procurement system (Annabi and Ibidapo-Obe 2017).

Data from the National Nutrition Agency for SPPG certification in South Sulawesi strengthens these findings. Of the 801 certifications owned by SPPG, the Sanitary Hygiene Fitness Certification (SLHS) reached 402 certifications or around 50 percent, while the Chef Certification reached 265 certifications or around 33 percent. In contrast, Halal Certification only amounts to 111 certifications or about 14 percent. Other food safety-based certifications are still relatively limited, namely FSMS ISO 22000 with 11 certifications (1 percent), HACCP with 5 certifications (1 percent), and ISO 45001 Occupational Health and Safety Management System (K3) with 7 certifications (1 percent). At the same time, of the total 876 SPPGs that have been recorded, 834 have been operational and 42 are still in the preparation stage (National Nutrition Agency 2026).

The data shows that the strengthening of the institutional capacity of SPPG is growing quite rapidly in terms of operations and food safety, but it has not been followed by the proportional strengthening of halal certification. From the perspective of *the halal assurance system*, this condition shows that attention to hygiene, sanitation, and food safety is developing faster than the strengthening of the formal halal assurance system. In fact, in the concept of *halal supply chain*, food safety and *halal assurance* are two elements that must run simultaneously. The inequality in the composition of the certification shows that MBG governance is still more oriented towards *food safety governance* than *halal governance*. Thus, the upstream stage can be categorized as the first halal critical point that shows a structural gap between the food safety system and the halal assurance system in the implementation of MBG.

b. Production Process in SPPG Kitchens: Cross-Contamination Risks and Halal Control System

The production stage is the most strategic point in maintaining the integrity of halal-thayyib because all raw materials are transformed into ready-to-consume products. In the

perspective of the Halal Assurance System (HAS), halal integrity is not only determined by the halal status of raw materials, but also by the control system applied during the production process. Therefore, the SPPG kitchen has a central position as a liaison between halal assurance at the procurement stage and the maintenance of halal integrity at the distribution stage (Ab Rashid and Bojei 2019).

The results of the study show that most of the SPPG kitchens have applied the principles of hygiene, sanitation, and food safety relatively well. The production process has included the use of personal protective equipment, sanitation supervision of the work environment, separation of raw and cooked materials, and the preparation of menus based on nutritional standards of needs. These findings show that the orientation of kitchen management is still very strong in the aspects of food safety and the fulfillment of nutritional standards. However, the implementation of the halal assurance system has not shown the same level of maturity.

The study found that most SPPG kitchens do not have a halal Standard Operating Procedure (SOP) that specifically regulates the control of halal critical points. Halal ingredient verification, food additive supervision, equipment segregation, high-risk ingredient handling procedures, and internal halal audits have not been implemented systematically. As a result, halal control is still highly dependent on the understanding of individual kitchen managers and is not yet based on a documented system. From the perspective of halal governance, this condition shows that halal is still positioned as a complementary aspect of operations, not as a core part of the production quality control system.

Analysis using the Hazard Analysis and Critical Control Point (HACCP) framework shows that most of the control mechanisms in SPPG kitchens still focus on biological, chemical, and physical hazards that have the potential to interfere with food safety. Meanwhile, halal hazards have not been explicitly identified in the risk control process. In fact, the integration between HACCP and HAS is an important need because safe products do not necessarily meet halal standards, while halal products must also meet food safety standards.

The study also found that there was a variation in the quality of kitchen facilities between regions. Some SPPGs already have a relatively good production layout with separate workflows, adequate ventilation, regular storage space, and fairly standard equipment. However, some still face limited production space, suboptimal ventilation, limited storage area, and layouts that do not fully meet the principle of segregation. This condition increases the risk of cross-contamination from materials, production tools, the work environment, and labor (Aung and Chang 2014).

In halal supply chain theory, cross-contamination is one of the biggest threats to halal integrity because products derived from halal ingredients can lose their halal status if exposed to materials, facilities, or equipment that do not meet halal standards. Therefore, the concept of segregation applies not only to foodstuffs, but also to equipment, production areas,

storage facilities, and distribution facilities. These findings show that some SPPG kitchens still face challenges in implementing a consistent segregation system as part of halal risk control.

The case of alleged contamination of MBG food trays with swine oil in 2025 provides an important illustration of the complexity of halal control in public food programs. Although laboratory test results showed that no swine oil content was found in the food tray used, the case shows that the scope of halal assurance cannot be limited to only foodstuffs. All production facilities, tableware, distribution containers, and other supporting facilities must be included in the halal supervision system. From the perspective of governance analysis, the case shows that public perception of halal is not only determined by the results of product testing, but also by the level of trust in the supervisory system implemented by the program organizer.

In addition to infrastructure factors, the study also found that the level of halal awareness of human resources is still relatively diverse. Most kitchen workers have received training related to food safety and sanitation, but have not received special training on halal assurance systems, halal critical points, and halal risk control procedures. This limited understanding has the potential to cause operational errors that are not detected by the supervision system. Therefore, strengthening the capacity of human resources through halal awareness training programs and halal competency certification is an important need in strengthening MBG governance.

Overall, the findings at the production stage show that the control system applied is still stronger in terms of food safety than halal control. This condition indicates that there is a gap between food safety management and halal assurance management that has the potential to affect the integrity of halal-thayyib in the MBG supply chain.

c. Downstream Distribution and Halal Logistics: Maintaining Integrity Beyond Production

In the theory of halal logistics, halal integrity does not end in the production process, but must be maintained during the process of distribution, storage, transportation, and presentation to the end consumer. Therefore, the downstream stage is an important part of ensuring that products that have met halal standards in the previous stage do not experience quality degradation or loss of halal integrity during the distribution process (Nghah, Zainuddin, and Thurasamy 2015).

The results of the study show that the MBG distribution system has been running relatively well in terms of service coverage and timeliness. Distribution is carried out regularly from the SPPG kitchen to the school or beneficiary point through a supervision mechanism involving the program manager and the school. This system allows food to be received by beneficiaries in a relatively short time, thus supporting the maintenance of food quality.

However, the study found that the downstream stage still faces a number of halal and thayyib critical points that have not been fully managed. One of the main problems is the uneven standard of distribution vehicles used. Some vehicles have not been specifically designed for food distribution and are not equipped with adequate temperature control

mechanisms. This condition has the potential to reduce the quality of food while increasing the risk of contamination during the transportation process.

From a halal logistics perspective, distribution vehicles are an integral part of the halal assurance system because they function as a medium for moving products from the kitchen to the beneficiaries. When the segregation system, vehicle cleanliness, and temperature control are not running optimally, the integrity of halal-thayyib can be compromised even though the raw materials and production process have met the required standards.

The next problem is related to storage facilities in beneficiary schools. The results of the study show that schools' ability to store and handle food is still very diverse. Some schools already have adequate storage space and a good supervision system, while others still face limited support facilities. As a result, food that has not been consumed immediately has the potential to experience quality degradation, damage, or environmental exposure that can affect food quality and safety.

From the perspective of HACCP, these conditions show that critical point control at the downstream stage has not been running optimally. Temperature control, distribution time, storage conditions, and facility cleanliness are important factors that determine the quality of the final product. When control of these factors is not carried out consistently, the risk of food safety and halal-thayyib quality disturbances will increase.

The research also found that the distribution monitoring system has not been integrated with the halal traceability system. In the event of a food safety incident, suspected halal violations, or public complaints, the tracking process still takes a relatively long time because supplier data, production data, and distribution data are not yet in one integrated monitoring platform. This condition shows that the existing traceability system still functions as a distribution administration system and has not developed into a halal traceability digital system that is able to support comprehensive halal supervision.

In addition, the food serving process is still highly dependent on the capacity of human resources and facilities available in each school. Differences in management capacity, level of understanding of food safety, and the availability of storage facilities cause the quality of food handling to be not always uniform. In some cases, weaknesses at the downstream stage can have a direct impact on the health of beneficiaries and lower the level of public trust in the program.

Overall, the analysis at the distribution and presentation stages shows that the main challenge lies not in the scope of distribution, but in the system's ability to maintain the integrity of halal-thayyib after the product leaves the SPPG kitchen. Weaknesses in temperature control, storage facilities, traceability systems, and halal logistics standards indicate that the downstream stage is the third halal critical point in MBG's supply chain. These findings further strengthen the argument that halal integrity cannot be maintained only through product certification or supervision at the production stage, but requires an integrated halal logistics and halal governance system from upstream to downstream.

Based on these three stages, this study shows that the main problem of MBG does not lie in the availability of food or distribution capacity, but in the lack of integration of the halal assurance system into the overall governance of the program. Weaknesses in supplier certification, halal audits, traceability, cross-contamination control, halal logistics, and institutional coordination indicate a significant halal governance gap. These findings confirm that the success of public food programs is not measured by the fulfillment of nutritional needs and food security, but also by the system's ability to ensure the integrity of halal-thayyib in a sustainable manner throughout the supply chain. These findings also strengthen the argument that the concepts of halal supply chain, halal assurance system, and halal governance need to be integrated into public food policy so that the goals of fulfilling nutrition, food safety, and halal certainty can be achieved simultaneously and sustainably.

Maqasid al-Shari'ah and Integrated Halal Governance in Public Food Policy

The findings of the study show that the Free Nutritious Food Program (MBG) can not only be understood as a public food policy oriented towards meeting the nutritional needs of the community, but also as an instrument of public benefit that has a direct relationship with the main goals of sharia (*maqasid al-shari'ah*). In the perspective of maqasid, the success of a public policy is not only measured by its administrative effectiveness and technical achievements, but also by the extent to which it is able to protect and realize the five fundamental objectives of sharia, namely the protection of religion (*hifz al-din*), soul (*hifz al-nafs*), intellect (*hifz al-'aql*), posterity (*hifz al-nasl*), and property (*hifz al-mal*). Therefore, it is not enough to evaluate the implementation of MBG through indicators of nutritional success and food distribution alone, but it is also necessary to place the halal-thayyib aspect as an integral part of public food governance.

From the perspective of Islamic law, the principles of halal and thayyib are a normative unit that cannot be separated. The Qur'an repeatedly commands the consumption of halal food and thayyib as part of efforts to protect religion, soul, and human welfare. The halal principle emphasizes the aspect of the validity of the sharia of a product, while the principle of thayyib emphasizes the aspects of safety, quality, cleanliness, and food usefulness. Thus, the fulfillment of nutrition in the Free Nutritious Food Program is not enough to meet nutrition and food safety standards, but must also ensure compliance with the principles of halal-thayyib as a whole. In this context, halal governance does not only function as an administrative instrument, but also as a mechanism for protecting people's religious rights as well as a means of realizing public benefits as the main goal of sharia.

The results of the study show that substantively MBG has made a strong contribution to the dimension of *hifz al-nafs* (life protection). The provision of nutritious food on a regular basis has increased vulnerable groups' access to decent food, helped reduce the risk of malnutrition, and supported government efforts to reduce the prevalence of stunting and various nutrition-based health problems. Within the framework of maqasid, the fulfillment of

nutritional needs is the main instrument in maintaining human survival and improving the quality of public health. Thus, MBG has carried out one of the basic functions of the state in ensuring public welfare through the protection of public life and health.

A similar contribution is also seen in the dimension of *hifz al-'aql* (protection of reason). Various findings show that the nutritional adequacy obtained by students through the MBG program contributes to increasing learning concentration, educational participation, and children's cognitive development. In the perspective of *maqasid*, the protection of reason is not only related to the prohibition of things that damage intellectual function, but also includes active efforts to support the development of human thinking capacity. Therefore, MBG can be positioned as a human resource investment instrument that contributes to the intellectual development of future generations.

At the same time, the program also supports the achievement of *hifz al-nasl* (protection of offspring). Adequate nutrition in children and vulnerable groups has long-term implications for the quality of future generations. Stunting prevention, improving nutritional status, and improving children's health are part of efforts to maintain the sustainability of offspring quality, which is one of the main goals of *sharia*. Thus, MBG not only produces short-term benefits in the form of meeting food needs, but also provides strategic benefits in the development of a healthy, productive, and competitive generation.

However, the results of the study show that the dimension of *hifz al-din* (religious protection) has not received an equal strengthening. Findings at the procurement, production, and distribution stages show that *halal* assurance has not been systemically integrated into program governance. The limitations of *halal* certification of suppliers, weak traceability systems, non-optimal *halal* audits, the risk of cross-contamination, and the absence of *halal* logistics standards indicate that the protection of Muslim consumer rights has not been fully fulfilled. From the perspective of *maqasid*, religious protection is not only related to the freedom to carry out worship, but also includes the right of the community to obtain products in accordance with the provisions of the *sharia*. Therefore, *halal* uncertainty in the MBG supply chain shows that there is a gap in implementation in one of the fundamental objectives of *sharia*.

The findings of the study show that the *halal* governance gap in the implementation of MBG is not only an administrative and technical problem, but represents an imbalance in the achievement of *maqasid al-shari'ah* as a whole. The program has been relatively successful in realizing *hifz al-nafs*, *hifz al-'aql*, and *hifz al-nasl* through the fulfillment of nutrition and improving the quality of public health, but it has not yet achieved the balance of *maqasid* in its entirety because the dimension of *hifz al-din* has not received equal protection. This condition shows that the effectiveness of public food policy in the perspective of *maqasid* is not enough to be measured by biological success alone, but also by the system's ability to integrate the spiritual, ethical, and *sharia* compliance dimensions simultaneously in program governance.

In addition, the aspect of hifz al-mal (property protection) also still needs to be strengthened through more transparent, accountable, and efficient governance. Programs with large budget scales such as MBG require a supervisory system that is able to ensure the effective use of resources while minimizing the risk of inefficiency and irregularities. In this context, strengthening digital traceability systems, supply chain audits, and inter-agency data integration is not only important to maintain halal integrity, but also supports transparency and accountability in public budget management. Thus, halal governance and good governance are basically two complementary dimensions in realizing the public benefit.

This study also shows that halal-thayyib governance cannot be separated from nutrition governance and food safety. These three dimensions form a Halal-Thayyib Governance Nexus, which is an interdependent relationship between nutritional governance, food safety governance, and halal governance. Food safety without halal assurance results in incomplete protection for the Muslim community, while halal assurance without food safety also does not meet the principle of thayyib. Therefore, public food policy requires the integration of these three dimensions in one integrated governance framework. In the context of MBG, the imbalance between the three dimensions causes the supervision system to focus more on hygiene and food safety aspects rather than strengthening halal assurance as a whole.

Based on these findings, this study identified the existence of a halal governance gap, namely the gap between the nutrition fulfillment system and the halal assurance system in public food policy. So far, MBG governance is more oriented towards nutritional governance and food safety governance, while halal governance has not gained an equal position in the supervision and decision-making structure. As a result, the success of the program in meeting the biological needs of the community has not been fully followed by the protection of the normative and spiritual needs of the Muslim community.

a. Integrated Halal-Thayyib Governance Model for Public Food Programs

In response to these gaps, this study offers the Integrated Halal-Thayyib Governance Model for Public Food Programs as a new conceptual model in sharia-based public food governance as follows:

No	Pillar Model	Main Functions
1	Halal Assurance System Integration	Integration of SJPH in the entire supply chain from suppliers, SPPG, distribution, to presentation
2	Digital Halal Traceability	Digital traceability system for real-time tracking of raw materials, production processes, distribution, and presentation
3	Risk-Based Halal Governance	Risk-based oversight through the integration of HAS, HACCP, and supply chain risk management

4	Institutional Integration	Integration of the functions of BGN, BPJPH, MUI, local governments, SPPG, and all supply chain actors
5	Halal Capacity Building	Strengthening human resources through halal awareness training, halal competency certification, and halal organizational culture

This model places halal-thayyib as the main principle that connects all stages of the public food supply chain, from the procurement of raw materials, production processes, distribution, presentation, to supervision and evaluation of programs.

From a policy perspective, this study recommends the establishment of MBG Halal Supervision Units at the central and regional levels that are tasked with coordinating halal audits, traceability data management, halal critical point monitoring, and cross-agency coordination. In addition, the development of a halal traceability digital platform that is integrated with the MBG monitoring system is a strategic need to strengthen transparency, accountability, and the effectiveness of supervision.

This study also recommends strengthening integration between the National Nutrition Agency (BGN), the Halal Product Assurance Agency (BPJPH), the Indonesian Ulema Council (MUI), local governments, SPPG, and all food supply chain actors in one integrated halal supervision system. This integration is important so that halal supervision does not run partially, but becomes an integral part of the governance of public food programs.

Theoretically, this research contributes to the development of halal governance literature by expanding the application of halal supply chain theory from the commercial food industry sector to the realm of public food policy. This research shows that halal integrity is not only an issue for the halal industry, but also an important part of public welfare governance. Thus, this study introduces the expansion of the concept of halal governance from the level of organizations and companies to the level of public policy and state governance.

In addition, this study develops an integrative analysis framework that connects the halal supply chain, halal assurance system, and maqasid al-shari'ah in a single conceptual model to explain the phenomenon of halal governance gap in national-scale public food programs. The integration of these three approaches shows that halal governance cannot be understood only as a product certification issue, but must be analyzed as a multidimensional governance system that includes aspects of regulation, institutional, supervision, technology, risk, and protection of the public interest.

Thus, this article positions MBG not just as a nutrition fulfillment program, but as an early model of Islamic Public Food Governance that integrates food security, nutritional fulfillment, Muslim consumer protection, and maqasid al-shari'ah goals in one comprehensive governance framework. Although this research was conducted in the Indonesian context, the findings and models produced have broader relevance for Muslim-majority countries that are developing school feeding programs, social food assistance programs, and public food policies

based on social welfare. Therefore, the Integrated Halal-Thayyib Governance Model for Public Food Programs offered in this study has the potential to be a conceptual reference in the development of Islamic Public Food Governance at the global level.

Overall, the results show that the Free Nutritious Food Program (MBG) has succeeded in building a public food system that provides significant benefits in increasing access to nutritious food, strengthening public health, improving the quality of education, and empowering the local economy. However, this success has not been fully followed by the strengthening of the halal-thayyib assurance system that is integrated at all stages of the program's supply chain. The findings of the study show that aspects of nutrition fulfillment and food safety have received relatively strong attention through various operational and institutional mechanisms, while the halal dimension still faces various challenges in the form of limited halal certification, weak traceability systems, suboptimal halal audits, risk of cross-contamination, and the lack of integration of halal logistics in program governance.

Supply chain analysis shows that halal critical points do not only appear at one specific stage, but are spread throughout the process from the procurement of raw materials, production in the SPPG kitchen, to distribution and presentation to beneficiaries. This condition shows that halal assurance in public food programs cannot be understood as a matter of product certification alone, but must be placed as part of a governance system that connects aspects of regulation, institutional, supervision, technology, and risk management in an integrated manner. In other words, the effectiveness of halal governance is largely determined by the system's ability to maintain the integrity of halal-thayyib in a sustainable manner from upstream to downstream.

In the perspective of Maqasid al-Syari'ah, the findings of the study show that MBG has made a strong contribution to the protection of the soul (*hifz al-nafs*), the protection of reason (*hifz al-'aql*), and the protection of offspring (*hifz al-nasl*) through the fulfillment of nutritional needs and the improvement of the quality of human resources. However, religious protection (*hifz al-din*) has not received equal reinforcement because the halal assurance system has not been optimally integrated in program governance. This condition indicates an imbalance in the achievement of maqasid which then gives birth to the phenomenon of halal governance gap, which is the gap between the success of fulfilling the biological needs of the community and the protection of the normative and spiritual rights of the Muslim community.

Therefore, this study emphasizes that the future of public food governance is not enough to be oriented only to *nutritional governance* and *food safety governance*, but must move towards integrated halal-thayyib governance that integrates nutritional fulfillment, food safety, halal assurance, and consumer protection in one comprehensive governance framework. This synthesis is the basis for the development of an integrated halal-thayyib governance model offered in this study as well as a conceptual foothold to strengthen public food policies that are oriented towards the benefit of the community as a whole.

Conclusion

This study concludes that the principal challenge of Indonesia's Free Nutritious Food Program (MBG) in South Sulawesi lies not in food availability, distribution, or nutritional adequacy, but in the limited integration of halal-thayyib governance throughout the public food supply chain. The findings reveal a halal governance gap, characterized by incomplete implementation of halal assurance systems, weak traceability, insufficient halal auditing, risks of cross-contamination, and fragmented halal logistics. Consequently, the effectiveness of public food policy should be evaluated not only through nutritional outcomes and food safety, but also through the sustainability of halal integrity.

From the perspective of Maqāṣid al-Sharī'ah, the program substantially advances ḥifẓ al-nafs, ḥifẓ al-'aql, and ḥifẓ al-nasl by improving access to nutritious food, public health, and human capital. However, ḥifẓ al-dīn remains insufficiently protected because halal assurance has not yet become an integral component of program governance. These findings demonstrate that Maqāṣid al-Sharī'ah provides a comprehensive analytical framework for balancing nutrition, food security, public welfare, and religious rights in public policy.

The study's primary contribution is the proposed Integrated Halal-Thayyib Governance Model, which unifies halal supply chain management, halal assurance systems, and Maqāṣid al-Sharī'ah within a single governance framework for public food programs. This model extends halal governance theory beyond commercial industries into public policy and conceptualizes halal integrity as a multidimensional governance system encompassing institutional coordination, traceability, risk management, supervision, and public accountability.

Policy implications include strengthening coordination among government agencies, halal authorities, local governments, and supply chain actors through integrated supervision, digital halal traceability, and risk-based halal auditing. The findings also have broader relevance for halal governance in school feeding programs and public nutrition policies across Muslim-majority countries. Future research should examine blockchain-enabled halal traceability, artificial intelligence-based halal monitoring, comparative governance models, and quantitative halal risk assessment to enhance evidence-based and sustainable halal public food governance.

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