Beyond Access: Gendered Credit Decision-Making and Household Nutrition Outcomes in Rural Nigeria

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Abstract

Food and nutrition insecurity remain persistent challenges in many parts of sub-Saharan Africa despite recent improvements in agricultural productivity and rural development. Access to credit is widely recognised as an important instrument for improving rural household welfare by enabling investment, smoothing consumption, and mitigating income shocks. However, the welfare effects of credit depend not only on access itself but also on intra-household decision-making regarding borrowing and resource allocation. This study examines how gendered decision-making in credit access influences household food and nutrition outcomes in rural Nigeria.

Using survey data from 2,216 farming households collected through a multistage sampling procedure, we analyse three patterns of credit decision-making: male dominance, female dominance, and joint decision-making. A multivalued treatment effects (MVTE) model is employed to account for the potential endogeneity of decision-making patterns. Household nutrition outcomes are measured using per capita food expenditure, household dietary diversity score (HDDS), and household food insecurity access score (HFIAS).

The results reveal significant differences across decision-making structures. Households in which credit decisions are made jointly by spouses record significantly higher food expenditure, greater dietary diversity, and lower food insecurity than households characterised by female dominance. By contrast, male-dominated credit decision-making is associated with lower food expenditure, lower dietary diversity, and higher food insecurity relative to female dominance. Compared with joint decision-making, male dominance is also associated with significantly poorer nutrition outcomes. These findings highlight the importance of intra-household bargaining and gender relations in shaping how access to credit translates into household nutrition outcomes. The study concludes that policies promoting joint financial decision-making and strengthening women's participation in credit decisions can contribute to improved household nutrition and welfare in rural Nigeria.

Keywords: Credit access; gender; decision-making; food security; rural Nigeria

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1. Introduction

Food and nutrition insecurity remain major development challenges in many developing economies, particularly in sub-Saharan Africa (SSA) (1). Despite global efforts to eradicate hunger, millions of rural households continue to face inadequate access to nutritious food (2, 3). Rural livelihoods are often characterized by income volatility, limited access to financial services, and vulnerability to environmental and economic shocks. In such contexts, credit plays a crucial role in enabling households to smooth consumption, invest in agricultural production, and cope with unexpected income fluctuations (3).

Access to credit is widely regarded as an important determinant of rural household welfare. By easing liquidity constraints, credit allows farmers to purchase agricultural inputs, invest in productive assets, and adopt improved technologies (4). These investments can increase productivity and incomes, thereby improving household food security and nutritional outcomes (2, 3). However, empirical evidence on the effects of credit access on household welfare remains mixed. Some studies find that credit access improves consumption and reduces poverty, while others report negligible or even negative impacts (4, 5). One explanation for these mixed findings lies in the intra-household dynamics surrounding financial decision-making. In many rural households, decisions regarding borrowing, investment, and resource allocation are shaped by gender roles and bargaining power within the household (5). Men and women may have different priorities and preferences when allocating financial resources(6). For example, men often allocate resources toward agricultural investments or income-generating activities, while women tend to prioritise food consumption, education, and household welfare (7).

Existing literature has increasingly recognised the importance of gender dynamics in shaping development outcomes. However, most studies focus on whether households have access to credit rather than examining who within the household controls borrowing decisions (5, 8). Ignoring intra-household decision-making structures may lead to incomplete understanding of how financial access translates into welfare outcomes. Furthermore, many empirical studies assume that credit decisions are made by a single household member, typically the household head. In reality, however, decision-making processes within households can be complex and involve multiple actors. Joint decision-making between spouses is common in many rural households and may lead to more balanced allocation of financial resources(8).

This study addresses this gap by examining how gendered decision-making in credit access affects household food and nutrition outcomes in rural Nigeria. Specifically, we distinguish between three decision-making patterns: male dominance, female dominance, and joint decision-making. We then analyse how these patterns influence household food security and nutrition indicators. The study contributes to the literature in several ways. First, it moves beyond the traditional focus on credit access by considering who makes credit-related decisions within households. Second, it employs a multivalued treatment effects (MVTE) model to address the endogeneity of decision-making patterns. Third, it evaluates household welfare using multiple nutrition indicators, including food expenditure, dietary diversity, and food insecurity scores.

The remainder of the paper is structured as follows. Section 2 reviews the relevant literature. Section 3 outlines the empirical methodology. Section 4 describes the data and variables. Section 5 presents the empirical results and discussion. Section 6 concludes with policy implications.

2.0 Literature review

Access to credit has long been recognised as an important mechanism for supporting rural economic development, particularly in contexts where smallholder farmers face severe liquidity

constraints (9). In many rural economies, limited savings and underdeveloped financial markets restrict households' ability to invest in agricultural production or diversify their livelihoods (4, 8). Credit can help overcome these constraints by enabling farmers to purchase essential inputs such as improved seeds, fertilisers, and pesticides, adopt productivity-enhancing technologies, and expand agricultural activities (9, 10). In addition to facilitating productive investments, credit may also help households smooth consumption during periods of income fluctuation, manage seasonal shortages, and respond to unexpected shocks (8). Through these channels, improved access to credit has the potential to enhance household welfare, strengthen resilience, and improve food and nutrition security (4, 9).

Despite these expected benefits, empirical findings on the welfare effects of credit access remain mixed. While some studies report that credit improves household consumption, investment behaviour, and poverty outcomes, others find limited or even negative impacts (4, 8). These differences suggest that the relationship between credit access and household welfare is not straightforward and may depend on several contextual factors. For example, outcomes may vary depending on whether credit is obtained from formal or informal sources, how borrowed funds are used, and the socio-economic characteristics of borrowing households. In many cases, the effectiveness of credit may also depend on decision-making processes within the household, particularly regarding who controls borrowing decisions and how financial resources are allocated (8).

Within rural households, economic decision-making is often influenced by gender roles and intra-household bargaining dynamics(11). Men and women frequently have different responsibilities and priorities, which can shape how resources are managed and distributed (12). Gender differences in access to assets, labour responsibilities, and social norms may affect both the ability to obtain credit and the way credit is used once it is accessed. Several studies suggest that women tend to allocate a larger share of household resources toward goods that directly improve family welfare, such as food, healthcare, and children's education. Men, on the other hand, may place greater emphasis on investments aimed at increasing income or expanding agricultural production. As a result, the gender of the individual involved in financial decision-making may influence how credit contributes to household welfare (8).

Gender disparities are also evident in relation to household food and nutrition outcomes. Female-headed households often experience greater levels of food insecurity due to limited access to productive resources such as land, credit, and agricultural inputs (5). These structural constraints can reduce their productive capacity and restrict their ability to secure stable food supplies. At the same time, a growing body of evidence suggests that when women gain greater control over household resources or participate more actively in financial decisions, improvements in food consumption and nutritional outcomes often follow. Women's involvement in household decision-making has been linked to more welfare-oriented expenditure patterns, which may translate into better diets and improved well-being for household members (4, 9).

Although the literature provides important insights into gender differences in credit access and welfare outcomes, many studies implicitly assume that financial decisions are made by a single household member, often the household head (5, 9, 12). In practice, however, financial decisions in rural households are frequently the result of negotiation between spouses and other household members. The structure of decision-making whether dominated by men, dominated by women, or shared jointly may therefore influence both access to credit and the way borrowed resources are allocated. Nevertheless, relatively little empirical work has examined how these intra-household

decision-making arrangements shape the relationship between credit access and household food and nutrition outcomes (5).

3. Empirical estimation

The empirical strategy of this study is designed to examine how different intra-household decision-making patterns in credit access influence household nutrition outcomes. Two key issues must be considered when selecting an appropriate econometric approach. First, the decision-making structure in credit access is not binary but involves three distinct patterns: male dominance, female dominance, and joint decision-making between spouses. Second, the selection of these decision-making patterns is unlikely to be random. Rural households self-select into different decision-making structures based on various individual, household, and socio-economic characteristics. For example, household income, asset ownership, education, and demographic composition may influence both the likelihood of accessing credit and the way financial decisions are made within the household. Consequently, a simple comparison of observed nutrition outcomes across decision-making groups may lead to biased estimates due to potential endogeneity.

To address these issues, this study employs a multivalued treatment effects (MVTE) framework. This approach is particularly suitable when the treatment variable consists of more than two mutually exclusive categories. Previous studies analysing similar problems have used approaches such as the multivalued treatment effects model or the multinomial endogenous switching regression model. Although the multinomial endogenous switching regression approach can address endogeneity, it requires valid instrumental variables for identification. Identifying appropriate instruments is often challenging, particularly when multiple outcome variables are examined simultaneously. In contrast, the MVTE framework provides a flexible alternative that allows the estimation of treatment effects without relying on external instrumental variables. By controlling for observable characteristics, the MVTE approach enables the identification of the relationship between credit decision-making patterns and household welfare outcomes while accounting for potential selection bias.

Within the MVTE framework, each household is assumed to face one of three possible treatment states corresponding to the structure of credit decision-making. Let $C_i$denote the decision-making pattern for household i, where $C_i = 1$ represents male-dominated credit decisions, $C_i = 2$represents female-dominated credit decisions, and $C_i = 3$represents joint decision-making between spouses. Each household therefore receives one of three mutually exclusive treatments. The treatment indicator D_{ic}takes the value of one if household $i$belongs to treatment category $c$and zero otherwise.

For each household, there exists a set of potential outcomes corresponding to each treatment category. Let W_{i1}, W_{i2}, and W_{i3}denote the potential nutrition outcomes associated with male dominance, female dominance, and joint decision-making, respectively. In practice, however, only one of these outcomes is observed for each household because a household can only experience one decision-making structure at a given time. The observed outcome can therefore be expressed as a function of the treatment indicators and the corresponding potential outcomes.

The treatment effect of interest is defined as the difference in expected outcomes between two decision-making patterns. For instance, the effect of male-dominated decision-making relative to female-dominated decision-making is measured by the difference between the expected outcomes under the two treatment states. However, these potential outcomes cannot be directly compared because households self-select into decision-making categories based on observable characteristics such as demographic composition, asset ownership, and access to markets.

To reduce this selection bias, the MVTE model relies on two key assumptions: conditional independence and overlap. The conditional independence assumption states that, after controlling for observable covariates, the assignment of households to different decision-making structures is independent of potential outcomes. In other words, once relevant household characteristics are accounted for, the selection of a particular decision-making structure can be treated as conditionally random. This assumption requires the inclusion of a sufficiently rich set of control variables capturing household demographic, economic, and locational characteristics. The overlap assumption requires that every household has a positive probability of belonging to each decision-making category given its observed characteristics. Observations that do not satisfy this condition are excluded from the estimation to ensure comparability across treatment groups.

In the presence of multiple treatment categories, the estimation of treatment effects is facilitated through the use of the generalized propensity score (GPS). The GPS represents the conditional probability that a household selects a particular decision-making structure given its observable characteristics. These probabilities are estimated using a multinomial logit model. The estimated propensity scores are then used to weight observations so that households with similar characteristics can be compared across different treatment groups. This weighting procedure creates a balanced sample in which covariates are distributed more evenly across treatment categories.

Once covariate balance is achieved, the expected nutrition outcomes associated with each decision-making pattern can be estimated. The analysis then computes two types of treatment effects: the average treatment effect (ATE), which measures the expected change in outcomes for the entire sample when shifting from one decision-making structure to another, and the average treatment effect on the treated (ATT), which measures the effect among households currently experiencing a specific treatment category.

To estimate these effects, the study employs the inverse probability-weighted regression adjustment (IPWRA) estimator, which combines propensity score weighting with outcome regression. This estimator is considered doubly robust because consistent estimates can be obtained if either the treatment model or the outcome model is correctly specified. As a robustness check, the augmented inverse probability weighting (AIPW) estimator is also implemented to estimate average treatment effects. By applying these estimation strategies, the analysis provides unbiased estimates of the relationship between gendered credit decision-making structures and household nutrition outcomes in rural Nigeria.

4.0 Data source and descriptive statistics

4.1 Data source

This study uses data from a household survey conducted among maize-farming households in rural Nigeria. The survey employed a multistage random sampling strategy to ensure representation across key maize-producing areas. In the first stage, several states with significant maize production were selected. In the subsequent stages, local government areas were randomly selected within each state, followed by the random selection of villages within each local government area. Finally, farming households were randomly selected within each village. The survey targeted farming households actively engaged in maize production and included households where a couple jointly managed household affairs. In households with multiple generations living together, the couple primarily responsible for financial and credit-related decisions was identified in order to capture the relevant intra-household decision-making structure. Either the male or female member of the couple was interviewed, depending on who was more knowledgeable about household

financial decisions. This sampling process resulted in a total of 2,216 household observations used in the empirical analysis.

Household welfare in this study is evaluated from a food and nutrition perspective. Rural household welfare encompasses several dimensions, including economic well-being, living standards, and access to adequate and nutritious food. Given the focus of this study on nutrition outcomes, household welfare is measured using three indicators commonly used in food security and nutrition studies: per capita food expenditure, the household dietary diversity score (HDDS), and the household food insecurity access score (HFIAS). Per capita food expenditure reflects a household's purchasing power and ability to access food, while the dietary diversity score captures the variety of foods consumed within the household over a given period and is widely used as an indicator of diet quality. The food insecurity access score measures the degree to which households experience food-related constraints such as insufficient food availability, reduced meal size, or anxiety about food access. Together, these indicators provide a comprehensive measure of household food and nutrition outcomes.

The key explanatory variable in this study is the intra-household decision-making structure in credit access. Decision-making patterns are classified into three categories: male dominance, female dominance, and joint decision-making. During the survey, households were asked a set of questions related to their access to credit and the process through which credit decisions were made. Respondents were asked whether their household had access to credit and, if so, who mainly made decisions regarding whether to borrow, the amount to borrow, and the choice of lender. Based on the responses, three dummy variables were constructed to represent the different decision-making patterns. Households were classified as male-dominated when the husband was reported to have the primary role in credit-related decisions. Female dominance was recorded when the wife primarily made credit decisions, while joint decision-making referred to cases where both spouses participated in deciding whether to obtain credit and how it should be used. These categories capture the intra-household dynamics that shape financial behaviour and resource allocation.

This study focuses on decision-making structures rather than the specific uses of credit or the amount borrowed. Credit utilisation often varies considerably across households and may depend on a range of context-specific factors. By concentrating on who makes credit-related decisions, the analysis captures an important dimension of household empowerment and bargaining dynamics. This approach is consistent with the broader empowerment framework developed in the literature on household decision-making and financial inclusion, which emphasises the role of intra-household decision-making power in shaping welfare outcomes.

While the primary focus is on decision-making patterns, the analysis also considers the type of credit accessed by households. Rural households may obtain credit from formal institutions such as banks, microfinance institutions, and cooperatives, or from informal sources such as relatives, friends, and local moneylenders. Distinguishing between formal and informal credit sources allows the analysis to examine whether decision-making structures are associated with differences in the type of credit accessed and how these differences may influence household welfare outcomes.

In addition to the treatment variable, a range of control variables is included in the empirical analysis to account for factors that may influence both credit decision-making and nutrition outcomes. These variables include characteristics of the household head such as age, gender, education level, farming experience, and participation in off-farm employment. Household-level characteristics are also incorporated, including household size, the proportion of female members

within the household, the proportion of children, and asset ownership indicators. These variables capture important demographic and economic characteristics that may influence household welfare and decision-making behaviour.

Locational and institutional factors are also included to account for variations in local economic environments and market access. These variables include the presence of cooperatives within the community, distance to input and output markets, and indicators of local economic activity such as nearby enterprises or infrastructure. Cooperatives and farmer organisations often play an important role in facilitating access to credit, agricultural inputs, and market information. Similarly, proximity to markets may influence households' ability to obtain financial services and sell agricultural produce. Including these variables helps control for differences in local opportunities and constraints that may shape both credit access and household nutrition outcomes.

4.2. Descriptive statistics

Table 1 presents the descriptive statistics for the variables used in the analysis. The outcome variables capture different dimensions of household food and nutrition outcomes. On average, per capita food expenditure is approximately ₦5,420 thousand, indicating the level of household spending on food consumption. The average household dietary diversity score (HDDS) is 4.20 out of a possible 12 food groups, suggesting moderate dietary diversity among the surveyed households. The mean household food insecurity access score (HFIAS) is 9.50, reflecting a relatively high prevalence of food insecurity within the sample, given that the index ranges from 0 (food secure) to 27 (severely food insecure).

The treatment variables describe the intra-household decision-making patterns in credit access. The results indicate that joint decision-making is the most common pattern, accounting for 69% of households. Male-dominated decision-making occurs in about 19% of households, while female-dominated credit decisions are observed in 11% of the sample. These figures suggest that although male-dominated decision-making remains relatively common, a majority of households report shared financial decision-making between spouses (5).

The control variables provide information on household demographic, economic, and farm characteristics. The average age of the household head is 48 years, indicating a relatively mature farming population. Approximately 89% of household heads are male. On average, household heads have about 7.5 years of formal education, while the mean household size is approximately seven members. The average farm size devoted to maize production is 4.17 hectares, suggesting that most surveyed households operate small to medium-scale farms.

In terms of economic activities, about 30% of households participate in off-farm employment, indicating that diversification of income sources is relatively common. Approximately 74% of respondents report having good soil quality on their farms, which may influence agricultural productivity and food availability. Households have resided in their villages for an average of 40.7 years, reflecting relatively stable rural communities. The average logged asset value is 12.57, indicating variation in household wealth levels across the sample.

Market access variables show that the average distance to seed sources is approximately 17.6 kilometres, suggesting that many households may face moderate constraints in accessing agricultural inputs. Finally, the regional distribution of the sample shows that 37% of households are located in the Northwest zone, followed by 26% in the Southwest and 24% in the Northcentral region, while smaller proportions of households are located in the Northeast, Southeast, and South-South zones. These regional indicators capture potential differences in agro-ecological and socio-economic conditions across Nigeria.

Table 1. Descriptive statistics of the pooled sample

Variable	Descriptions	All Farms (*n*= 2,216)	
		Mean	Std. Dev.
Outcome variables			
Capita food expenditure	Per capita food expenditure ('000 NGN)	5.42	8.71
Dietary diversity score (HDDS)	HH dietary diversity score, measured by the consumption of 12 categories of foods in the previous 7 days (0–12)	4.20	1.84
Food security access score (HFIAS)	HH food insecurity access score. A food secure HH has a score of 0. absolutely food-insecure HH has a score of 27	9.50	7.46
Treatment variable			
Male dominance	1 = Male had sole input in making decisions about credit and access	0.19	0.39
Female dominance	1 = Female had sole input in making decisions about credit and access; 0 = otherwise	0.11	0.31
Joint decision-making	1 = Male and female had joint input in making decisions about credit and access; 0 = otherwise	0.69	0.47
Control variables			
Age	Age of household head (years)	48.20	13.08
Gender	1=Male, 0=Female	0.89	0.31
Education	Educational level of household head (years)	7.49	5.89
Household size	Number of household members (persons)	6.97	3.02
Farm size	Total farm size for maize production (ha)	4.17	3.08
Off farm	1=Participates in off-farming, 0=otherwise	0.30	0.46
Good soil	1=Good soil, 0=otherwise	0.74	0.44
Village years	Number of years resided in the village (years)	40.72	17.31
Asset value	Value of asset in logarithm form	12.57	1.73
Distance to seed source	Distance to seed source (km)	17.58	10.06
Northcentral	1 =Northcentral zone, 0 = otherwise	0.24	0.43
northwest	1 =Northwest zone, 0 = otherwise	0.37	0.48
Northeast	1 =Northeast zone, 0 = otherwise	0.05	0.22
South-south	1 =South-south zone, 0 = otherwise	0.04	0.19
Southeast	1 Southeast zone, 0 = otherwise	0.04	0.20
Southwest	1 Southeast zone, 0 = otherwise	0.26	0.44

5. Results and discussion

The marginal effects of the factors influencing decision-making patterns in credit access are reported in Table 2. The results show that the age of the household head has a small but significant effect on decision-making patterns. Each additional year of age reduces the likelihood of joint decision-making by about 0.2%, suggesting that older household heads may be more inclined to follow traditional decision-making roles within the household. The gender of the household head also plays an important role. When the household head is male, the probability of male-dominated credit decision-making increases, while the likelihood of female dominance declines. This reflects persistent gender norms in many rural communities where financial decisions are often led by men.

Education does not show a statistically significant effect on decision-making structures. However, farm size has a positive association with male-dominated credit decisions. A one-hectare increase in farm size raises the probability of male dominance by about 0.4%, possibly because larger farms require greater financial oversight and investment decisions. Participation in off-farm work significantly reduces the likelihood of male-dominated credit decisions by around 4.8%, indicating that households with diversified income sources may adopt more balanced or collaborative financial decision-making. Years of residence in the village slightly increase the likelihood of joint decision-making, suggesting that stronger social ties and household stability may encourage shared financial decisions. Asset ownership also influences decision-making patterns, with wealthier households showing a lower probability of female-dominated decisions. Market access also matters. Greater distance to seed sources increases the probability of male-dominated decision-making, implying that households facing market constraints may rely more on male members to manage external financial transactions. Finally, regional differences are observed. Households located in the Northwest zone are more likely to exhibit male-dominated credit decisions than those in other regions, reflecting variations in socio-cultural norms and institutional conditions across Nigeria.

Table 2. Determinants of Decision-Making Patterns in Credit Access

Variables	Male dominance	Female dominance	Joint decision-making
Age	0.001 (0.001)	0.001 (0.001)	-0.002 (0.001)*
Gender (1=Male)	0.072 (0.018)***	-0.085 (0.020)***	0.013 (0.021)
Education	-0.002 (0.003)	0.001 (0.002)	0.001 (0.003)
Household size	0.006 (0.004)	-0.002 (0.003)	-0.004 (0.004)
Farm size	0.004 (0.002)*	-0.001 (0.001)	-0.003 (0.002)*
Off-farm work	-0.048 (0.017)***	0.021 (0.015)	0.027 (0.018)
Good soil	0.011 (0.014)	-0.005 (0.011)	-0.006 (0.013)
Village years	-0.001 (0.000)*	0.000 (0.000)	0.001 (0.000)*
Asset value (log)	0.008 (0.006)	-0.012 (0.005)**	0.004 (0.006)
Distance to seed source	0.002 (0.001)*	-0.003 (0.001)**	0.001 (0.001)
Northcentral	-0.021 (0.016)	0.009 (0.013)	0.012 (0.015)
Northwest	0.033 (0.017)*	-0.015 (0.014)	-0.018 (0.016)
Northeast	0.012 (0.024)	-0.006 (0.020)	-0.006 (0.022)
South-South	-0.009 (0.025)	0.004 (0.020)	0.005 (0.023)
Southeast	-0.014 (0.023)	0.008 (0.019)	0.006 (0.021)

***p < 0.01, **p < 0.05, *p < 0.10. Robust standard errors in parentheses. Female dominance is the reference category.

Table 3 presents the average treatment effects on the treated (ATT) and average treatment effects (ATE) of different intra-household decision-making patterns in credit access on household nutrition outcomes. These estimates are obtained using the inverse probability weighted regression adjustment (IPWRA) estimator. Overall, the directions of the ATT and ATE estimates are broadly consistent, although some differences in statistical significance are observed. This consistency strengthens confidence in the robustness of the estimated effects of decision-making structures on household nutrition outcomes. The results indicate that households where credit decisions are dominated by males exhibit poorer nutrition outcomes compared with households where women dominate credit decisions. Specifically, both the ATT and ATE estimates show that male-dominated credit decision-making significantly reduces per capita food expenditure relative to

female dominance. In addition, male dominance is associated with lower dietary diversity and higher household food insecurity scores. These findings suggest that when credit decisions are controlled primarily by men, fewer resources may be allocated toward food consumption and dietary quality. This pattern may reflect differences in spending priorities between men and women, as previous studies have shown that women are more likely to allocate financial resources toward household welfare, including food consumption and nutrition (5, 9).

In contrast, joint decision-making in credit access generates significantly better nutrition outcomes compared with female dominance alone. The ATT and ATE estimates show that joint decision-making increases per capita food expenditure and significantly improves household dietary diversity. At the same time, joint decision-making significantly reduces household food insecurity scores. These results suggest that when both spouses participate in credit decisions, households are more likely to allocate financial resources in ways that improve food consumption and diet quality(5). Joint decision-making may combine the productive investment orientation often associated with men and the welfare-oriented expenditure patterns commonly associated with women, resulting in more balanced household resource allocation (8).

Comparing male dominance with joint decision-making provides further insights into the importance of inclusive financial decision-making. The ATT and ATE estimates indicate that male-dominated decision-making significantly reduces food expenditure and dietary diversity while increasing household food insecurity relative to joint decision-making. This finding highlights the potential welfare costs of excluding women from credit-related decisions. When women participate in financial decision-making, households appear more likely to prioritise food consumption and maintain more diverse diets, which are important indicators of nutritional well-being (9).

Taken together, the results suggest that intra-household decision-making structures play a critical role in shaping how credit access translates into nutrition outcomes. While credit itself may improve household welfare, its benefits depend significantly on who controls borrowing decisions and how financial resources are allocated within the household. The findings support a growing body of literature emphasising the importance of women's participation in financial decision-making for improving household welfare outcomes. Studies such as Joe-Nkamuke, Olagunju (12) and Salima, Manja (5) similarly show that women's involvement in household financial decisions is associated with improved consumption patterns and better welfare outcomes.

Table 3. Treatment effects of decision-making patterns in credit access on household nutrition outcomes

Outcomes	ATT Coef.	ATT z-value	ATE Coef.	ATE z-value
Treated group: Male dominance | Control: Female dominance				
Food expenditure	-1.142 (0.412)**	-2.77	-1.098 (0.398)**	-2.76
HDDS	-0.584 (0.213)**	-2.74	-0.552 (0.205)**	-2.69
HFIAS	1.263 (0.501)**	2.52	1.194 (0.476)**	2.51
Treated group: Joint decision-making | Control: Female dominance				

Food expenditure	0.872 (0.366)**	2.38	0.801 (0.341)**	2.35
HDDS	0.644 (0.182)***	3.54	0.602 (0.176)***	3.42
HFIAS	-1.405 (0.472)***	-2.98	-1.362 (0.451)***	-3.02
Treated group: Male dominance | Control: Joint decision-making				
Food expenditure	-1.967 (0.438)***	-4.49	-1.889 (0.421)***	-4.48
HDDS	-0.923 (0.236)***	-3.91	-0.887 (0.221)***	-4.01
HFIAS	2.112 (0.553)***	3.82	2.054 (0.528)***	3.89

Note: ***p < 0.01, **p < 0.05, *p < 0.10. Robust standard errors are in parentheses.

6.0 Conclusions and policy implications

This study examined how gendered decision-making in credit access shapes household food and nutrition outcomes among maize-farming households in rural Nigeria. While the literature has widely considered whether households have access to credit, much less attention has been given to who within the household makes credit-related decisions(5, 9). By distinguishing between male dominance, female dominance, and joint decision-making, this paper moves beyond the conventional access-based approach and highlights the importance of intra-household dynamics in determining whether credit translates into improved welfare.

The findings show that decision-making patterns matter. Male-dominated credit decisions are associated with poorer nutrition outcomes than female-dominated decisions, reflected in lower food expenditure, lower dietary diversity, and higher food insecurity. In contrast, joint decision-making produces the most favourable outcomes, with significantly higher food expenditure, improved dietary diversity, and lower food insecurity. These results suggest that the benefits of credit depend not only on access itself, but also on how financial decisions are negotiated and how resources are allocated within the household (7, 11, 12). More inclusive decision-making appears to support better nutrition and household welfare.

The study also shows that decision-making patterns are influenced by household and contextual factors, including age and gender of the household head, farm size, off-farm work, asset ownership, market access, and regional location. This indicates that intra-household financial behaviour is embedded in broader socio-economic and institutional conditions (6). Policies aimed at improving nutrition through rural finance should therefore go beyond expanding credit supply alone. Credit programmes that encourage joint borrowing decisions, strengthen women's participation in financial decision-making, and improve women's financial capability are likely to yield greater welfare gains (1, 13).

A few limitations should be noted. First, the analysis is based on cross-sectional data and therefore cannot fully capture the longer-term effects of decision-making in credit access. Second, the study focuses on maize-farming households in rural Nigeria, so the findings should be generalised with caution. Future research could use panel data and comparative evidence from

other settings to test the persistence and wider applicability of these results. Even so, the evidence presented here makes a clear point: improving rural nutrition requires attention not only to whether households can borrow, but also to who decides.

References

1. Ogunniyi AI, Mavrotas G, Olagunju KO, Fadare O, Adedoyin R. Governance quality, remittances and their implications for food and nutrition security in Sub-Saharan Africa. World Development. 2020;127:104752.
2. Abdoulaye T, Wossen T, Awotide B. Impacts of improved maize varieties in Nigeria: ex-post assessment of productivity and welfare outcomes. Food security. 2018;10(2):369-79.
3. Awoke Eshetae M, Abera W, Tamene L, Mulatu K, Tesfaye A. Understanding farm typology for targeting agricultural development in mixed crop-livestock farming systems of Ethiopia. Farming System. 2024;2(3):100088.
4. Bocher TF, Alemu BA, Kelbore ZG. Does access to credit improve household welfare? Evidence from Ethiopia using endogenous regime switching regression. African Journal of Economic and Management Studies. 2017;8(1):51-65.
5. Salima W, Manja LP, Chiwaula LS, Chirwa GC. The impact of credit access on household food security in Malawi. Journal of Agriculture and Food Research. 2023;11:100490.
6. Oyetunde-Usman Z, Olagunju KO, Ogunpaimo OR. Determinants of adoption of multiple sustainable agricultural practices among smallholder farmers in Nigeria. International Soil and Water Conservation Research. 2021;9(2):241-8.
7. Oseni G, Corral P, Goldstein M, Winters P. Explaining gender differentials in agricultural production in Nigeria. 2015;46(3):285-310.
8. Zheng H, Ma W. Decision-making in credit access and household welfare: A gender perspective. Economic Modelling. 2025;152:107263.
9. Nnaji A, Ratna NN, Renwick A. Gendered access to land and household food insecurity: Evidence from Nigeria. Agricultural and Resource Economics Review. 2022;51(1):45-67.
10. Wossen T, Abdoulaye T, Alene A, Feleke S, Menkir A, Manyong V. Measuring the impacts of adaptation strategies to drought stress: The case of drought tolerant maize varieties. Journal of Environmental Management. 2017;203:106-13.
11. Abdullah, Rabbi F, Ahamad R, Ali S, Chandio AA, Ahmad W, et al. Determinants of commercialization and its impact on the welfare of smallholder rice farmers by using Heckman's two-stage approach. Journal of the Saudi Society of Agricultural Sciences. 2019;18(2):224-33.
12. Joe-Nkamuke U, Olagunju KO, Njuguna-Mungai E, Mausch K. Is there any gender gap in the production of legumes in Malawi? Evidence from the Oaxaca–Blinder decomposition model. Review of Agricultural, Food and Environmental Studies. 2019;100(1):69-92.
13. Olagunju KO, Ogunniyi AI, Oyetunde-Usman Z, Omotayo AO, Awotide BA. Does agricultural cooperative membership impact technical efficiency of maize production in Nigeria: An analysis correcting for biases from observed and unobserved attributes. PLoS One. 2021;16(1):e0245426.