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# The Influence of Local Food Systems on Farmers' Household Food Sovereignty in Momalia II Village, Posigadan District, South Bolaang Mongondow Regency

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**Abstract**

*Food sovereignty is the right and ability of the community to determine, access, control, and manage an independent production system based on local resources. Momalia II Village has local food potential such as corn, bananas, and tubers, but farmer households still depend on rice from outside the area. Previous studies have largely discussed food security and local food diversification in general, while the influence of local food systems on the food sovereignty of coastal farmer households has been quantitatively rarely studied. This study aims to analyze the influence of local food systems, which include food diversity, the use of local foodstuffs, and food processing and storage on the food sovereignty of farmers' households. This study uses a quantitative method with an explanatory survey approach and multiple linear regression analysis. The results showed that simultaneously the three variables had a significant effect on food sovereignty (F = 105.754; sig. 0.000). An Adjusted $R^2$ value of 0.860 indicates that 86% of food sovereignty variations can be explained by these three variables. Partially, the diversity of food had a negative and significant effect (t = -2.040; sig. 0.047), the use of local food had a negative and significant effect (t = -14.958; sig. 0.000), while food processing and storage had a positive but insignificant effect (t = 0.474; sig. 0.638). These results show that local food systems have not been effective in supporting food sovereignty, because there is still a high dependence on external food and low utilization and processing of local food.*



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## INTRODUCTION

Food sovereignty is the right of every individual, community group, and state to access and control various productive resources and control their food production, distribution, and consumption policies in accordance with their respective ecological, social, economic, and cultural conditions (KRKP, 2018). On *World Food Summit* In Rome, hosted by FAO, the idea of food sovereignty first emerged when the concept of food security was further studied down to the household level. However, the idea of food security has not succeeded in realizing a world free of hunger and poverty, so the alternative is the right to food (Propantoko et al., 2019). Indonesia has paid attention to food affairs with the existence of (Law of the Republic of Indonesia No. 18 of 2012 concerning Food) The solution to food problems is the approach of food sovereignty and food security. Since the establishment of the Republic of Indonesia, the 1945 Constitution has mandated that the State is obliged to exercise food sovereignty (the people's right to food) and strive to meet the food needs of the population.

The People's Coalition for Food Sovereignty (KRKP), formulated that there are four main pillars that must be met to achieve food sovereignty. First, agrarian reform aims to change the way land is owned, controlled, and used (agrarian resources). Secondly, sustainable agriculture, also known as ecological agriculture, is a type of agriculture that emphasizes the preservation of biodiversity and its support systems. Third, local food systems, where food production and consumption are carried out locally, and this circulation process can improve local health, economy, and diversity. Fourth, fair trade, which seeks to break out of a food liberalization system that harms small-scale food producers (Food Sovereignty Index, 2019). In the IKP, the four pillars of sovereignty are reduced to several parameters and indicators that are measured quantitatively (survey) and qualitatively (Kenableakan et al., 2020).

The third pillar of food sovereignty is the local food system, which It is of special concern in this study because it is directly related to the ability of the community to utilize the potential of food available in the surrounding environment. Local food systems emphasizing efforts to localize the food system, namely how communities, especially small-scale farmers, manage food production, distribution, and consumption independently and based on local resources. Local food systems also emphasize the importance of local control over the entire food chain, from access to land, natural resources (such as water), to access to markets and capital (Zamanialaei et al., 2022). One of the most important dimensions in the local food system is the diversity of



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foodstuffs, the use of local foodstuffs, food processing & storage, which reflects the extent to which farmer households are able to utilize and consume the different types of local food available in their regions.

South Bolaang Mongondow Regency is one of the districts bordering Gorontalo Province which has 7 sub-districts (BPS, 2024), one of which is Posigadan District which is located on the coast. The population of Posigadan District in 2023 based on Population and Civil Registration (Dukcapil) data is 15,357 people (BPS, 2022). Posigadan District has 16 villages. One of them is Momalia II Village with an area of 2,400 hectares. Based on the latest population data, Momalia II Village has a population of 1,572 people consisting of 403 Heads of Families (KK). The livelihood of its inhabitants is partly related to the use of coastal and marine resources, such as traditional fishermen, cultivators and farmers.

Momalia II Village has 220 farmers who are members of 12 farmer groups. Coastal communities, who live in coastal areas, have developed a distinctive culture that is closely related to the use of coastal resources and the environment. However, the local food system in this village faces various challenges where Momalia II Village has quite rich local food potential, including corn, bananas, and various types of local tubers.

However, the abundant potential of local food has not been fully utilized optimally by the community. Dependence on rice as the main source of carbohydrates is still very high, even though most of the rice is imported from outside the region. The use of local food commodities such as corn, bananas, and tubers is still on a limited scale and has not become a major part of farmers' daily household food consumption patterns (Putra et al., 2024). This condition is exacerbated by a consumption culture that has taken root in society, where rice is considered the only staple food that is suitable for consumption (Khoirotun et al., 2025). As a result, locally available food has not been able to make a real contribution to increasing the food sovereignty of farmers' households.

Based on the description of the problem, the low utilization of local food influenced by the limited knowledge of the community about the nutritional value of local food, the distance between settlements and farm locations that are quite far, the lack of development of food processing innovations based on local commodities, and limited access to technology, information, and human resource development in coastal communities, are the background for researchers to conduct research on the influence of the system local food sovereignty of farmers' households in Momalia II Village, Posigadan District, South Bolaang Mongondow Regency. This study aims to (1) analyze the perception of food sovereignty of farmer households in Momalia II Village, Posigadan District, South Bolaang Mongondow Regency, and (2) analyze the influence of


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local food systems on the food sovereignty of farmer households in Momalia II Village, Posigadan District, South Bolaang Mongondow Regency. This research is expected to make a new contribution in the form of quantitative empirical evidence regarding the relationship between the dimensions of the local food system and the achievement of food sovereignty in farmer households in coastal areas, as well as an input for the formulation of food policies based on local potential.

**RESEARCH METHODS**

This research was conducted in Momalia II Village, Posigadan District, South Bolaang Mongondow Regency, which was carried out from January to June 2025. The selection of the research location was carried out deliberately (*purposive)* with the consideration that Momalia II Village is one of the agricultural areas that cultivates a lot of local food crops. This study uses a quantitative approach with the *explanatory survey, namely* A method that aims to analyze the influence of an independent variable on a bound variable (Sari et al., 2023).

The data collection in this study is primary data Obtained through field surveys including respondent characteristics and research variables (food diversity, use of local foodstuffs, food processing and storage, and food sovereignty). Secondary data was obtained from the BPS of Posigadan District and the profile of Momalia II Village (BPS, 2022, 2024). The research population is all farmer households that cultivate food commodities in Momalia II Village as many as 220 people. The sample size was determined using the Isaac and Michael formula with an error rate of 10% (Scott, 2023), resulting in a sample of 52 farmer households selected using a simple random sampling technique (Subhaktiyasa, 2024).

Data were collected through observation, interviews, questionnaires (questionnaires), and documentation (Rifa'i Abubakar, 2021). The research instrument was in the form of a questionnaire with a Likert scale of 1-5 to measure the variables of food diversity (X1), local food use (X2), food processing and storage (X3), and food sovereignty (Y), which were previously tested for validity and reliability. Data analysis used multiple linear regression with the help of

SPSS software, referring to the Food Sovereignty Index framework (KRKP, 2019) specifically the pillars of the local food system, with the equation model $Y = b0 + b1X1 + b2X2 + b3X3 + e$. Before regression testing, classical assumption tests were carried out including normality tests, multicollinearity tests (with tolerance criteria > 0.1 and VIF < 10), and heteroscedasticity tests (Effiyaldi et al., 2022; Handayani & Subakti, 2021). Hypothesis testing was carried out through simultaneous tests (F test), partial tests (t tests) at a significance level of 5%, and determination


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coefficients (Adjusted $R^2$) to measure the large contribution of independent variables to bound variables.

## RESULTS AND DISCUSSION

### Overview and Characteristics of Respondents

Momalia II Village is the result of the expansion of Momalia Village (Momalia Innduk) which was designated as a definitive village in 1997, with an area of 2,400 Ha and is 1 km from the district capital and 70 km from the district capital. Some of the livelihoods of its residents are related to the use of coastal and marine resources, such as traditional fishermen, cultivators, and farmers.

The respondents of the study amounted to 52 farmer households with an average level of education at the elementary school level (80.77%), an average cultivated area of 1 hectare, and an average of 23 years of farming experience. Based on the type of crops cultivated, all respondents (100%) cultivated vegetable and fruit groups (chili, bananas, durians, onion stems), followed by tubers (61.5% of respondents; cassava, sweet potato, taro), various spices and beverage ingredients (46.2%; cloves), grains namely corn (25%), and nuts (13.5%; peanuts), while the animal food, oil and fat, and sugar groups have not been cultivated by the respondents. This condition shows that cultivation patterns are still dominated by horticultural crops and plantations, although the diversity of existing commodities shows great local potential to support diversification and household food sovereignty.

### Farmers' Households' Perceptions of Local Food Systems

To answer the second objective of the study, the perception of farmer households was analyzed through respondents' response scores to the three dimensions of the local food system that are the basis of food sovereignty, as presented in Table 1.

**Table 1. Average Perception of Farmer Households on the Local Food System**

| Yes | Indicator | Actual Score | Ideal Score | % | Criteria |
|---|---|---|---|---|---|
| 1 | Diversity of food ingredients | 1.118 | 1.300 | 86,00 | Excellent |
| 2 | Use of local food | 1.129 | 1.300 | 86,85 | Excellent |
| 3 | Food processing and storage | 1.052 | 1.300 | 80,92 | Good |



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| | | | | | |
|---|---|---|---|---|---|
| | Variable Score | 3.299 | 3.900 | 84,59 | Good |

*Source: Primary data analysis, 2026*

Overall, the perception of farmer households towards the local food system is on good criteria with a score of 84.59%. The highest perception was found in the indicator of local food use (86.85%), followed by food diversity (86.00%), while food processing and storage obtained the lowest perception (80.92%). Farmer households assess both the availability and use of local food from their own agricultural products, but assess the ability to process them into value-added products and food storage facilities still need to be improved, especially due to the limitations of modern processing equipment and adequate storage facilities.

**The Influence of Local Food Systems on Food Sovereignty**

The regression model has met the classical assumption, namely normal distributed residuals, no multicollinearity (tolerance value of all variables > 0.1 and VIF < 10), and no heteroscedasticity based on scatterplot distribution patterns. The results of multiple linear regression analysis are presented in Table 2.

**Table 2. Results of Multiple Linear Regression Analysis of the Influence of Local Food Systems on Farmers' Household Food Sovereignty**

| Models | Coefficients | Std. Error | t | Sig. | Remarks |
|---|---|---|---|---|---|
| Constant | 65,412 | 1,874 | 34,914 | 0,000 | - |
| Diversity of food ingredients (X1) | -0,140 | 0,069 | -2,040 | 0,047 | Significant negatives |
| Use of local food (X2) | -1,135 | 0,076 | -14,958 | 0,000 | Significant negatives |
| Food Processing & Storage (X3) | 0,032 | 0,067 | 0,474 | 0,638 | Positive, insignificant |
| R Square | 0,869 | | | | |


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| | | | | | |
|---|---|---|---|---|---|
| Adjusted $R^2$ | 0,860 | | | | |
| F count | 105,754 | | | | |
| Sig. F | 0,000 | | | | |
| Durbin-Watson | 1,810 | | | | |

*Source: Primary data processed, 2026*

The regression equation obtained was Y = 65.412 - 0.140X1 - 1.135X2 + 0.032X3 + e. The Adjusted $R^2$ value of 0.860 indicates that 86.0% of the variation in farmers' household food sovereignty can be explained by all three local food system variables, while the remaining 14.0% is explained by other factors outside the model, such as agrarian reform, sustainable agriculture, and fair trade. The results of the simultaneous test (F test) showed an F value of 105.754 with a significance of 0.000 ($p < 0.05$), so that H0 was rejected and H4 was accepted, which means that food diversity, local food use, and food processing and storage together have a significant effect on the food sovereignty of farmers' households

**The Influence of Food Diversity on Food Sovereignty**

The food diversity variable (X1) has a significance value of 0.047 (< 0.05) with a regression coefficient of -0.140, which means that it has a real effect but the direction is negative on food sovereignty. These findings indicate that the increasing variety of food available does not necessarily increase the food sovereignty of farmers' households. Conditions on the ground show that although farmers' households have a fairly diverse local food supply, they do not yet have complete control over their own food, as some crops such as corn, tubers, and bananas are sold more to the market than they are consumed by themselves. The limited knowledge about the nutritional value of local food has also caused farmer households to continue to make rice as the main staple food. These findings are in line with the view that food sovereignty does not only depend on the diversity of food types, but also on how the food is managed and used as a basis for independent consumption (Santoso & Falatehan, 2021); Sadaresruwati et al., 2023).

**The Influence of Local Food Use on Food Sovereignty**

The variable of local food use (X2) has a significance value of 0.000 (< 0.05) with a regression coefficient of -1.135, showing a negative and significant influence on food sovereignty. This


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condition reflects that the use of local food in Momalia II Village has not been based on food awareness and independence, but is more often used in response to limited access to rice. The consumption culture that has been firmly rooted in rice makes local food only a temporary substitute, not a permanent part of daily consumption patterns, in line with the findings Putra et al. (2024)regarding the limitations of local food utilization and dependence on one type of staple food. This condition confirms the importance of changing mindsets and consumption cultures so that local food is consciously chosen as part of an independent food system, as emphasized Wehantouw et al. (2021) that the benefits of local food are only felt optimally when used stably and regularly.

**The Influence of Food Processing and Storage on Food Sovereignty**

The variable of food processing and storage (X3) has a significance value of 0.638 (> 0.05) with a positive regression coefficient of 0.032, so that the effect on food sovereignty is not significant even though the direction is positive. Farmer households basically have the ability to process and store food in a traditional way, such as simply processing bananas and tubers and storing crops through drying, but this practice has not developed into value-added processed products or adequate storage systems. The limitations of modern processing facilities and equipment are the main obstacles, in line with the Abdoellah et al. (2020) which emphasizes that the ability to manage local food independently, including through good processing and storage, is an important indicator of food sovereignty that needs to be strengthened.

**CONCLUSION**

The local food system, which includes food diversity, the use of local foodstuffs, and food processing and storage, simultaneously had a significant effect on the food sovereignty of farmer households in Momalia II Village (F = 105.754; sig. 0.000; Adjusted $R^2$ = 0.860). Partially, the diversity of food and the use of local food have a significant negative effect, while food processing and storage have a positive but insignificant effect. The perception of farmer households towards the local food system as a whole is at good criteria (84.59%), but dependence on rice and limited local food processing show that the food sovereignty of farmer households has not been achieved optimally. It is recommended that farmers increase awareness and ability to use local food resources sustainably, the government strengthens mentoring and training programs for local food processing and storage along with market access and infrastructure support, and further researchers expand the scope of research on a larger scale.



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