Measuring gender inequality in household decision-making and its impact on food security: Evidence from rice-farming households in Jambi Province, Indonesia

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Abstract.
This study investigates the impact of gender inequality in household decision-making on food security among rice-farming households in Jambi Province, Indonesia. Drawing on the Harvard and Moser Models, the research develops quantitative indicators of gender roles and applies an ordered probit model to assess household food security across ranked categories. Data were collected from 214 households using a two-stage stratified sampling method, combining survey responses with secondary institutional data. The findings reveal that only 29% of households are food secure, while 71% experience either temporary or chronic food insecurity. Male-dominated households are more likely to achieve food security, whereas female-dominated and jointly managed households are significantly more vulnerable. Structural factors also exert a decisive influence: the education of the household head and land ownership consistently enhance food security. At the same time, participation in farmer training without resource support and reliance on non-farm income have adverse effects. These results underscore the importance of gender-inclusive policies that expand women's access to education, land, credit, and market information. Targeted microcredit programs, resource-supported training, and the promotion of joint decision-making are recommended to reduce gender inequality and strengthen sustainable food security in rural farming communities.

Keywords: *Food security, Gender inequality, Harvard–Moser Model, Rice-farming households, Rural development.*

JEL Classification: I32, J16, Q18

INTRODUCTION

Gender equality and food security are closely interlinked pillars in achieving the Sustainable Development Goals (SDGs). Gender inequality—particularly in access to resources and participation in agricultural decision-making—reduces productivity and undermines household food security (FAO, 2011; Quisumbing et al., 2014). Globally, women constitute about 43% of the agricultural labor force in developing countries, yet they continue to face persistent barriers to land ownership, credit, technology, and training. According to FAO (2011), equalizing women's access with that of men could

increase agricultural productivity by 20–30% and reduce global hunger by 12–17%. These challenges are also evident in Indonesia, which ranked 92nd of 146 countries in the Global Gender Gap Index with a score of 0.697 in 2022 (WEF, 2022). Gender inequality, therefore, has implications not only for individual well-being but also for national food security (FAO, 2015). In Jambi Province, the issue is particularly pressing: the region ranks 26th of 34 in the Gender Empowerment Index (BPS, 2022) and 19th in the Food Security Index (BKP, 2021).

Conceptually, gender extends beyond biological differences to encompass social roles and cultural constructs that shape access to and control over resources (Hubeis, 2010; Kartika & Kanada, 2017; Puspitawati, 2012; Sitorus, 2016). At the macro level, gender inequality is commonly measured through indices such as the Gender Development Index (GDI), the Gender Empowerment Measure (GEM), and the Gender Inequality Index (GII) (UNDP, 2016). At the micro level, the Harvard and Moser Models are widely used to analyze role division, access, and control within households (Daytana & Salmun, 2021; Dewi et al., 2020; Ludgate & Tata, 2016; Yadav & Sharma, 2022). Food security, defined as reliable access to sufficient, safe, and nutritious food for all individuals at all times (FAO, 1996), rests on four dimensions: availability, access, utilization, and stability (Westerweel & Samwel, 2014). It can be assessed objectively, through food consumption data (Bogale & A, 2009; Ogundari, 2017), or subjectively, through household perceptions of food conditions (Angner, 2010; Jaleta et al., 2018; Stutzer & Frey, 2010; van Hoorn et al., 2010). Many scholars argue that subjective approaches capture vulnerability more comprehensively (Aryal et al., 2019; Kassie et al., 2014, 2015; Nkegbe et al., 2017). In agrarian contexts, women play critical roles in food production, distribution, and consumption (ADB (Asian Development Bank), 2013; Masamha et al., 2018), though their contributions are often constrained by unequal access to land, capital, and technology.

Empirical research highlights diverse intersections between gender and food security. In Kenya, men dominate decision-making in *miraa* cultivation (Ndubi et al., 2023), whereas in West Sumatra, women play central roles in cattle farming (Andarwati et al., 2023). In Ethiopia, women's bargaining power has been linked to the adoption of rust-resistant wheat varieties (Euler et al., 2024), while in India, women's economic resources positively correlate with greater household decision-making participation (Jy et al., 2025). These cases illustrate that women's involvement in agricultural decision-making varies across contexts, yet consistently influences household welfare and food security outcomes.

Methodologically, diverse econometric approaches have been employed to analyze these dynamics. In Uganda, a binary logit model revealed that women's empowerment positively impacts food security (Barak et al., 2024). In Albania, instrumental variable regressions revealed that women's bargaining power increased plantation productivity but reduced livestock output (Zhllima et al., 2021). Another Ugandan study, using ordinal logistic regression, demonstrated how gender, socioeconomic status, and cultural norms shaped household energy transitions (Tereka et al., 2025). In Indonesia, binary logistic regression has been applied to examine women's participation in household decisions (Akbar et al., 2023), logistic regression to analyze female-headed household poverty (Ekaputri et al., 2025), and ordinal logistic as well as geographically weighted ordinal logistic regression (GWOLR) to map gender inequality (Khaulasari & Suhaeri, 2024). Ordered logit models have also been used to explore gender-based discrimination and food security (Reddy, 2025). Collectively, these studies underscore the versatility of

econometric methods in capturing the gender–food security nexus.

In Southeast Asia, gender inequality and food insecurity remain pressing challenges. Indonesia records the highest Gender Inequality Index in the region, reflecting significant disparities in economic participation, income, and political representation (Bangun et al., 2024). Structural barriers—including limited financial access, weak digital literacy, and employment constraints—disproportionately affect women and heighten poverty risks, particularly in female-headed households (Ekaputri et al., 2025). Furthermore, regions with lower gender equality often exhibit greater food insecurity compared with those with higher levels of equality (Tanziha et al., 2023). At the household level, factors such as education, employment, and food expenditure strengthen food security, while larger household size tends to exacerbate shortages (Akbar et al., 2023).

Despite extensive evidence linking gender inequality and food security, two key gaps remain. First, no study has explicitly integrated the Harvard and Moser Models into quantitative indicators of household-level gender inequality. Second, although various econometric models have been employed, few have operationalized the Harvard–Moser indicators within an ordered probit framework, which is particularly well-suited for analyzing ordered categorical outcomes, such as household food security status.

Against this backdrop, the present study contributes in two ways: (1) methodologically, by integrating the Harvard and Moser Models to construct quantitative indicators of household-level gender inequality, and (2) analytically, by applying an ordered probit model to assess how gender inequality and socioeconomic characteristics affect food security. Specifically, this study examines gender inequality and food security among rice-farming households in Jambi Province, with a focus on the impact of gender-based decision-making on household food security outcomes.

METHODS

Data

The primary data for this study were collected directly from household respondents. In addition, secondary data on gender inequality and food security were obtained from government institutions and related agencies, including the Central Statistics Agency (Badan Pusat Statistik), Regional Development Planning Agency (Bappeda), Food Security Agency, Department of Agriculture, Department of Women's Empowerment and Child Protection (DP3A), and the National Population and Family Planning Board (BKKBN).

Population and sample

The study population comprised all rice-farming households in Jambi Province. The sampling framework was designed in two stages. The first-stage framework consisted of villages in Jambi Province, while the second-stage framework consisted of rice-farming households.

Sampling was carried out using a two-stage stratified sampling method, as follows:

1. First Stage. Selection of sample villages as research locations. This stage used purposive sampling, based on two main considerations: (a) Of the 11 districts/cities in Jambi Province, two districts—Kerinci and Tanjung Jabung Barat—were selected because: (1) both districts have the largest harvested rice area in the province; and (2) Kerinci is located in the western part of the province while Tanjung Jabung Barat lies in the east, thereby representing the province more broadly. (b) From each selected

district, two villages with the largest harvested rice area were chosen based on available secondary data.
2. Second Stage. A selection of 10% of rice-farming households in the chosen villages. Sampling was conducted through proportional random sampling, with the following steps:
   - Listing of rice-farming households in each village.
   - Random selection of 50 households in each village.

Data collection instruments

Data collection instruments included a structured questionnaire covering socioeconomic and demographic characteristics, food security, and gender inequality. In addition, interview guidelines were used to conduct in-depth interviews with selected households.

Analytical tools

Descriptive statistics were applied to describe gender inequality and food security conditions among rice-farming households. A Chi-Square test was then conducted to assess the initial relationship between gender dominance in decision-making and household food security, as both variables are categorical.

To further identify the factors influencing food security, an ordered probit model was employed, expressed as follows:

$$\frac{\partial P(Y_{ig}=0 \mid X_{ig})}{\partial X_{ig}} = -\varphi(\alpha_1 - X_{ig}\beta_g)\beta_g \quad \text{.......} (1)$$

$$\frac{\partial P(Y_{ig}=1 \mid X_{ig})}{\partial X_{ig}} = \beta g\left[\varphi(\alpha_1 - X_{ig}\beta_g) - \varphi(\alpha_2 - X_{ig}\beta_g)\right] \quad \text{.......} (2)$$

$$\frac{\partial P(Y_{ig}=2 \mid X_{ig})}{\partial X_{ig}} = \varphi(\alpha_2 - X_{ig}\beta_g)\beta_g \quad \text{.......} (3)$$

Where:

Yig = dependent variable, household food security status (food secure, temporarily food insecure, chronically food insecure), with iii representing the household and ggg the gender indicator (male, female, or joint decision-making)..

Xig = vector of independent variables, including demographic variables, wealth and assets, and access to infrastructure and facilities.

βg = coefficient

ϵig = error term

Measurement and evaluation of research variables

Gender inequality

Gender inequality was measured using questions adapted from Gebre et al. (2021). Respondents were asked 16 questions covering land ownership, ownership of production inputs, decisions regarding rice variety, fertilizer use, land preparation, planting, weeding, harvesting, storage, consumption, selling, transportation, buyer selection, and use of sales proceeds. Responses were categorized into three options: male, female, or joint decision-making.

Table 1. Questionnaire items on gender inequality

No	Question	Response		
		Male	Female	Joint
1	Who owns the rice farmland?			
2	Who owns the agricultural equipment?			
3	Who owns the harvested crop?			
4	Who decides the type of rice to plant?			
5	Who decides on fertilizer usage?			
6	Who prepares the land for rice production?			
7	Who plants rice on the farmland?			
8	Who weeds the rice fields?			
9	Who harvests the rice?			
10	Who gathers harvested rice for storage?			
11	Who decides the amount of rice to be consumed?			
12	Who decides when to sell the rice?			
13	Who transports the harvest to the market?			
14	Who sells the rice at the market?			
15	Who chooses the buyer?			
16	Who decides on the use of rice sale proceeds?			

Food security

Food security was measured through households' self-assessment. Following Mallick & Rafi (2010), food security status was determined by the question: *"Considering all food sources, how do you assess your household's food consumption condition over the past 12 months?"*

Responses were classified into four categories: 1) Food surplus; 2) Balanced (neither surplus nor deficit); 3) Occasional food shortage (temporary food insecurity); 4) Year-round food shortage (chronic food insecurity). For model analysis, categories were simplified into three: food secure (categories 1 and 2), temporarily food insecure, and chronically food insecure.

Demographic variables

- Age of household head (X_1)
- Number of children ≤ 15 years (X_2)
- Number of adult males in the household (X_3)
- Number of adult females in the household (X_4)

Human resources

- Education of household head (years of formal schooling completed) (X_5)

Wealth and assets

- Land area owned (hectares) (X_6)
- Rice yield (tons/hectare) (X_7)

Access to infrastructure and facilities

- Access to credit (1 = yes, 0 = no) (X_8)
- Participation in farmer training (1 = yes, 0 = no) (X_9)
- Access to market information (1 = yes, 0 = no) (X_{10})
- Access to non-farm income (1 = yes, 0 = no) (X_{11})

RESULTS AND DISCUSSION

Gender inequality conditions

Gender inequality among rice-farming households in Jambi Province can be observed across four dimensions: (1) ownership of resources, (2) production and operations, (3) yield and financial management, and (4) overall household decision-making.

With respect to resource ownership, the majority of households (82.2%) reported joint ownership between men and women, indicating that women's roles in managing agricultural assets are relatively recognized. Male-dominated ownership was rare (2.3%), while 15.4% of households were female-dominated.

A different pattern emerges in production and operations, where men controlled most technical decisions, such as rice variety selection and fertilizer use. In this domain, 57.9% of households were male-dominated. Women's independent authority was limited (3.7%), while joint decision-making accounted for 38.3%. These figures suggest that although women actively participate in fieldwork, decision-making in technical production remains largely in men's hands.

In yield and financial management, decision-making was more evenly distributed. Male dominance was reported in 44.4% of households, while 16.8% were female-dominated, and 38.8% relied on joint decision-making. This suggests that women play a more significant role in financial matters compared to technical production, either independently or in partnership with men.

At the level of overall household decision-making, male dominance remained prevalent in 56.5% of households. However, 21.5% of households were female-dominated, and 22.0% reported joint decision-making. This distribution reflects the persistence of patriarchal patterns, while also showing that collaborative and female-led arrangements exist in a notable share of farming households.

Table 2. Gender inequality among rice-farming households in Jambi Province, 2024

Gender Dominance	Ownership of Resources (%)	Production & Operational (%)	Yield & Financial Management (%)	Overall Decision-Making (%)
Male Dominant	2.3	57.9	44.4	56.5
Female Dominant	15.4	3.7	16.8	21.5
Joint	82.2	38.3	38.8	22.0
Total	100.0	100.0	100.0	100.0

Note: The "Overall Decision-Making" category was determined hierarchically. If either men or women dominated in at least one aspect, the household was classified accordingly. If both male and female dominance appeared across different aspects, the household was categorized as joint decision-making. Where all aspects reflected joint decision-making, the classification remained joint.

Food security

The level of food security among rice-farming households in Jambi Province reflects substantial vulnerability. As shown in Table 3, only 62 households (29.0%) are classified as food secure, while the majority remain exposed to varying levels of food shortages. A total of 109 households (50.9%) experience temporary food insecurity, indicating conditions highly sensitive to seasonal or economic fluctuations. Meanwhile, 43 households (20.1%) suffer from chronic food insecurity, consistently facing shortages throughout the year.

Table 3. Food Security Levels in Rice-Farming Households in Jambi Province, 2024

Food Security Level	Frequency	Percentage (%)
Food Secure	62	29.0
Temporarily Food Insecure	109	50.9
Chronically Food Insecure	43	20.1
Total	214	100.0

This distribution highlights a striking paradox: although these households are directly engaged in rice farming—a crop central to regional food production—over 70% still experience food insecurity. Vulnerable households outnumber secure ones by a wide margin, underscoring that food security is far from guaranteed even in rice-producing areas.

Gender inequality and food security

The relationship between gender-based decision-making and food security among rice-farming households in Jambi Province reveals marked disparities, as summarized in Table 4. Households with male-dominated decision-making are relatively better protected: 36.4% are food secure, and only 0.8% fall into the chronically food insecure category. By contrast, female-dominated households face the greatest vulnerability, with 43.5% classified as chronically food insecure—nearly half of this group. Joint decision-making households also show substantial risk, with 46.8% chronically food insecure.

Table 4. Relationship between gender inequality and food security levels in rice-farming households in Jambi Province, 2024

Gender Dominance		Food Security Level			Total
		Food Secure	Temporarily Food Insecure	Chronically Food Insecure	
Male Dominant	Frequency	44	76	1	121
	% within Gender	36.4	62.8	.8	100.0
	% within Food Security	71.0	69.7	2.3	56.5
Female Dominant	Frequency	8	18	20	46
	% within Gender	17.4	39.1	43.5	100.0
	% within Food Security	12.9	16.5	46.5	21.5
Joint	Frequency	10	15	22	47
	% within Gender	21.3	31.9	46.8	100.0
	% within Food Security	16.1	13.8	51.2	22.0

Statistical testing confirms the strength of this relationship. The Pearson Chi-Square value of 64.886, with a significance level below 0.001 (Table 5), indicates a robust association between gendered decision-making patterns and household food security outcomes. These findings demonstrate that while male-dominated households are more likely to maintain food security, female-dominated and jointly managed households are disproportionately represented among the chronically food insecure.

Table 5. Chi-Square test of gender inequality and food security levels in rice-farming households in Jambi Province, 2024

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	64.886[a]	4	.000
Likelihood Ratio	75.699	4	.000
Linear-by-Linear Association	33.955	1	.000
N of Valid Cases	214		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.24.

A noteworthy observation is that households with joint decision-making appear even more vulnerable than female-dominated ones, with nearly half (46.8%) experiencing chronic food insecurity. This suggests that shared authority does not automatically translate into balanced or effective decision-making. Instead, joint arrangements may reflect contested roles, lack of resource control, or weak bargaining power on both sides, which in turn undermines household resilience to food insecurity.

The effect of gender inequality on food security in rice-farming households in Jambi Province

The ordered probit estimation indicates that only a few socioeconomic variables consistently influence household food security. Demographic factors such as household head age, number of children, and household composition show no significant effects. By contrast, household head education and land ownership emerge as the most stable determinants. Education is positively associated with food security, particularly in male- and female-dominated households, while land ownership exerts a consistent effect across all models.

Table 6. Ordered probit model estimation results for household food security

Variable	Overall Model			Male-Dominant Model			Female-Dominant Model			Joint Model		
	Koefisien	Std. Error	t-value	Koefisien	Std. Error	t-value	Koefisien	Std. Error	t-value	Koefisien	Std. Error	t-value
Household Head Age (x1)	-0.017	0.011	-1.59	-0.014	0.018	-0.80	0.024	0.031	0.78	0.005	0.026	0.20
Children < 15 Years (x2)	-0.032	0.118	-0.27	0.102	0.189	0.54	-0.361	0.294	-1.23	-0.049	0.288	-0.17
Adult Males (x3)	-0.026	0.097	-0.27	0.180	0.142	1.26	-0.262	0.348	-0.75	-0.072	0.279	-0.26
Adult Females (x4)	0.054	0.118	0.46	0.204	0.182	1.12	-0.020	0.363	-0.05	0.283	0.448	0.63
Household Head Education (x5)	0.042	0.026	1.59	0.111	0.044	2.52	0.154	0.067	2.31	0.065	0.066	0.98
Total Land Ownership (x6)	0.412	0.089	4.65	0.188	0.142	1.33	1.283	0.390	3.29	0.620	0.272	2.27
Rice Yield (x7)	-0.278	0.188	-1.48	0.041	0.274	0.15	-0.125	1.028	-0.12	-0.729	1.065	-0.68
Credit Access (x8)	-0.089	0.177	-0.5	0.684	0.349	1.96	0.180	0.379	0.48	0.378	0.373	1.01
Farmer Training Participation (x9)	-0.673	0.201	-3.35	0.039	0.330	0.12	-1.016	0.565	-1.80	-0.160	0.528	-0.3
Market Information Access (x10)	0.682	0.232	2.95	0.388	0.387	1.00	N/A	N/A	N/A	0.243	0.624	0.39
Off-Farm Income Access (x11)	-0.015	0.189	-0.08	-0.752	0.290	-2.59	N/A	N/A	N/A	0.703	0.681	1.03

A notable finding is that participation in farmer training has a negative effect on the overall model. This suggests that training programs, when not accompanied by complementary resources such as capital or inputs, may add obligations without strengthening households' capacity to secure food.

In terms of threshold values (Table 7), female-dominated households display the highest cut-off points, indicating stronger resistance to further deterioration in food security despite more limited access to resources.

Table 7. Intercept of the ordered probit model

Model	Food Secure to Temporarily Food Insecure	Temporarily Food Insecure to Chronically Food Insecure
Overall Model	-0.6182 (0.7024)	0.9860 (0.7032)
Male-Dominant Model	0.9011 (1.1298)	4.2052 (1.2035)
Female-Dominant Model	2.0153 (1.8815)	3.5547 (1.9277)
Joint Model	1.1281 (2.0764)	2.1678 (2.0842)

Note: Standard errors are shown in parentheses.

The results further show that off-farm income exerts a significant negative effect, particularly in male-dominated households. This reflects a trade-off between allocating time and labor to farming versus non-farm activities: as attention shifts away from staple food production, household food security tends to weaken. Credit access is significant only in male-dominated households. In contrast, rice yield and market information access do not show consistent effects, though the latter displays a positive tendency in the overall model.

The marginal effects (Table 8) reinforce the decisive role of education and land ownership in increasing the probability of being food secure. By contrast, reliance on off-farm income reduces this probability, while farmer training without complementary resource support does not demonstrate consistent benefits.

Table 8. Marginal effects of the ordered probit model

Variabel	dF/dx	Std. Error	z-value	P>|z|
Household Head Age (x_1)	-0.0059	0.0042	-1.39	0.1652
Children < 15 Years (x_2)	-0.0375	0.0451	-0.83	0.4052
Adult Males (x_3)	-0.0021	0.0372	-0.06	0.9547
Adult Females (x_4)	0.0776	0.0479	1.62	0.1052
Household Head Education (x_5)	0.0341	0.0106	3.23	0.0013
Total Land Ownership (x_6)	0.1996	0.0480	4.16	0.0000
Rice Yield (x_7)	-0.1216	0.0920	-1.32	0.1859
Credit Access (x_8)	0.0507	0.0697	0.73	0.4676
Farmer Training Participation (x_9)	-0.1222	0.0793	-1.54	0.1234
Market Information Access (x_{10})	0.1762	0.1012	1.74	0.0816
Off-Farm Income Access (x_{11})	-0.1395	0.0649	-2.15	0.0316

Overall, these results highlight that food security among rice-farming households in Jambi Province is primarily strengthened by education and access to land. At the same time, interventions such as training and off-farm employment may undermine resilience unless supported with adequate resources and balanced livelihood strategies..

Discussion

The findings confirm that decision-making patterns in rice-farming households in Jambi Province remain predominantly male-dominated, especially in the technical aspects of production and operations. This aligns with earlier studies showing that agricultural technical domains are often regarded as a male sphere, thereby limiting women's strategic involvement (Doss et al., 2011; Peterman et al., 2014). By contrast, women's participation is more visible in financial management and, to some extent, in resource ownership, with joint decision-making providing some opportunities for involvement. This reflects gender dynamics in which women are relatively trusted to manage household income and consumption (Anderson et al., 2017; Quisumbing & Maluccio, 2003). Thus, while patriarchal structures remain dominant, there is scope to

expand women's participation beyond financial roles into production and operational decision-making.

The high prevalence of food insecurity—affecting more than 70% of households—underscores the influence of seasonal shocks, price fluctuations, and income instability (Seaman et al., 2014; Tume et al., 2020). Chronic food insecurity, affecting roughly one-fifth of households, is often associated with limited assets, restricted market access, and weak institutional support (FAO, 2018; IFAD & UNEP, 2013). These conditions suggest that intervention strategies cannot be uniform but must differentiate between temporarily vulnerable households and those facing persistent shortages. Tailored measures, including microcredit provision, stronger institutional support, and enhanced distribution networks, are necessary to address the diverse risks of food insecurity.

The relationship between gender inequality and food security shows clear disparities: male-dominated households are relatively more secure, while female-dominated and jointly managed households are disproportionately represented among the chronically food insecure. This is consistent with evidence that men generally enjoy greater access to productive resources (Doss, 2006; Headey & Ecker, 2013). However, the vulnerability of female-dominated and joint households indicates that collaboration or female leadership, without equitable access to assets, does not automatically translate into improved food security. This reinforces the need for policies that promote asset redistribution, particularly by improving women's access to land, capital, and market information.

The ordered probit analysis further underscores the importance of structural factors. Education and land ownership consistently enhance household food security, supporting the argument that education strengthens managerial capacity and nutritional knowledge (Anand et al., 2019; Mutisya et al., 2016), while land ensures direct control over production (Bhandari, 2022; Ibrahim et al., 2023). Conversely, farmer training without complementary resources had negative effects, confirming evidence that training alone rarely generates impact (Kearsey et al., 2024). Market information access, though not consistently significant, plays a bridging role between production and distribution (Renwick, 2019). Meanwhile, off-farm income exerted a negative influence, suggesting a trade-off between time allocated to non-farm activities and household focus on staple food production (Rockson et al., 2013; Yusriadi et al., 2024).

Differences in threshold values across household types provide further insights. Female-dominated and jointly managed households exhibited higher transition thresholds, suggesting more cautious strategies in food management despite limited structural assets. Interpreted through the Moser Model, this reflects women's practical roles in safeguarding consumption within resource-constrained contexts. Meanwhile, the Harvard Model highlights how role division and control over assets shape household adaptive capacity in the face of food insecurity risks. Together, these perspectives illustrate that gender dynamics and productive assets are mutually reinforcing in shaping household food security outcomes.

The key contribution of this study lies in integrating the Harvard and Moser Models into quantitative indicators and testing them through an ordered probit model. The results demonstrate that while gendered decision-making is significant, structural determinants—such as education, land ownership, and access to information—are more decisive in ensuring food security. The policy implication is the need for a dual strategy: mainstreaming gender to broaden women's participation in decision-making, alongside structural reforms in the distribution of productive assets. Such a strategy addresses both the social and structural dimensions of food insecurity, providing a pathway toward

sustainable food security in rural farming communities such as those in Jambi.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study demonstrates that gender inequality in household decision-making among rice-farming families in Jambi Province is closely linked to food security, though it is not the sole determinant. Households with male-dominated decision-making are more likely to be food secure, whereas those with female dominance or joint decision-making are more vulnerable to food insecurity. Nevertheless, the ordered probit results indicate that female-dominated and joint households exhibit higher transition thresholds toward food insecurity, reflecting more cautious management strategies despite their limited access to productive assets.

Structural factors were found to be more consistent in strengthening food security. Household head education and land ownership play a particularly significant role in enabling households to meet food needs independently, while access to market information contributes positively, though not always significantly. By contrast, participation in training programs without capital support and reliance on non-farm income tends to weaken household food security. These findings suggest that strategies to promote education, equitable distribution of productive assets, and broader access to information must be integrated with gender mainstreaming to ensure that women gain more equal opportunities in decision-making and resource management.

Recommendations

Based on these findings, regional policies should prioritize two complementary directions. The first concerns the strengthening of productive assets, which requires expanding women's access to education, ensuring fairer land distribution, and providing microcredit schemes that are directly linked to agricultural inputs. The second relates to promoting gender inclusion, particularly by enhancing women's access to market information, utilizing digital technologies to support production and marketing decisions, and fostering joint household decision-making patterns. Furthermore, continuous monitoring and research on the interplay between gender and food security are essential to ensure that policy interventions remain adaptive and evidence-based. By combining structural reforms with inclusive strategies, it becomes possible to reduce household-level gender inequality while simultaneously reinforcing food security in the rural communities of Jambi Province.

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