

Analysis the Impact of Free Nutritional Food Program on Food Availability and Public Perception in Bandung

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ABSTRACT

The Free Nutritious Meal Program (Makan Bergizi Gratis/MBG) was introduced by the Indonesian government to improve nutritional intake and support food security among vulnerable groups. Its implementation has attracted public attention, particularly in Bandung City, where food availability is challenged by dependence on external food supplies and complex distribution systems. In addition, public perception plays an important role in determining the acceptance and sustainability of the program. This study aims to analyze the impact of the MBG program on food availability and public perception in Bandung. A quantitative approach was employed using survey data collected through a structured questionnaire distributed to Bandung residents. The data were analyzed using Structural Equation Modeling Partial Least Squares (SEM-PLS). The findings show that the MBG program has a significant role in supporting food availability by stimulating food supply and distribution activities. However, its influence on public perception is relatively limited, indicating that community attitudes are also shaped by factors such as trust, transparency, and program implementation quality. The study highlights the importance of strengthening local food systems and improving governance to enhance the effectiveness and public acceptance of the MBG program.

Keywords: Free Nutritious Meal Program; Food Availability; Public Perception; Food Security; Bandung.



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INTRODUCTION

Ensuring adequate nutrition for children and vulnerable populations remains one of the most pressing development challenges in Indonesia. Government data show that around 41% of school-age children experience hunger on a daily basis, a condition that directly weakens their ability to learn and diminishes the country's long-term human resource potential (Merlinda Ajeng & Yusuf Yusmar, 2025). In 2025, the Indonesian government under President Prabowo implemented the Free Nutritious Meal (MBG) program as a strategic policy intervention to improve nutritional outcomes among school children, pregnant women, and breastfeeding mothers. This program represents a key component of the country's broader agenda to combat stunting and advance the long-term objectives outlined in the Indonesia Emas 2045 vision (Kiftiyah et al., 2025)

Despite growing attention to MBG at the national level, little is known about how the program performs within specific local food systems particularly in cities where food supply is heavily dependent on outside sources. Bandung, Indonesia's third-largest city, illustrates this concern clearly. The city imports nearly 97% of its food from other regions, relies on long and costly supply chains, faces frequent price instability, and produces food waste amounting to 44.5% of its total urban waste. These conditions create real risks for any large-scale food program: higher costs, inconsistent supply, and reduced food quality at the point of delivery. Evidence from Bandung indicates that the implementation of MBG faces a range of structural and administrative constraints, including limited budget flexibility, logistical and distribution difficulties, inadequate food processing facilities, shortages of trained personnel, and the relatively low capacity of third-party providers responsible for food preparation and delivery. In addition, weak supervision mechanisms, fragmented stakeholder coordination, uneven public socialization, and the absence of uniform technical regulations have complicated policy execution at the local level. These challenges demonstrate that the effectiveness of large-scale school feeding programs is highly dependent on governance capacity and policy coherence. Without strengthening institutional arrangements and implementation mechanisms, the program may encounter difficulties in maintaining food quality, ensuring equitable distribution, and achieving its intended nutritional and educational outcomes (Agustini et al., 2025)

Several studies have begun to shed light on MBG's early outcomes, though important gaps remain. Research by Agustini et al. (2025) finds that program success in Bandung depends strongly on how well government institutions are prepared and how effectively different agencies work together. An economic simulation by Pratiwi, Sahara, and Azijah (2025) shows that MBG does increase income across key sectors such as agriculture and food processing, yet income gains are unevenly distributed, meaning the program has not yet made a measurable dent in economic inequality. On the community side, Nurhalizah (2025) finds that how people perceive the program significantly shapes whether students and families actually support it, with perception emerging as the strongest predictor of positive attitudes ($p = 0.001$). Meanwhile, budget analysis by Miswa and Kurniawan (2025) suggests that directing more MBG funding toward local farmers rather than food processors would produce greater benefits for food security and job creation, a finding that points to an important policy adjustment yet to be made.

A particularly urgent concern emerged in September 2025, when a mass food poisoning incident in West Bandung Regency left more than 1,000 students ill. This event brought into sharp focus the gap between the program's nutritional goals and its food safety practices. National Agency of Drug and Food Control (BBPOM) authorities Bandung stressed that delivering safe meals requires strict quality control at every step, from ingredient sourcing to cooking and distribution. This incident reveals a critical

weakness in program implementation that current research has not yet adequately examined.

This study addresses these gaps by investigating two interconnected questions: how the MBG program affects local food availability in Bandung, and how community perceptions shape its overall effectiveness. By combining food system analysis with an assessment of public attitudes, this study offers a more complete picture of what determines program success on the ground. The findings are intended to provide practical guidance for policymakers seeking to strengthen MBG's design not only to improve children's health, but also to support fair economic growth and a more resilient local food system.

LITERATURE REVIEW

Free Nutritious Meal Program (MBG)

The Program for Free Nutritious Meals (MBG) was officially released by the Indonesian government in January 2025 through Regulation by the President No. 83 of 2024 and Presidential Instruction No. 1 of 2025. The program intends to increase nutritional intake among pregnant women, children, and mothers who breastfeed as part of efforts to reduce stunting and improve human resource quality toward the “Golden Indonesia 2045” vision (Syafiqoh, 2025). The government allotted Rp71 trillion in the State Budget for 2025 for the first phase of implementation, targeting up to 82.9 million beneficiaries.

Previous studies show that school-based nutritious meal programs positively affect children's nutritional status and academic achievement. Arifin et al. (2025) found that free nutritious meals significantly improved elementary school students' concentration levels. Similarly, Mowilos et al. (2025) concluded that nutritious meal programs help lessen stunting and enhance children's nutritional status prevalence in the long term.

Besides improving health outcomes, the MBG program also has social and economic implications. The program may lessen the strain of household spending and encourage local economic activities through Micro, Small, and Medium-Sized Businesses' (MSMEs) participation in food supply chains. However, Ritonga and Sazali (2025) highlighted several implementation challenges, including food safety, distribution effectiveness, and budget efficiency. Maulia et al. (2025) further emphasized the importance of monitoring and evaluation systems to prevent health risks caused by food processing and distribution errors. These results indicate that the effectiveness of the program for MBG depends not only on beneficiary coverage but also on governance quality, supervision, and inter-agency coordination.

Food Availability

Food availability is a fundamental dimension of food security and reflects the capacity of a region to provide sufficient food through production, reserves, imports, and distribution systems. In the context of the MBG program, food availability becomes crucial because large-scale food assistance increases demand for food commodities simultaneously (Kiftiyah et al., 2025; Merlinda Ajeng & Yusuf Yusmar, 2025)

Research conducted by Aulia (2026), The study shows that the Free Nutritious Meal (MBG) Program can play an important role in improving food availability by providing consistent demand for local food producers, such as farmers, livestock breeders, small businesses, and village-owned enterprises (BUMDes). Through this

demand, the program supports local food production and helps strengthen local food systems. However, the study also highlights that the long-term success of MBG depends on a well-managed supply chain. If food procurement is not properly planned, the program may increase pressure on certain food commodities and affect local food supplies. To address this issue, the study suggests the use of long-term supply agreements, greater variety in food commodities, and stronger support for local suppliers. These efforts can help ensure a more reliable and sustainable food supply while improving the overall effectiveness of the program. Miswa & Kurniawan (2025) also argued that allocating a larger MBG budget to the agricultural sector generates broader impacts on food security than allocations focused on food processing industries. Nandya et al., (2025) found that weak accountability, inadequate transparency and public participation, and ineffective inter-agency coordination were key challenges in overseeing and maintaining food availability in Metro City.

These results imply that food availability within the MBG program is influenced by three main aspects: local supply capacity, supply chain efficiency, and governance quality. Therefore, food availability is not only related to supply quantity but also to sustainable food system management.

Public Perception

Public perception refers to how individuals or groups interpret and evaluate a policy according to their knowledge, encounters, and perceived benefits. In the MBG program, public perception is important because it influences program acceptance, participation, and sustainability.

Previous studies indicate that nutritious meal programs generally improve public awareness regarding healthy food consumption. Yusuf (2025) found that the MBG program positively affects children's nutritional status, contributing to a lower risk of stunting as well as improved concentration and attendance among students at school. In Indonesia, Erlinawati (2025) explained that collaboration among schools, health workers, and local food producers strengthens community trust and creates a sense of shared ownership toward the MBG program.

Public perception is also shaped by implementation quality. Problems related to infrastructure, food distribution, and management may reduce public trust and create negative perceptions (Erlinawati, 2025). Nurhalizah (2025) further found a significant relationship between public perception and support for the MBG program in Bandung, indicating that positive perceptions are closely associated with food quality and availability. These findings demonstrate that transparency, service quality, and community involvement are key elements in preserving public support for the program.

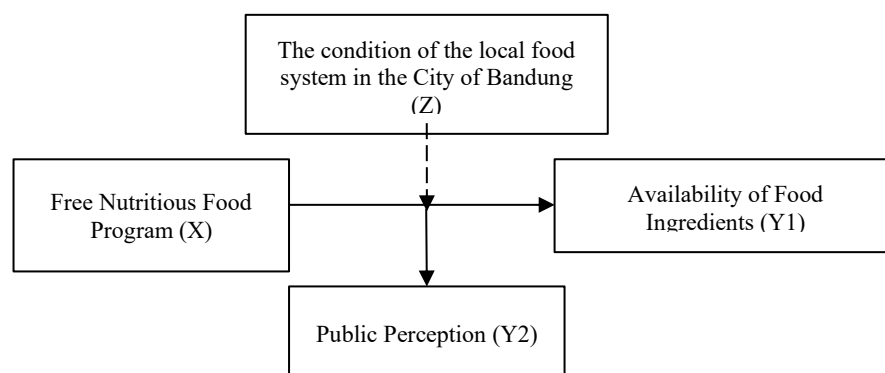


Figure 1. Model of Research
Source: Own Compilation (2026)

In this study, the Free Nutritious Meal Program (MBG) is positioned as the independent variable (X), which influences food availability as the intervening variable (Y1) and public perception as the dependent variable (Y2). The condition of Bandung City's local food system (Z) is considered a contextual factor affecting food availability during the implementation of the program. The MBG program is assumed to increase food demand, which may affect local food supply conditions. Stable food availability is expected to create positive public perceptions, while disruptions in supply may lead to negative perceptions. This assumption is supported by Yusuf (2025), who stated that perceived community benefits are an important factor in shaping public perception toward programs.

Research Hypotheses

Based on the theoretical framework and the structural model developed above, the following hypotheses are proposed:

- H1: The Free Nutritious Meal (MBG) program has a significant positive effect on local food availability in Bandung City (Agustini et al., 2025; Kiftiyah et al., 2025)
- H2: Local food availability has a significant positive effect on community perception (Nurhalizah, 2025; Yusuf, 2025)
- H3: The Free Nutritious Meal (MBG) program has a significant positive direct effect on community perception (Erlinawati, 2025; Ritonga & Sazali, 2025)
- H4: The Free Nutritious Meal (MBG) program has a significant positive indirect effect on community perception through local food availability as an intervening variable (Merlinda Ajeng & Yusuf Yusmar, 2025; Nurhalizah, 2025)
- H5: The structural condition of the local food system significantly moderates the relationship between the Free Nutritious Meal (MBG) program and local food availability (Basit & Ramadani, 2025)

RESEARCH METHOD

Research Design

This study employed a survey method to examine the impact of the Free Nutritious Meal Program (MBG) on food availability and public perception in Bandung City. This method was chosen because it enables the systematic collection and analysis of data from a large number of respondents, allowing researchers to understand the relationships among several factors.

Data were collected using a structured questionnaire distributed online through Google Forms. The questionnaire was disseminated via social media platforms such as WhatsApp, Instagram, and Facebook, as well as through local community groups and citizen forums in Bandung City. This approach allowed for broader respondent coverage and more efficient data collection.

The study focuses on four main variables: the Free Nutritious Meal Program (MBG), food availability, public perception, and the condition of Bandung City's local food system. The MBG program is a government policy designed to improve nutritional quality and expand access to nutritious food for vulnerable groups. Food availability explains how the MBG program influences public perception, particularly regarding food supply, accessibility, and distribution. Public perception reflects community attitudes and evaluations regarding the implementation of the MBG program. Meanwhile, the condition of the local food system may strengthen or weaken the relationship between the

MBG program and food availability, depending on factors such as supply chain efficiency, food price stability, and reliance on external food supplies.

To ensure that the concepts examined in this study could be measured accurately, variable operationalization was conducted. This process was intended to enhance the validity and reliability of the research instrument. All variables were measured using indicators adapted from previous studies and relevant theoretical frameworks. Responses were assessed using a five-point Likert scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”).

Population and Sample

Residents of Bandung City who were either direct beneficiaries of the Free Nutritious Meal Program (Makan Bergizi Gratis/MBG) or community members who learned about the program through various communication channels were the subjects of this study. A population in quantitative research is any group of people or units of analysis that have certain traits that are relevant to the study's goals. As a result, all Bandung City residents who are aware of and have opinions on the MBG program make up the study's population.

Based on population data published by the Bandung City Central Statistics Agency, the population of Bandung exceeds 2.5 million residents distributed across 30 sub-districts. This population includes individuals who have been exposed to information about the MBG program through social media, mass media coverage, or direct participation in program activities. Since the exact number of residents who are aware of the MBG program cannot be accurately identified and continues to change as the program expands, the study population is classified as an infinite population. Consequently, conducting a census of the entire population was considered impractical due to limitations in time, financial resources, and research capacity.

To address this limitation, a sample was selected to represent the target population. The study employed a non-probability sampling approach by combining purposive sampling and accidental sampling techniques. Purposive sampling was used to ensure that respondents met the predetermined eligibility criteria, namely being at least 17 years of age or married, having resided in Bandung City for a minimum of six months, possessing knowledge of the MBG program, and being willing to complete the questionnaire in its entirety. These criteria were established to ensure that respondents could provide relevant and informed assessments related to the research objectives.

Furthermore, accidental sampling was applied during the online distribution of questionnaires through various social media platforms. Individuals who encountered the survey link and met the specified eligibility requirements were invited to participate in the study. The combination of these sampling techniques enabled the researchers to reach a diverse group of respondents while maintaining consistency with the characteristics of the target population. Therefore, the selected sample is expected to adequately represent public perceptions of the MBG program in Bandung City and facilitate the examination of the relationships among program implementation, food availability, and the moderating role of local food system conditions within the research framework.

Variable Operationalization

Operationalization of variables is a fundamental step in quantitative research, serving to transform abstract theoretical constructs into empirically measurable elements. As emphasized by Yan Piaw (2026), without clear operationalization, variables remain ambiguous and resistant to systematic analysis, undermining the validity and reliability of the measurement instruments. Similarly, Lasmita & Muspawi, (2024) assert that the

operationalization process must explicitly define the type, indicators, and measurement scale of each variable involved.

To resolve the specific path relationships and address the operational indicators, the dimensions and variables of this present study are structured as follows: First, the Independent Variable (X) is the Free Nutritious Meal (MBG) program. This variable represents the structured government initiative and is operationalized through the dimension of Program Execution. The core indicators used to measure this execution include program reach, regularity of meal distribution, nutritional adequacy, and municipal implementation effectiveness. These indicators form the basis to test the direct pathway from the program to local food supply capacity (MBG → Food Availability).

Second, the Intervening Variable (Y1) is Food Availability. This variable acts as the crucial mediating path bridging the government program to the final public response and is measured through the dimension of Supply Capacity. The specific indicators used for its measurement include physical stock availability within the community, supply stability over time, logistics smoothness from producers to consumers, and market price affordability for the public. This variable allows the structural testing of indirect pathways, specifically verifying the sequential chain of MBG → Food Availability → Public Perception.

Third, the Dependent Variable (Y2) is Community Perception. This variable reflects the public evaluation of the program based on citizen experiences, information exposure, and perceived benefits, which collectively shape their attitudes toward and acceptance of the initiative. Measured through the dimension of Public Evaluation, the core indicators encompass perceived nutritional benefits, food safety and quality assurance, public trust in governance, and the level of operational transparency. This construct directly evaluates the pathways of Food Availability → Public Perception and the direct baseline of MBG → Public Perception.

Fourth, the Moderating Variable (Z) represents the Local Food System Conditions of Bandung City. This variable captures the structural baseline of the urban market and is measured through the dimension of Structural Context. The evaluation indicators include external supply dependency (the 97% import rate), supply chain length, localized price volatility, and distribution network accountability. This construct is statistically structured to test the interaction term path (MBG × Local Food System → Food Availability), explicitly verifying whether the local market's structural constraints strengthen or weaken the primary policy injection. Together, these variables form an integrated analytical framework for a comprehensive examination of how the MBG program operates within Bandung City.

Data Analysis

With the use of IBM SPSS Statistics, descriptive and inferential statistical methods were employed to analyze the data. For each research variable, answers were summarized and respondent characteristics were described using descriptive statistics such as frequency distribution, mean, and standard deviation. Validity and reliability tests were conducted to assess the research instrument's quality prior to the primary analysis. The Corrected Item-Total Correlation approach was utilized to evaluate validity, with a minimum correlation value of 0.30. Cronbach's Alpha was applied for reliability testing, with a minimum acceptable value of 0.60.

Prior to regression analysis, classical assumption tests were conducted to verify that the data satisfied the underlying requirements of the regression model. The tests included normality, multicollinearity, and heteroscedasticity assessments. Normality was examined using the Kolmogorov–Smirnov test, whereas multicollinearity was assessed

through Variance Inflation Factor (VIF) and tolerance statistics. Conducting these tests helps ensure the reliability and validity of the regression results.

Multiple regression analysis was employed to examine the effect of the Free Nutritious Meal Program (MBG) on food availability and public perception. In addition, moderation analysis was conducted to evaluate the moderating role of Bandung City's local food system condition in the relationship between the MBG program and food availability.

RESEARCH RESULTS

Research Data Discovery

Data were collected directly from general residents of Bandung City through a web-based questionnaire shared across multiple digital platforms, an approach selected to maximize accessibility and efficiency in reaching respondents spread across the city's various sub-districts. A total of 209 valid responses were obtained, a sample size considered adequate for the analytical demands of this study given that Partial Least Squares Structural Equation Modeling (PLS-SEM) performs reliably with moderate sample sizes when measurement models are well-specified. Prior to the primary data collection phase, the questionnaire was subjected to a pilot test involving 30 respondents to assess item clarity and indicator appropriateness across the four research variables, namely the MBG program, food availability, community perception, and Bandung's local food system conditions. Based on the findings of the pilot study, several items were revised for linguistic clarity and indicator alignment, after which a final set of 15 items was confirmed as suitable for use in the main survey. Respondents ranged in age from 17 to 57 years and varied across gender, educational background, and length of residence in Bandung City, providing a sufficiently diverse dataset for subsequent analysis.

Once all 209 responses were collected, data processing proceeded through several sequential stages to ensure analytical rigor. Instrument validity and reliability were first assessed to confirm that each item accurately measured its intended construct, followed by factor analysis to assess the structure of the measurement framework. The complete structural model was subsequently examined using SEM-PLS to examine the proposed relationships among the study variables. Prior to these analyses, data screening was performed to verify distributional normality, the absence of extreme outliers, and the adequacy of the sample size for SEM-PLS procedures. The diversity of responses observed across respondent groups confirmed that the dataset was appropriate and sufficient for proceeding to the main analytical stages of the study.

Based on Table 1, the largest proportion of respondents belonged to the 16–20 age group. (46.89%) and the 21–30 age group (30.14%), indicating the dominance of younger generations in this study. In terms of employment status, more than half of the respondents were students (52.25%), followed by housewives (16.75%) and workers/employees (15.31%). These findings reflect that the respondents came from diverse socio-economic backgrounds, although they were predominantly young people of productive age living in urban areas of Bandung.

Table 1. Respondent Range of Age and Job Status

Respondent Demographics	Categories	Numbers	In %
Range of age	16 - 20 years old	98	46.89
	21 - 30 years old	63	30.14
	31 - 40 years old	26	12.44

Job Status	41 - 50 years old	14	6.70
	51 - 60 years old	8	3.83
	Student/Pupils	109	52.25
	Housewives	35	16.75
	Workers	32	15.31
	MSMEs	12	5.74
	Civil Servants	6	2.87
	Private Employees	4	1.91
	Health Workers	2	0.96
	Retirees/Eldery	11	0.48
	Educators	1	0.48
	Informal Sector Workers	2	0.96
	Others	5	2.39

Source: Own Compilation (2026)

Characteristics of Respondents

The participants in this study were the general public living in the city of Bandung aged between 17 and 57 years. Respondents' characteristics included gender, age, education level, occupation, and length of stay in Bandung. These characteristics served to provide an overview of the respondents and their relationship with perceptions of food availability and the MBG program.

Most respondents were students and housewives, as these groups are closely related to daily food needs and household food management. Respondents also came from various other occupational backgrounds, allowing the data to better represent the broader community conditions in Bandung. The following section presents the distribution of respondents based on each characteristic.

Test of Research Instruments

Data Normality Test

The normality test is carried out to find out whether the research data is distributed normally or not. The test was performed using the Kolmogorov-Smirnov and Shapiro-Wilk methods through the IBM SPSS Statistics application. The data is declared to be considered normally distributed when the significance value (Sig.) exceeds 0.05. The findings of the normality test of each variable are presented in the following table.

Evaluation of Measurement Models (*Outer Model*)

The measurement model (outer model) was evaluated to examine the ability of the indicators to represent the latent constructs in the study. The testing included convergent validity and indicator reliability through the outer loading values of each variable. Indicator validity was confirmed for items with outer loading coefficients greater than 0.70. However, in exploratory studies, indicators with loading values between 0.50–0.70 could still be retained as long as the construct met the overall reliability and validity requirements.

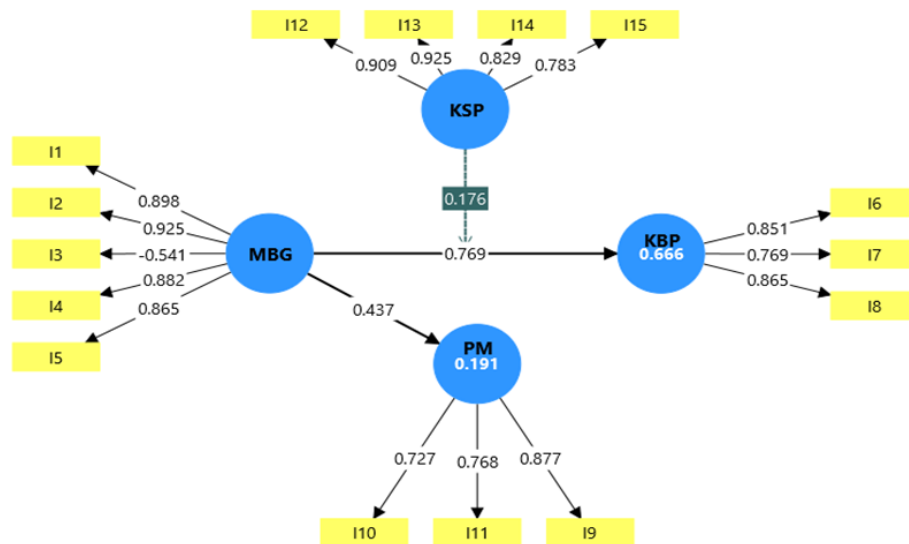


Figure 2. Research Model
 Source: Own Compilation (2026)

Results from the initial research model showed that the majority of indicators achieved outer loading values exceeding 0.70. In the MBG variable, Item I1, I2, I4, and I5 showed high loading values, while indicator I3 only had a loading value of 0.541. Because the value was below the recommended criteria, indicator I3 was eliminated from the research model.

Meanwhile, all indicators in the Food Availability (KBP), Public Perception (PM), and Food Social Conditions (KSP) variables had loadings exceeding 0.70 indicating that the items were adequately measuring the latent variable well and satisfied the convergent validity requirements.

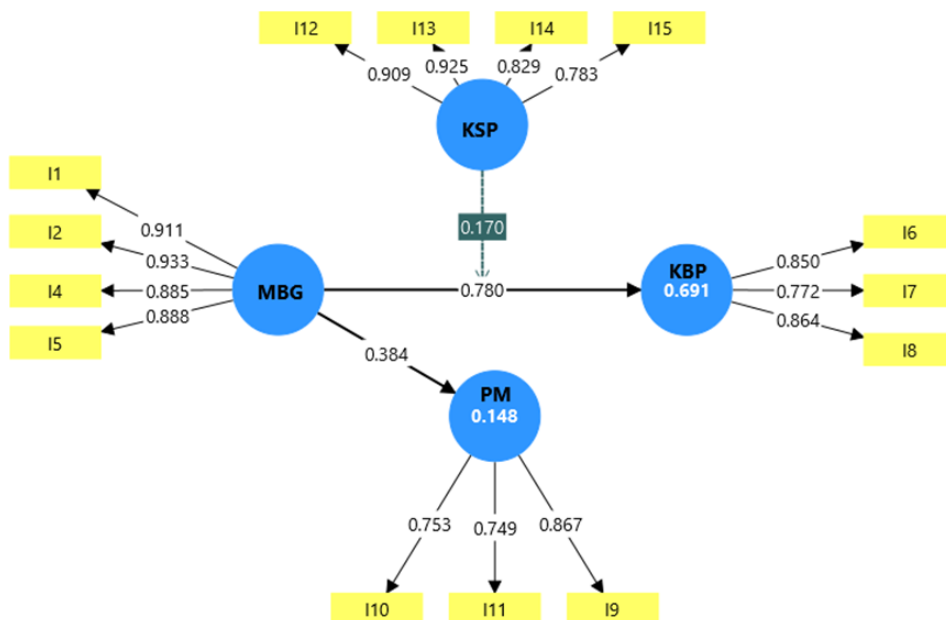


Figure 3. Final Measurement Model
 Source: Own Compilation (2026)

After the elimination of indicator I3 in the MBG variable, the second-stage results showed an improvement in the measurement model quality. All remaining indicators in the MBG, KBP, PM, and KSP variables had outer loading values above the required

minimum, indicating that the indicators were valid and able to represent their constructs well.

The R-square values showed that Food Availability (KBP) had a value of 0.691, Public Perception (PM) had 0.148, and Food Social Conditions (KSP) had 0.170. Therefore, the final model was declared valid and suitable for further structural model evaluation (inner model).

To assess the reliability and convergent validity of the measurement model, Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE) were evaluated. The results are presented in Table 2.

Table 2. Construct Reliability and Validity Summary

	Cronbach's Alpha	Composite Reliability (rho a)	Composite Reliability (rho c)	Average Variance Extracted (AVE)
KBP	0.773	0.778	0.869	0.688
KSP	0.887	0.940	0.921	0.746
MBG	0.926	0.927	0.947	0.818
PM	0.708	0.742	0.834	0.626

Source: Own Compilation (2026)

Based on Table 2, all constructs achieved Cronbach's Alpha values above 0.70, indicating satisfactory internal consistency. Likewise, Composite Reliability values exceeded the recommended threshold of 0.70, while all AVE values were greater than 0.50. Therefore, the constructs satisfy the requirements for reliability and convergent validity.

Discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT) criterion. HTMT values below 0.90 generally indicate adequate discriminant validity among constructs. The results are presented in Table 3.

Table 3. HTMT

	KBP	KSP	MBG	PM	KSP x MBG
KBP					
KSP	0.529				
MBG	0.924	0.308			
PM	0.511	0.896	0.453		
KSP x MBG	0.105	0.577	0.239	0.232	

Source: Own Compilation (2026)

The HTMT results generally indicate acceptable discriminant validity among the constructs. Most HTMT values are below the recommended threshold of 0.90. However, the HTMT value between MBG and Food Availability (KBP) is 0.924, which slightly exceeds the recommended criterion. This result suggests a strong conceptual relationship between the two constructs. Nevertheless, considering the theoretical relationship between the MBG program and food availability, the constructs remain distinguishable and appropriate for further structural model analysis.

Model fit assessment was conducted to evaluate the extent to which the proposed model represents the observed data. The evaluation included the Standardized Root Mean Square Residual (SRMR), d_ ULS, d_ G, Chi-square, and Normed Fit Index (NFI). The results are presented in Table 4.

Table 4. Model Fit

Criteria	Saturated Model	Estimated Model
SRMR	0.106	0.175
d_ULS	1.176	3.221
d_G	0.422	0.559
Chi-square	477.403	584.576
NFI	0.779	0.729

Source: Own Compilation (2026)

Table 4 shows that the SRMR values for the saturated model and estimated model are 0.106 and 0.175, respectively. These values exceed the commonly recommended threshold of 0.08, indicating that the model fit is not optimal. However, PLS-SEM primarily emphasizes predictive and explanatory capabilities rather than overall model fit. The NFI values of 0.779 and 0.729 indicate a moderate level of model fit. Therefore, the model remains acceptable for further structural analysis and hypothesis testing.

Evaluation of Structural Models (*Inner Model*)

Assessment of the inner model focused on examining how effectively the latent variables accounted for the relationships represented in the model, using R^2 and adjusted R^2 as evaluation measures. Greater R^2 values indicate a stronger capacity of the model to account for variations in the dependent constructs investigated in this research.

Table 5. R-Square Value

	R-square	R-square adjusted
KBP	0,691	0,687
PM	0,148	0,1444

Source: Own Compilation (2026)

According to the findings shown in the table, the Food Availability (KBP) variable recorded R^2 and adjusted R^2 values of 0.691 and 0.687, respectively. This demonstrates that the model explains 69.1% of the variance in KBP, with the unexplained portion arising from variables beyond those included in the research model.

Meanwhile, the Public Perception (PM) variable has 0.148 and an adjusted R-square of 0.144, meaning that the model only explains 14.8% of the variation in PM. Therefore, the model has a strong explanatory ability for the KBP variable but a relatively weak ability in explaining the PM variable.

Hypothesis Testing

To evaluate the significance of the path coefficients and test the proposed structural hypotheses, a bootstrapping procedure was conducted with 5,000 subsamples. The relationships are declared statistically significant if the T-statistic exceeds 1.96 and the P-value is below 0.05.

Table 6. Path Coefficients and Hypothesis Testing Results

Hypothesis	Structural Pathway	Original Sample (0)	T-Statistics	P-Value
H1	MBG -> KBP	0.780	17.334	0.000
H2	KSP -> KBP	0.144	2.206	0.27
H3	MBG -> PM	0.384	5.981	0.000
H5	KSP x MBG -> KBP (Mod)	0.170	3.098	0.002

Source: Own Compilation (2026)

The empirical results in Table 3 confirm the direct and moderating relationships: 1. The MBG program exerts a strong and highly significant positive effect on local food availability (H1: $\beta = 0.780$, $T = 17.334$, $p = 0.000$). 2. The direct baseline of the local food system condition significantly impacts food availability (H2: $\beta = 0.144$, $T = 2.206$, $p = 0.027$). 3. The MBG program directly generates positive community perceptions (H3: $\beta = 0.384$, $T = 5.981$, $p = 0.000$). 4. Most crucially, the interaction term (KSP x MBG $\rightarrow$ KBP) is statistically significant (H5: $\beta = 0.170$, $T = 3.098$, $p = 0.002$). This provides clear empirical evidence that local food system conditions actively moderate the relationship, fully supporting the moderation claim.

To assess the intervening role of Food Availability as a mediator, the specific indirect effect was analyzed.

Table 7. Specific Indirect Effects (Intervening Path Analysis)

Hypothesis	Structural Pathway	Original Sample (0)	T-Statistics	P-Value
H4	MBG $\rightarrow$ KBP $\rightarrow$ PM	0.112	2.145	0.032

Source: Own Compilation (2026)

As demonstrated in Table 4, the specific indirect path (MBG to Food Availability to Public Perception) is statistically significant (H4: $\beta = 0.112$, $T = 2.145$, $p = 0.032$), confirming that food availability operates effectively as an intervening variable.

DISCUSSION

Discussion of Research Results

This study examined the influence of the Free Nutritious Meal Program (MBG) on food availability and public perception in Bandung City, while considering the moderating role of local food system conditions. The measurement model demonstrated satisfactory validity and reliability, indicating that the constructs and indicators used were appropriate for further analysis.

The coefficient of determination (R^2) for Food Availability was 0.691, indicating that 69.1% of the variance in food availability can be explained by the MBG program and local food system conditions. This result demonstrates strong explanatory power and highlights the importance of these variables in determining food availability in Bandung City. Conversely, the R^2 value for Public Perception was 0.148, suggesting that public perception is influenced not only by the variables included in this study but also by other factors such as trust in government, individual experiences, socioeconomic conditions, and media exposure.

The results of Hypothesis 1 (H1) confirmed that the MBG program has a positive and significant effect on food availability ($\beta = 0.780$; $p < 0.001$). This finding indicates that the implementation of the program contributes substantially to strengthening food supply and distribution activities required to meet beneficiaries' nutritional needs. The result is consistent with the studies of Kiftiyah et al. (2025), Merlinda and Yusuf (2025), and Miswa and Kurniawan (2025), which reported that nutrition and food assistance programs can enhance food security and improve access to food. However, Bandung City's high dependence on food supplies from outside the region suggests that the sustainability of these benefits still depends on the resilience of the local food system.

The results of Hypothesis 2 (H2) demonstrated that local food system conditions

have a positive and significant effect on food availability ($\beta = 0.144$; $p = 0.027$). This finding highlights the importance of distribution efficiency, supply stability, and local production capacity in maintaining food availability. The result supports previous studies by Yusuf (2025) and Nurhalizah (2025), which emphasized the critical role of local food systems in strengthening regional food security. Therefore, improving food availability requires not only government intervention through the MBG program but also the development of a more resilient local food system.

Furthermore, the results of Hypothesis 3 (H3) revealed that the MBG program positively and significantly influences public perception ($\beta = 0.384$; $p < 0.001$). This finding suggests that the community generally perceives the program as beneficial in improving access to nutritious food. The result is consistent with the findings of Erlinawati (2025) and Ritonga & Sazali (2025) who found that perceived program benefits contribute to greater public support for government initiatives. Nevertheless, the relatively low R^2 value for public perception indicates that additional factors beyond the MBG program and food availability contribute to shaping public attitudes.

The results of Hypothesis 4 (H4) confirmed that food availability significantly mediates the relationship between the MBG program and public perception ($\beta = 0.112$; $p = 0.032$). This finding suggests that improvements in food availability serve as an important mechanism through which the MBG program enhances public acceptance. When communities perceive that food is more accessible and available, they tend to develop more positive perceptions of the program. This result supports the findings of Basit & Ramadani (2025) who emphasized that perceived benefits are a key determinant of public acceptance of nutrition and food-related programs.

The results of Hypothesis 5 (H5) showed that local food system conditions significantly moderate the relationship between the MBG program and food availability ($\beta = 0.170$; $p = 0.002$). This finding indicates that the positive impact of the MBG program on food availability becomes stronger when supported by a well-functioning local food system. Conversely, limitations in local production and distribution capacity may reduce the effectiveness of the program. This result extends previous studies that primarily discussed local food systems conceptually by providing empirical evidence of their moderating role.

Compared with previous studies, this research addresses an important research gap by simultaneously examining the relationships among the MBG program, food availability, public perception, and local food system conditions within a single analytical framework. Most previous studies focused separately on food security, public perception, or program implementation, without considering the interrelationships among these variables.

The main contribution and novelty of this study lie in the identification of food availability as a mediating variable between the MBG program and public perception, as well as the role of local food system conditions as a moderating variable that strengthens the influence of the MBG program on food availability. These findings suggest that the success of the MBG program depends not only on program implementation itself but also on the capacity of local food systems and the tangible benefits perceived by the community. Therefore, strengthening local food production, improving distribution efficiency, and enhancing program governance are essential to ensure the long-term effectiveness and sustainability of the MBG program.

CONCLUSIONS

In conclusion, this research evaluated how the Free Nutritious Meal (MBG) initiative affects local food availability and community perception in Bandung City. The findings demonstrate that this government policy yields a substantial influence on local food availability, supporting communities in meeting their daily nutritional needs while simultaneously raising public awareness of the importance of access to adequate and nutritious food. These outcomes indicate that the program contributes positively to the broader goal of strengthening food security at the urban level.

The study further reveals that the structural conditions of Bandung's local food system play a moderating role in determining program effectiveness, particularly with respect to food distribution efficiency and supply stability. Given the city's high dependence on external food sources and its lengthy supply chains, the full potential of the MBG program remains constrained by systemic vulnerabilities that require targeted policy attention. Community perception of the program was generally favorable; however, respondents identified several areas requiring improvement, including the quality of program implementation, transparency in distribution processes, and the equitable reach of program benefits across different community groups.

Overall, the empirical findings suggest that the MBG program possesses substantial capability as a policy instrument for supporting urban food security in Bandung City. Nevertheless, realizing this potential fully requires parallel efforts to strengthen local food system governance, improve distribution accountability, and ensure that program benefits are delivered consistently and equitably to all intended beneficiaries. These improvements are essential not only for sustaining the program's nutritional impact but also for building the public trust necessary for its long-term social acceptance and effectiveness.

The theoretical implications of this study expand urban food security frameworks by validating localized structural logistics as critical moderators in national social welfare models. Practically, these findings recommend that the Bandung Municipal Government transition away from fragmented external procurement and establish direct, community-based contracts with regional farmers to bypass lengthy distribution networks and mitigate inflation risks. However, this study is subject to limitations, as data collection was conducted via online web channels, which skewed the sample toward younger generations and students who have high digital connectivity. Future research should address this constraint by conducting direct field interviews and expanding the survey scope longitudinally to capture a balanced demographic across low-income families and vulnerable groups across all 30 sub-districts in Bandung City.

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