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EVALUATION OF THE IMPLEMENTATION OF THE FREE NUTRITIOUS MEALS (MBG) POLICY IN REMOTE AREAS: ANALYSIS OF FOUR EDWARDS III VARIABLES IN THE 3T REGION OF NORTH KALIMANTAN

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Abstract :

The Free Nutritious Meals (MBG) program is a large-scale affirmative policy, yet its national achievement has not been matched by effectiveness in underdeveloped, frontier, and outermost (3T) regions that face distinctive structural barriers. This study aims to evaluate MBG implementation in remote areas using Edwards III's theory, namely communication, resources, disposition, and bureaucratic structure, while identifying its main inhibiting factors. The population comprised all MBG-recipient schools and their implementers in North Kalimantan Province. The quantitative sample was determined by purposive sampling and comprised 60 respondents from 20 schools, while the qualitative stage involved 10 informants selected through snowball sampling. The study used a mixed-method approach with a sequential explanatory design. Quantitative data from a Likert questionnaire were analyzed descriptively, then deepened with qualitative data from interviews, observations, and documentation that were analyzed through data condensation, data display, and conclusion drawing, after which both results were integrated. The results show that implementation was in the moderate category (3.19 on a 1 to 5 scale). The disposition dimension obtained the highest score (3.74) and resources the lowest (2.69). The main barriers were technical and logistical, namely transportation, the cold chain, limited personnel, and supply continuity, while implementers' high commitment tended to mask systemic weaknesses. The study concludes that MBG effectiveness in remote areas is constrained not by implementers' will but by the system's capacity to overcome geographical barriers, so that Edwards III's four variables need to be complemented by a fifth dimension, namely the socio-cultural suitability of local food.

Keywords : *Free Nutritious Meals, policy implementation, Edwards III, remote areas, school-based nutrition policy*

INTRODUCTION

The Free Nutritious Meal Program (MBG) is one of the largest affirmative action policies in the history of the state budget, with a funding allocation reaching IDR 71 trillion from the State Budget (Kompas, 2025, in Bintari et al., 2025). This policy is designed to accelerate stunting reduction while supporting the vision of Golden Indonesia 2045. Its direction is in line with Presidential Regulation Number 76 of 2023 concerning the Acceleration of Stunting Reduction, which emphasizes a multi-sectoral approach, especially for underdeveloped, frontier, and outermost regions or 3T (Wahyuni & Rahayu, 2025). The national stunting prevalence has indeed decreased to 19.8 percent in

2024 (Aji, 2025). However, this achievement is not evenly distributed because remote areas still face unique structural obstacles. Several studies have found that the implementation of MBG in remote areas is hampered by delays in logistics distribution, menus that are less suited to local food habits, minimal cold storage facilities, and weak cross-agency coordination (Herdiana, 2025; Bintari et al., 2025).

This research problem stems from the gap between uniform national policy designs and the highly diverse geographical and socio-cultural realities of the 3T regions. The primary question is to what extent communication, resources, disposition, and bureaucratic structure can explain the success or failure of MBG in areas with limited access. The subsequent question is why program achievements at the national level have not yet matched their effectiveness at the remote local level.

The novelty of this research lies in its attempt to unite two previously separate areas of study: studies on the implementation of school-based nutrition policies and studies on social justice in the 3T (United Nations) regions. Previous research generally highlights the effectiveness of MBG as an educational intervention or driver of the local economy in areas with relatively adequate infrastructure (Agustini & Mulyani, 2025; Mozin et al., 2025). Meanwhile, studies in underdeveloped regions are still limited to the social justice dimension and have not systematically integrated the analysis of the four implementation variables (Wahyuni & Rahayu, 2025). This research offers a new perspective by linking technical and logistical barriers to implementer dispositions and local bureaucratic structures, something rarely addressed in previous literature, which tends to be descriptive (Ayuni, 2025; Purnomo et al., 2025).

The theoretical basis used is George C. Edwards III's theory of public policy implementation. According to this theory, successful implementation is determined by four interrelated variables: communication, resources, disposition, and bureaucratic structure (Agustino, 2023). All four must work together to optimally achieve policy objectives. Recent empirical findings support this theory by showing that the availability of human and financial resources determines the success of school-based food programs in areas with limited infrastructure (Rahmah et al., 2025). The attitudes and commitment of implementers at the agency and school levels also determine the quality of program monitoring and reporting (Agustini & Mulyani, 2025). Edwards III's theory is considered relevant because it can explain the relationship between technical-administrative factors and the behavior of implementing actors in the field, especially in challenging geographic contexts such as remote areas.

Based on the description, this study aims to evaluate the implementation of MBG in remote areas through four Edwards III variables, identify the main obstacles in the aspects of distribution, resources, and governance, and compile policy recommendations that are appropriate to the geographical and socio-cultural characteristics of the region.

Theoretically, this research is expected to enrich the study of public policy implementation on the issue of school-based nutrition policy in the 3T (third-to-

third) regions, which has rarely been studied in depth. Practically, the results can provide input for the National Nutrition Agency and local governments in designing distribution strategies, strengthening implementing capacity, and adapting menus to local foods. In this way, MBG can have a long-term impact on improving nutrition for communities in remote areas without compromising social equity and fiscal sustainability.

RESEARCH METHOD

This study employed a mixed methods approach with a sequential explanatory design. In this design, quantitative data were collected and analyzed first, then the results were further deepened and explained through qualitative data (Sugiyono, 2022). This choice was justified because the four Edwards III variables needed to be measured in a structured manner through surveys and interpreted in depth through interviews and observations (Creswell & Creswell, 2021). The social and geographical complexity of remote areas is difficult to capture with numbers alone. The research was conducted in North Kalimantan Province, focusing on educational units receiving MBG in border districts and areas with limited access, such as the island clusters and inland districts in Nunukan Regency and its surroundings, which represent the characteristics of the 3T (Underdeveloped, Frontier, and Remote) areas.

The study population included all MBG recipient schools and their implementing agencies, namely the Nutrition Fulfillment Service Unit, the school administration, and relevant agencies in the study area. The quantitative sample was selected using a purposive sampling technique from schools that had received MBG for at least one semester. Respondents were school principals, teachers, and MBG implementation coordinators, resulting in a total of 60 respondents from 20 schools. For the qualitative phase, informants were selected using snowball sampling from local government elements, the National Nutrition Agency at the regional level, local food suppliers, and parents to provide a more comprehensive perspective. Quantitative data were collected through a Likert-style questionnaire structured based on the four Edwards III indicators. Qualitative data were collected through semi-structured interviews, field observations of the food distribution and serving process, and documentation studies of program implementation reports at the district level.

The questionnaire instrument consisted of 24 statements divided evenly into four dimensions, each with six items, and measured on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The qualitative phase involved ten informants representing school principals, teachers or homeroom teachers, school MBG coordinators, Nutrition Fulfillment Service Unit (SPPG) managers, regional agency representatives, local food suppliers, parents of students, and regional monitoring coordinators. The interview guide contained eight main questions that explored the four dimensions of implementation and issues of local food adaptation.

Quantitative data were analyzed descriptively to obtain an overview of the level of effectiveness of each variable. Qualitative data were analyzed using

the interactive model of Miles, Huberman, and Saldaña, which includes data condensation, data presentation, and conclusion drawing (Sugiyono, 2022). The two results were then combined in the final stage to complement each other and strengthen the interpretation, in accordance with the principles of sequential explanatory design (Creswell & Creswell, 2021). The validity of the qualitative data was tested through triangulation of sources and techniques by comparing the results of interviews between informants, field observations, and official program documents. The validity and reliability of the quantitative instrument were tested through construct validity with corrected item-total correlation and Cronbach's alpha reliability before the instrument was administered to the primary respondents.

RESULTS AND DISCUSSION

This research took place in North Kalimantan Province, specifically at MBG recipient schools in the border and interior areas of Nunukan Regency and its surroundings. The study area encompassed two distinct typologies of 3T areas: island or border areas facing challenges with maritime connectivity, and inland sub-districts with limited land access. North Kalimantan's vast geography, its direct borders with neighboring countries, and its dispersed schools form the primary backdrop for all the findings in this section, as these conditions directly impact logistics distribution, resource availability, and communication patterns among MBG implementing actors.

The data in this section comes from two groups of informants in the region. In the quantitative phase, 60 respondents from 20 MBG recipient schools provided assessments of the four Edwards III variables: principals, teachers, and MBG implementation coordinators. In the qualitative phase, ten key informants deepened the findings: principals and teachers or homeroom teachers from island/border and remote areas, school MBG coordinators, Nutrition Fulfillment Service Unit (SPPG) managers, regional agency representatives, local food suppliers, parents, and regional program monitoring coordinators, coded I01 to I10. The diverse backgrounds of the informants, ranging from school level, service providers, suppliers, beneficiaries, to district policymakers, enabled triangulation of perspectives. This diversity ensures that the results described reflect the lived experiences of MBG implementers in North Kalimantan, not merely administrative snapshots.

The presentation follows a sequential explanatory design. Quantitative findings are presented first to provide a general overview of the implementation level, then deepened and interpreted through qualitative findings from the interviewees. The discussion begins with a test of the instrument's feasibility as a basis for data reliability, followed by a descriptive overview of the achievements of the four Edwards III variables and their comparisons across regions. Then, qualitative in-depth analysis of each dimension is provided, and finally, the integration of both types of data into a single model of findings.

Before further analysis, the research instrument was tested for its feasibility. Validity test results showed that all 24 items had corrected item-total

correlation values between 0.543 and 0.789, making them suitable for use as measurement tools. Reliability test results indicated that all four dimensions were in the reliable category with Cronbach's Alpha values above 0.80, as shown in Table 1.

Table 1. Reliability test results (Cronbach's Alpha)

Dimensions	Cronbach's Alpha	Interpretation
Communication	0.883	Reliable
Resource	0.834	Reliable
Disposition	0.898	Reliable
Bureaucratic Structure	0.839	Reliable

Criteria: the instrument is reliable if the Cronbach's Alpha value is ≥ 0.70.

The Cronbach's Alpha values, ranging from 0.834 to 0.898 in Table 1, confirm that this instrument is internally consistent and reliable for measuring the perceptions of MBG implementers in the 3T region of North Kalimantan. After the instrument's feasibility was met, the analysis continued with a descriptive overview of the level of implementation in each dimension. The survey results of 60 respondents from 20 schools showed an overall average implementation score of 3.19 on a scale of 1 to 5, as summarized in Table 2.

Table 2. Descriptive statistics of MBG implementation per dimension (n = 60)

Dimensions	Mean	Elementary School	Category
Communication	3.23	0.63	Currently
Resource	2.69	0.51	Currently
Disposition	3.74	0.67	Tall
Bureaucratic Structure	3.11	0.51	Currently
Overall average	3.19	0.29	Currently

Scale category intervals 1–5: low (1.00–2.33); medium (2.34–3.66); high (3.67–5.00).

Although the overall mean was in the moderate category, the four dimensions exhibited distinct patterns. Disposition received the highest score of 3.74, categorized as high, followed by Communication (3.23) and Bureaucratic Structure (3.11), both moderate, while Resources received the lowest score of 2.69. The differences in performance between these dimensions are more clearly visible in Figure 1.

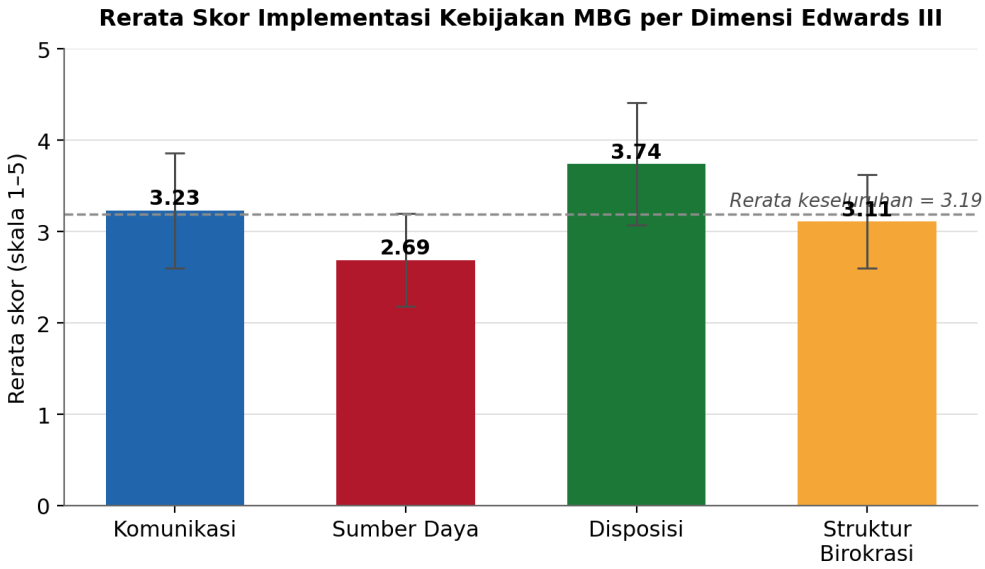

Figure 1. Average score of MBG policy implementation per Edwards III dimension

Figure 1 shows a wide gap between disposition and resources. The distribution of respondent categories reinforces this pattern. On the Disposition dimension, 33 respondents were in the high category and 12 respondents were in the very high category, while only 2 respondents were in the low category and none were in the very low category. Conversely, on the Resources dimension, the majority of respondents were concentrated in the medium and low categories, namely 34 and 20 respondents, with only 3 respondents in the high category and none in the very high category. Communication and Bureaucratic Structure showed a more even distribution in the medium category, with 32 and 34 respondents, respectively. This pattern indicates that the attitudes and commitment of implementers in the field are much stronger than the available logistical and infrastructure support.

Regional comparisons reinforce this picture. Schools in remote or limited-access areas consistently scored slightly higher than those in island or border areas on three of the four dimensions: Communication (3.39 versus 3.06), Resources (2.79 versus 2.59), and Disposition (3.79 versus 3.69). Island or border areas actually had a slight advantage in Bureaucratic Structure (3.19 versus 3.02). Overall, remote areas scored 3.25 and island or border areas 3.13, as shown in Figure 2.

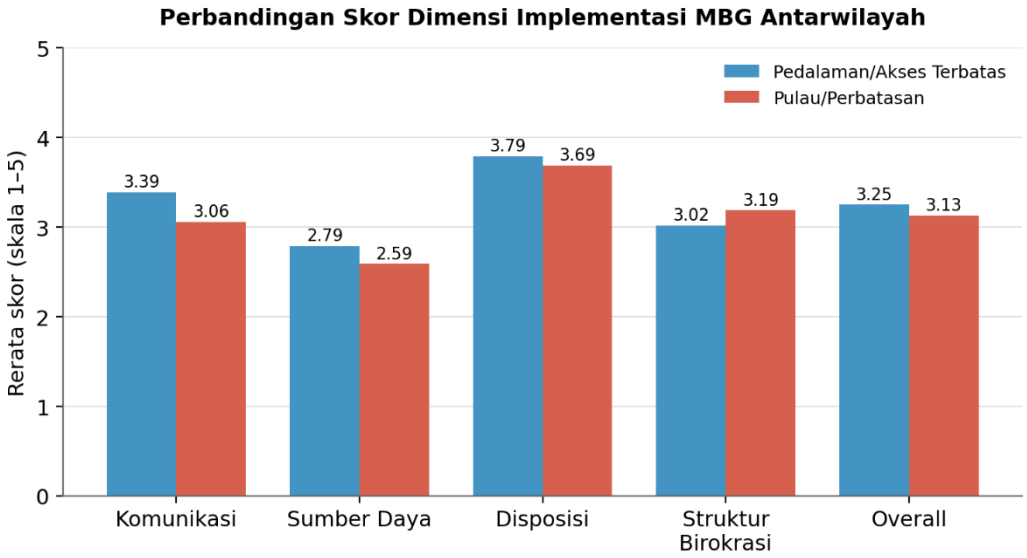

Figure 2. Comparison of MBG implementation dimension scores between inland/limited access areas and island/border areas

The different patterns in Figure 2 indicate that the challenges to implementing MBG in remote areas are not unique. The challenges of land access in the interior differ from those of maritime connectivity in the archipelago. This aligns with findings that gaps in public services in the 3T (Underdeveloped and Remote Areas) regions are significantly influenced by the geographic typology of each location, not simply by its overall remoteness (Hasanah et al., 2022).

The quantitative findings were further deepened through qualitative data from ten informants. In terms of communication, informants assessed that basic information about the objectives and flow of the MBG was relatively easy to understand. Problems arose when technical changes arrived through more than one channel at different times. As a principal in an island/border area noted, "sometimes schools receive information from two channels... at different times... schools have to double-check before making a decision" (I01). In remote areas, this obstacle was exacerbated by limited telecommunications signal, requiring online updates to be read some time later, and implementers had to manually save copies of the guidelines (I03). This pattern confirms that policy communication at the implementation level is vulnerable to fragmented information channels. Similar issues emerged in the Family Hope Program, whose effectiveness declined due to ineffective communication to beneficiaries at the village level (Sutikno et al., 2023; Khabibi & Rodiyah, 2024). The same thing is seen in the implementation of MBG in other educational units, where hierarchical communication and cross-sector coordination still need to be strengthened so that information is delivered consistently (Malik & Rabbani, 2025; Erinaldi et al., 2025).

The resource dimension was the most frequently highlighted in both interviews and observations, consistent with its lowest quantitative score. Nearly all informants cited limited transportation, storage or cold chain facilities, the number of implementing personnel, and supply continuity as the most

significant obstacles. SPPG managers in remote areas stated that "the most critical resources are vehicles, skilled personnel, and production capacity during peak hours," and that material storage must adapt to uncertain supply (I08). Field observations reinforced this finding. Schools in island/border areas lacked cold storage, resulting in distribution delays of approximately 20 to 30 minutes on the day of observation. In remote SPPGs, storage capacity was critical because supplies did not arrive daily. This finding strongly converges with quantitative data and with various studies that repeatedly identify limited human, financial, and infrastructure resources as the most dominant implementation barriers in the 3T (United Territories) regions (Rahmah et al., 2025; Purnomo et al., 2025; Falah & Hadna, 2022; Zulfa & Nuraini, 2023). Similar patterns were seen in evaluations of MBGs in other regions, which revealed unequal resource allocation, inconsistent service standards, and weak oversight (Ulfah et al., 2026). Logistics and distribution constraints were even described as systemic, rooted in weak governance, communication, and coordination between actors (Serang et al., 2025).

Unlike resources, disposition was the primary strength of MBG implementation in the research area. Implementers demonstrated high commitment, rapid response, and a focus on the interests of beneficiaries. A school principal in an island area stated that "implementers' commitment is quite good; when distribution is late, staff usually find a way to ensure the food arrives" (I01). The regional monitoring coordinator added that "many problems are resolved because staff are responsive" (I10). However, several informants cautioned that success based on individual enthusiasm risks being unsustainable without adequate system support. Informant I01 emphasized that "individual enthusiasm should not be the sole support; the system must also facilitate," while informant I10 stated that "good performance must stem from a good system, not just the sacrifices of staff." The pattern of high disposition that masks system weaknesses is also often found in affirmative policies in other 3T areas, where the success of educational programs and social assistance is highly dependent on the personal initiative of teachers, principals, or program facilitators (Sholehah et al., 2022; Alfariq & Putri, 2024; Shoib & Vebriansyah, 2025).

Regarding the bureaucratic structure dimension, qualitative findings explain why the score is only moderate despite the availability of MBG SOPs. Several informants assessed that the national SOPs do not fully accommodate the geographic conditions of remote areas. The MBG coordinator for a remote school stated that "some provisions feel like they were designed for areas with easier access... one person can perform several functions due to limited personnel" (I03). Representatives of regional agencies emphasized the need for decentralization of authority with clear boundaries so that regions can make quick decisions without always waiting for superior approval (I05). Duplication of reporting between units and minimal data integration were also repeatedly cited as sources of inefficiency. This need for a flexible yet accountable structure aligns with findings across various sectors, where overly rigid structures hamper field response while overly loose ones threaten accountability (Setyawan, 2016;

Sutikno et al., 2023).

In addition to the four main dimensions, qualitative data revealed an additional theme that expands Edwards III's framework: the adaptation of local food. Most informants, from principals and teachers to parents, reported that menus featuring local ingredients and flavors, such as fresh fish and local vegetables, were more accepted and consumed by students than less familiar standard menus. Teachers in island/border areas explained that "some menus are nutritionally sound, but some are not finished because the taste or texture is not what they are used to" (I02). Local food suppliers emphasized the importance of a catalog of nutritionally equivalent ingredient substitutions so that small suppliers can continue to contribute despite seasonal supply fluctuations (I06). Field observations supported these findings, as schools with menus based on fish and local foods demonstrated higher consumption rates. These findings underscore the importance of a contextual and locally-based approach to affirmative action policies in the 3T (United, Disadvantaged Regions) regions (Zulfa & Nuraini, 2023; Hasanah et al., 2022). This argument is supported by a study on the MBG program which found that student satisfaction with the menu was significantly related to reduced food waste (Daumi et al., 2026), and that menu acceptability was largely determined by the sensory characteristics and eating habits of the beneficiaries (Srimiati et al., 2026).

The integration of quantitative and qualitative data through a sequential explanatory design yielded a mutually reinforcing picture across each dimension. Moderate communication scores were explained by fragmented information channels and signal limitations. Low resource scores were confirmed by barriers to transportation, storage, and supply continuity, repeatedly mentioned by informants. High disposition scores were supported by implementer commitment and responsiveness, although success should not depend solely on individual improvisation. Moderate bureaucratic structure scores were related to the need for delegation of authority and streamlined reporting lines. A summary of the interconnectedness of the two types of data across each dimension is presented in Table 3.

Table 3. Integration of quantitative and qualitative findings per dimension

Dimensions	Quantitative	Qualitative explanation	Integration conclusion
Communication	Mean 3.23 (moderate)	The basic information is clear enough, but technical changes, multiple channels, signal limitations, and sudden notifications reduce consistency.	Qualitative results explain why the scores did not reach the high category.
Resource	Mean 2.69 (medium; lowest)	Transportation, storage/cold chain, personnel, access costs,	Strong convergence: both types of data

Dimensions	Quantitative	Qualitative explanation	Integration conclusion
		spare vehicles, and supplier continuity are the dominant issues.	indicate resources as a priority for intervention.
Disposition	Mean 3.74 (high)	The implementers are responsive and committed, often improvising to keep the service running.	Convergence: the attitude of the implementer becomes a strength, but is not enough to replace the system/logistics.
Bureaucratic Structure	Mean 3.11 (moderate)	SOPs exist, but escalation paths, delegation, duplication of reports, and flexibility in remote areas still need improvement.	Qualitatively clarifies the bureaucratic points that need to be simplified.

As shown in Table 3, this integration confirms that the effectiveness of MBG implementation in remote areas is not primarily limited by the will of the implementer, but rather by the system's ability to overcome geographic barriers through adequate resources, integrated communication, and an accountable yet flexible bureaucratic structure. These field findings should be read in the context of the scale and speed of MBG's national expansion. The National Nutrition Agency (BNN) noted that the program began in January 2025 with 190 SPPGs and approximately 570,000 beneficiaries. This number grew rapidly to 21,102 SPPGs with approximately 59.86 million beneficiaries and a budget realization of approximately IDR 18 trillion by January 20, 2026, and then continued to grow to 29,843 operational SPPGs by the end of May 2026. Such rapid expansion explains why resources and bureaucratic structure lagged behind implementer commitments, as logistical capacity and administrative governance require time to adjust. The relevance to the research area was emphasized by the inauguration of the Nunukan Sebatik Tanjung Karang SPPG on January 22, 2026, as part of the MBG expansion to border areas. The inauguration positions Nunukan Regency as a strategic point and a test point for the program's resilience to the geographical challenges of the border.

In terms of nutritional status, the prevalence of stunting in North Kalimantan decreased from 27.5 percent in 2021 to 22.1 percent in 2022. This trend is improving, but the figure remains above the national average of 19.8 percent in 2024, so the effectiveness of the MBG in the border and interior of North Kalimantan remains relevant for continued evaluation. From a local economic perspective, Nunukan Regency's GRDP of IDR 40.54 trillion with 4.03

percent growth and the presence of more than 20,000 agricultural households opens up opportunities to strengthen local food suppliers in the MBG supply chain, although not all households are directly connected to the program.

Overall, the results of this study both strengthen and extend Edwards III's theory in the context of remote areas. The pattern of disposition as a key strength and resources as a key weakness is consistent with various policy implementation studies in the education and social protection sectors, both in the 3T (United Nations) and beyond (Sutikno et al., 2023; Khabibi & Rodiyah, 2024; Falah & Hadna, 2022). A similar finding emerged in the evaluation of the MBG at the educational unit level, which placed resources and disposition as the two most dominant implementation factors (Ariyani et al., 2026). The novelty of this study lies in the finding that the four Edwards III variables need to be complemented by one contextual dimension in school-based nutrition policies, namely the socio-cultural suitability of local food, which has been shown to influence beneficiaries' actual consumption and is not fully explained by the four classical variables. The synthesis of all findings is summarized in the implementation model in Figure 3.

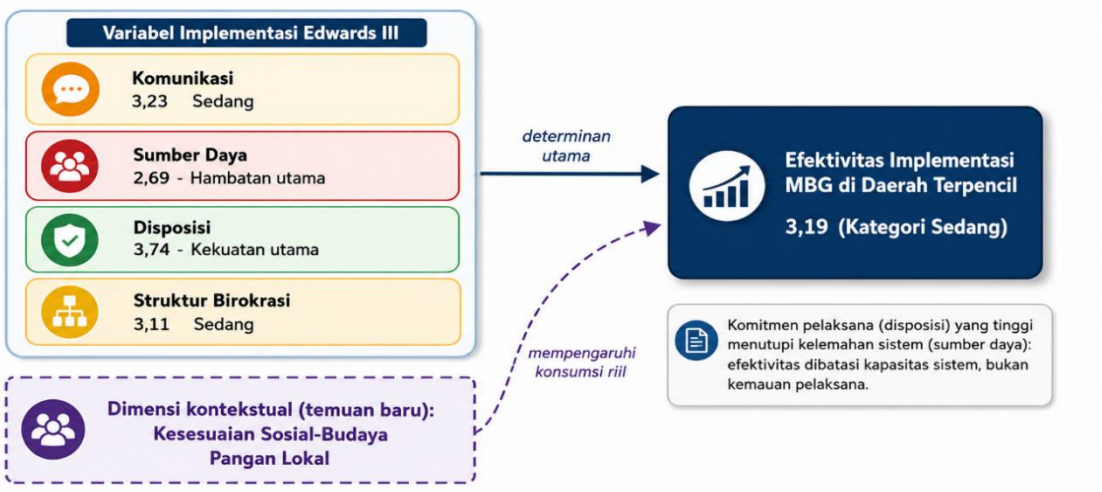

Figure 3. Model findings of MBG implementation in remote areas based on the expanded Edwards III

The model in Figure 3 confirms that the effectiveness of MBG implementation in remote areas is determined by the interaction of the four Edwards III variables, expanded by the socio-cultural suitability dimension of local food. High implementer disposition acts as a temporary buffer against resource constraints. However, the program's sustainability ultimately depends on the system's ability, not individual sacrifice, to overcome geographic barriers, strengthen integrated communications, and maintain an accountable yet flexible bureaucratic structure.

CONCLUSION

An evaluation of the implementation of the MBG in remote areas of North Kalimantan Province using the Edwards III four-variable framework concluded that the average implementation score was in the moderate category, namely

3.19, with implementer disposition as the strongest dimension (3.74) and resources as the weakest dimension (2.69). This means that the effectiveness of MBG in remote areas is not limited by the implementer's willingness, but rather by the system's ability to overcome geographical barriers that differ in character between land access in the interior and sea connectivity in islands or borders.

This study also emphasized the need to complement the four classic Edwards III variables with a fifth contextual dimension, namely the socio-cultural suitability of local food which has been shown to influence the actual consumption of beneficiaries. Based on this conclusion, the National Nutrition Agency and local governments are advised to strengthen the logistics system according to the level of geographical difficulty, provide an official integrated communication channel, implement reporting that accommodates connectivity limitations including offline recording options, implement documented and accountable delegation of emergency authority, compile a catalog of nutritionally standardized local food-based menu substitutions, and design a tiered financing scheme according to the regional difficulty index. Given that the coverage is only one province, further research is recommended to test the geographic risk-based implementation model in more 3T areas and measure the impact of MBG on nutritional status longitudinally.

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