THE EFFECT OF THE COMMERCIALIZATION OF HOME-GROWN AGRICULTURAL GOODS ON POVERTY: EVIDENCE FROM NORTH-EAST NIGERIA

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ABSTRACT: *Agricultural commercialization plays a central role in mitigating poverty, especially for widowed farmers. Widowhood is a catastrophic event for women farmers at any stage of their lives, with serious implications for their well-being. We examine the effect of household commercialization on the poverty of widowed cowpea farmers in North-East Nigeria. A multistage sampling procedure was employed, yielding 525 respondents. The data were collected using a structured questionnaire and analyzed using both descriptive and inferential statistics (multiple regression). The results revealed that the Household Commercialization Index (HCI) was moderate in both the internally displaced persons (IDPs) and the host communities. The average Progress out of Poverty Index (PPI) score was lower for IDP farmers than for host community farmers, with homogeneity across both groups. Explanatory variables influencing PPI explained 35% of its variation. Legume farming experience and the value of harvest were found to improve PPI. Household size and IDP status were associated with reduced PPI. The HCI explained 4.7% of the variance in poverty among widowed cowpea farmers and was inversely related to poverty. All in all, widowed cowpea farmers' household commercialization increases poverty by 0.126, while heterogeneity among households, greater legume farming experience, smaller household sizes, IDP host communities, and higher cowpea value were associated with less poverty in the study area. Strengthening cooperative development, promoting the added value of cowpea products, expanding access to financial services, and targeted support for widowed farmers are hence recommended.*

KEYWORDS: *rural poverty, market participation, female-headed household, vulnerability, internally displaced persons (IDPs), Borno*

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INTRODUCTION

Background

Cowpea (*Vigna unguiculata*) is a hardy and nutritious legume that is highly adaptable to diverse soils and cropping systems. It has considerable economic and nutritional importance in Nigeria, the world's largest producer and consumer. This is especially true in the arid and semi-arid North-East region, where it serves as a staple food, a critical source of income, and a component of soil fertility management (IITA 2020; Bolarinwa et al. 2022). Historically, cowpea production has been a cornerstone of rural livelihoods in this region (Nwagboso et al. 2024).

However, the North-East has been subjected to profound socio-economic disruption due to the Boko Haram insurgency, recurrent flooding, climate change vulnerability, and farmer-herder conflicts, resulting in over two million internally displaced persons (IDPs) (IOM 2023; FAO 2017). These crises disproportionately affect women, leaving many widowed and severed from their traditional agrarian livelihoods (UNHCR 2017). The resultant loss of spousal support, land access, and social networks has exacerbated poverty and vulnerability among these women, compelling a re-evaluation of their livelihood strategies (Barbelet et al. 2021).

Agricultural commercialization, the shift from subsistence to market-oriented production, is widely posited as a viable pathway out of poverty for smallholder farmers. Empirical studies, such as those by Ogutu et al. (2019) in Kenya and Simtowe et al. (2017) in the Democratic Republic of Congo, demonstrate that commercialization can increase household incomes, improve livelihoods, and build resilience to shocks. This perspective is reinforced by Cazzuffi et al. (2020), who found a positive association between commercialization and household welfare in rural Vietnam, and by De Janvry and Sadoulet (2009), who argue for its primacy given the heterogeneity of farmers.

The gender dimension of this pathway, however, reveals significant constraints. Women, particularly in sub-Saharan Africa, consistently face gender-based barriers in accessing land, credit, and extension services, limiting their full participation in commercial agriculture (Horn et al. 2022; Mukaila 2024). Recent research by Shehu et al. (2024a) on smallholder cowpea farmers in Nigeria explicitly highlights these gendered paths to market participation, finding that female farmers face distinct socio-structural obstacles compared to their male counterparts. This suggests that the poverty-reduction potential of commercialization cannot be assumed to be gender-neutral.

Furthermore, the relationship between commercialization and poverty is nuanced and may be mediated by crop type and household vulnerability. Studies focusing on staple food crops present a more complex picture. Birhanu et al. (2021), in their study on cereal commercialization in Ethiopia, hypothesize that commercializing staple foods *could* increase multidimensional poverty if it occurs at the expense of household food consumption, a scenario of "distress sales." This contrasts with findings from Chinese contexts, where Wang et al. (2024) found that agricultural commercialization significantly reduced multidimensional poverty, and from a multi-country study in Africa, where Mgomezulu et al. (2024) concluded that poverty was higher among subsistence farmers than among commercial farmers in Malawi, Tanzania, and Nigeria. This divergence underscores that the impact of commercialization is context-dependent, influenced by initial resource endowments, market structures, and household vulnerability profiles.

Despite this growing body of literature, a critical gap remains. There is a paucity of research that specifically examines the commercialization experiences of widowed women farmers in conflict-affected areas. This group represents a unique intersection of gender and vulnerability, with women often managing households alone under the compounded stresses of displacement, asset loss, and psychological trauma. As noted by Vasilyeva et al. (2023), institutional factors such as conflict and displacement profoundly shape economic mobility. The specific mechanisms by which widows in settings such as North-East Nigeria engage with markets, and whether such engagement alleviates or exacerbates their poverty, are poorly understood.

Humanitarian analyses, such as those by Barbelet and Wake (2020), report a high rate of exclusion of women, particularly widows, from formal support systems, pushing them towards independent but precarious livelihood strategies like small-scale farming. This makes the study of their agricultural decisions, especially regarding a key crop like cowpea, not only an academic exercise but a pressing policy concern.

This study, therefore, aims to fill this gap by investigating the effect of household cowpea commercialization on poverty among widowed farmers in North-East Nigeria, with explicit attention to differences between those in IDP settings and host communities. The study is grounded in the consumption-based concept of poverty, operationalized through the Progress out of Poverty Index (PPI), which assesses the likelihood that a household lives below a given poverty line using proxy indicators of assets and durable goods (Schreiner 2015).

The research seeks to answer the following central question: Does the household commercialization of cowpea contribute to progress out of poverty for widowed farmers in this conflict-affected context, or does it represent a distress strategy that undermines food security and well-being?

In addressing this, this paper contributes to the literature in three key ways: It provides empirical evidence on the livelihood strategies of a critically vulnerable yet understudied group (widowed women) in a protracted crisis zone. It interrogates the universal poverty-reduction narrative of agricultural commercialization by testing it in a context of acute gender and displacement-induced vulnerability, and third, it generates evidence-based insights for policymakers and humanitarian actors aiming to design targeted interventions that support sustainable livelihoods for widowed farmers that align with the Sustainable Development Goals (SDGs), particularly SDG1 (No poverty), SDG5 (Gender equality), and SDG10 (Reduced inequalities).

Theoretical framework

The relationship between agricultural commercialization and poverty is a central theme in development economics, drawing from theories of market integration, household economics, and livelihood resilience. The prevailing orthodoxy, rooted in the market integration model (Timmer 1997; Pingali–Rosegrant 1995), posits that increased market participation allows smallholder farmers to specialize according to comparative advantage, achieve economies of scale, and realize higher incomes from cash sales. This enhanced income is theorized to catalyse a virtuous cycle of investment in productivity-enhancing inputs, improved household consumption, and ultimately, a sustained exit from poverty (De Janvry – Sadoulet 2009; Cazzuffi et al. 2020). This framework underpins numerous policy prescriptions advocating the commercialization of smallholder agriculture as a primary engine for reducing rural poverty.

However, this linear, optimistic model is increasingly challenged by empirical evidence highlighting the contingent and often heterogeneous outcomes of commercialization, particularly for vulnerable groups. The new economics of labour migration (NELM) perspective (Stark–Bloom 1985) and livelihoods approaches (Scoones 1998; Ellis 2000) provide more nuanced frameworks. They conceptualize households not as profit-maximizing firms but as complex units managing a portfolio of assets (natural, human, financial, social, physical) to navigate risks and secure well-being. From this viewpoint, market participation is one strategy among many, and its adoption and impact depend critically on a household's initial asset endowment, its vulnerability context, and intra-household dynamics.

When farmers sell surplus produce beyond subsistence needs, commercialization directly increases disposable income (Ogutu et al. 2019). This income can be used to purchase a more diverse basket of goods and services, invest in children's education and health, and acquire productive

assets, thereby reducing multidimensional poverty, as measured by indices such as the PPI (Wang et al. 2024). This pathway aligns with classical theories of market integration.

Conversely, commercialization can be a symptom of vulnerability rather than an opportunity. Faced with liquidity constraints, debt, or immediate shocks (e.g., illness, school fees), households may engage in distress sales of food staples, selling a portion of their harvest that would be needed for home consumption (Birhanu et al. 2021). This reduces the quantity and quality of food available for the household, potentially leading to seasonal hunger, poor nutrition, and increased reliance on purchased food, which may be more expensive or less nutritious. In this scenario, while cash income may rise in the short term, the household's food security and overall well-being deteriorate, creating a perverse outcome in which commercialization exacerbates a core dimension of poverty.

This dual-pathway model is supported by contrasting findings in the literature. Mgomezulu et al. (2024) found that poverty was lower among commercial farmers in three African countries, suggesting the dominance of the former pathway. In contrast, studies in highly vulnerable contexts, such as those involving female-headed households in Ethiopia, warn of the risks of the latter pathway in which market participation does not translate into improved food security or resilience (Kuma et al. 2019).

In addition, gender is a fundamental axis structuring access to and control over the assets necessary for successful commercialization. Feminist political economy critiques highlight how patriarchal norms restrict women's land ownership, limit their access to credit and extension services, and assign them the bulk of reproductive labour (Agarwal 1994; Doss et al. 2018). For widows, these constraints are often intensified. The death of a spouse can trigger asset-stripping by relatives, a loss of customary land rights, and a collapse of social networks that previously facilitated market access (Peterman 2012). Their commercialization decisions are therefore made from a position of significantly diminished "asset pentagon" (Scoones 1998), particularly in terms of financial, social, and natural capital.

Furthermore, widows in conflict zones, such as North-East Nigeria, face a triple vulnerability: gender, displacement, and the trauma of conflict. Displacement (IDP status) represents a severe shock to all livelihood assets, the loss of land, the destruction of physical capital, and the disruption of social and market networks (IOM 2023). This forces a radical reconfiguration of livelihood strategies, often under conditions of extreme uncertainty and limited state support (Barbelet et al. 2021). In this context, the decision to commercialize cowpea cannot be read simply as an entrepreneurial choice; it may be a critical survival strategy shaped by desperation and a lack of alternatives.

Conceptual framework

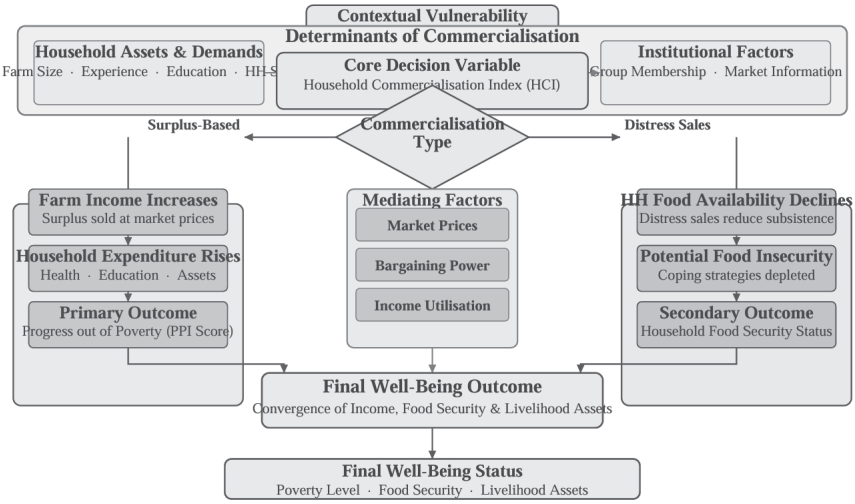
Integrating these theoretical insights and empirical cautions, Figure 1 presents the conceptual framework guiding this analysis. It moves beyond a simple linear model to depict a system of relationships in which the impact of cowpea commercialization on the poverty status of widowed farmers is mediated by contextual and household-level factors and can manifest across different poverty dimensions.

Core constructs and relationships:

1. Contextual vulnerability (Exogenous shock): The conflict-induced displacement (IDP *vs*. Host status) acts as a primary shock, directly constraining access to key productive assets (especially land and capital) and shaping market access conditions. This creates the initial conditions for all subsequent decisions.
2. Household Commercialization Index (HCI): The degree to which a widow commercializes her cowpea harvest is influenced by:
   – Asset endowment: Farm size, farming experience, human capital (education).
   – Institutional access: Group membership (social capital), access to market information.
   – Household demands: Household size (consumption needs/ dependents).
3. Dual-pathway impact on poverty:
   – Pathway 1 (Income channel): Commercialization → Increased farm income → Increased household expenditure on non-food items (health, education, assets) → Reduction in income / Multidimensional Poverty (PPI).
   – Pathway 2 (Subsistence channel): Commercialization → Reduced quantity of cowpea available for household food consumption → Potential compromise in food security & nutrition. This pathway is likely dominant in cases of distress sales driven by more significant household needs or a lack of alternative income sources.
4. The mediating role of market conditions & agency: the ultimate effect on overall well-being (the final poverty outcome) depends on whether the income generated (Pathway 1) is sufficient to offset the food deficit (Pathway 2) by allowing the purchase of adequate and nutritious food from the market. This, in turn, is mediated by local food prices, the widow's bargaining power within the household and market, and her ability to utilize income for welfare-maximizing purposes.

5. Outcome variable – Progress out of Poverty Index (PPI): This study uses the PPI as its primary dependent variable. It is crucial to note that the PPI is a proxy for the likelihood of living below a national income poverty line based on indicators of household assets and living standards. It is thus a strong measure for Pathway 1 (Income poverty) but may be less sensitive to acute, seasonal fluctuations in Pathway 2 (Food security). A finding of no change or a negative relationship between HCI and PPI would strongly suggest that commercialization is failing to improve income-based poverty status, potentially because it is of the distress-sale variety, with benefits offset by associated costs, or because income is not being converted into a durable asset.

Figure 1. *Conceptual framework showing the effects of widowed farmers' household commercialization on poverty*



Source: Author's compilation.

MATERIALS AND METHODS

Study area

This study was conducted in North-East Nigeria, comprising six states: Adamawa, Bauchi, Borno, Gombe, Taraba, and Yobe. The region lies between Latitude 9° 08' to 14° N and Longitude 8° 68' to 15° E. The area occupies a land mass of 280,419 km^2 (National Bureau of Statistics 2022). According to the source, the region has a population of 30,541,900.

The choice of this area is predicated on its status as Nigeria's primary cowpea production zone (IITA 2020) and its acute vulnerability context. There is a heightened poverty rate as a result of the activities of Boko Haram-related armed conflict in the agrarian communities, which results in community displacements that are coupled with farmer–herder conflicts, incessant floods, and climate change vulnerability. These factors thwart many farmers from going to their farms, specifically widows (IOM 2023; UNHCR 2017). As a result, such widows become vulnerable to food insecurity, harsh weather, poor sanitation, limited access to health services and clean water, and low living standards, among others (FAO–WFP 2018; Aderemi–Ogebe 2024). However, humanitarian actions have attempted to cushion these vulnerabilities, in which the high rate of female exclusion, with widows as the majority, was reported (Barbelet–Wake 2020; Barbelet et al. 2021). Legume production, such as groundnut, which requires relatively little input and also improves soil fertility through atmospheric nitrogen fixation, is one approach; legumes may also serve as both cash and food crops for humans and animals (Witcombe–Tiemann 2022). These also have a relatively short production duration, allowing a quicker return on investment (ibid.). It therefore represents a viable alternative for vulnerable widows in North-East Nigeria to engage in its production and commercialisation, given their limited access to resources, its market value, and its nutritional richness.

Sampling procedure

The multistage sampling technique was used to select communities and respondents in the four local government area's (LGAs). The technique reduces the time and cost of collecting samples from a large population to a manageable size, and proceeds through several stages to ensure fair representation (Rahman et al. 2022; Shehu et al. 2024a). In the first stage, four states were purposively selected from the six states of North-East Nigeria engulfed by the Boko Haram

Insurgency; the selection was based on the intensity of the conflicts in the states. These states were Adamawa, Borno, Gombe, and Yobe. In the second stage, LGAs with lower-intensity conflicts were proportionately randomly selected to allow data collection by the enumerators, and the displaced farmers usually found IDPs in these less-affected conflict areas. Third, a list of widow farmers was collected from the extension officer of the Agricultural Development Programme (ADP) and community leaders, so a list of all active female farmers could be compiled in the selected LGAs, 5% of whom were randomly selected from the list of the widow farmers as suggested by Krejcie and Morgan (1970) from the population of 10,500 (under 99% confidence level with 5% margin of error), leading to n=525 for the study (Table 1).

Table 1. *Sampling procedure and sample size*

State	LGA	Sample frame	Sample size (5%)
Adamawa	Demsa	500	25
	Fufore	480	24
	Gombi	680	34
	Guyuk	540	27
	Hong	740	37
	Song	380	19
	Yola south	400	20
Borno	Bayo	640	32
	Biu	480	24
	Hawul	480	24
	Kwaya kusar	620	31
	Shani	460	23
Gombe	Akko	540	27
	Billiri	580	29
	Kaltungo	560	28
Yobe	Fika	760	38
	Nangere	820	41
	Potiskum	840	42
Total	*18*	*10500*	*525*

Source: Reconnaissance Survey (2022)

Method of data collection

Primary data were collected through a cross-sectional survey conducted between September and December 2022. A structured questionnaire was pre-tested and refined; the pre-tested data were excluded from the analysis. This was administered through face-to-face interviews by a team of trained enumerators fluent in local languages (Hausa, Kanuri, and Fulfulde).

The questionnaire was digitally deployed using Open Data Kit (ODK), an open-source suite of tools for mobile data collection, on Android tablets. This ensured real-time data capture, reduced errors, and facilitated efficient data management. The instrument was designed to collect detailed information on socio-economic characteristics (age, education, household composition, displacement status); farm production (cowpea farm size, farming experience, production quantity, inputs used); commercialization (quantity and value of cowpea harvested, quantity and value sold, marketing channels used); institutional factors (membership in farmer groups or cooperatives, access to credit, and sources of market information); and PPI indicators.

Method of data analysis

The study used descriptive statistics, such as frequency, percentage, mean, and standard deviation, to summarize the data. Inferential statistics (OLS multiple linear regression) were used to determine the drivers of poverty among widowed cowpea farmers and the effects of widowed cowpea farmers' HCI on their poverty. Therefore, the results should be interpreted as associational rather than causal.

The model for drivers of poverty was explicitly expressed as:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_{10} X_{10} + \varepsilon_i \quad (1)$$

where Y_i : poverty (PPI),
β_0 : intercept,
β : regression coefficients,
ε_i : error term,
X_1 : control variables, and
X_2 : HCI.

Table 2. *Description and measurement of variables*

Variable	Description and measurement	Mean	S.D.
Dependent variable			
Progress out of Poverty Index (PPI)	A composite index (0–100) calculated using the official Nigeria PPI scorecard. The scorecard uses ten simple, verifiable indicators (e.g., household size, children's school attendance, asset ownership, housing materials) to compute a likelihood score of a household living below the national poverty line (Schreiner 2015). A higher score indicates a lower probability of being in poverty.	40.12	12.45
Key independent variable			
Household Commercialization Index (HCI)	The ratio of the total value of cowpea sold to the total value of cowpea production, expressed as a percentage. HCI = (Value of sales / Value of total harvest) x 100. This measures the degree of market orientation for cowpea.	54.56	16.12
Explanatory/control variables			
Age	Age of the respondent in years	49.21	13.88
Education	Years of formal schooling completed by the respondent	5.03	5.01
Farm size	Total land area dedicated to cowpea cultivation in the last season, in hectares	3.02	2.05
Legume farming experience	Number of years the respondent has been farming legumes (including cowpea)	22.98	12.45
Household size	Total number of persons eating from the same pot and living in the same household	7.01	2.92
Group membership	Dummy: 1 – Respondent is a member of any farmers' group, cooperative, or association; 0 – Otherwise	0.41	0.49
Market information	Dummy: 1 – Respondent accessed formal market information (on price, standards, buyers) via extension agents, radio, or mobile phone in the last season; 0 – Otherwise	0.41	0.49
Value of harvest (₦)	Total monetary value (in Naira) of the cowpea harvested in the last season, based on local prevailing prices at harvest	137,854	159,220
Sales (₦)	Total cash income (in Naira) from cowpea sales in the last season	78,245	114,210
IDP status	Dummy: 1 – Respondent resides in an IDP camp/settlement; 0 – Respondent resides in a host community	0.26	0.44

RESULT AND DISCUSSION

Variable description and measurement

The mean and standard deviation for each variable (Table 2) offer immediate insight into the sample's characteristics and the distribution of key factors. For example, the mean PPI of 40.12 provides a baseline welfare level. The mean HCI of 54.56% indicates a surprisingly high level of market participation, which contextualizes the discussion of distress sales. The mean household size of 7.01 and the IDP status mean of 0.26 (26%) quantify the significant consumption burdens and displacement shock highlighted in the conceptual framework as key vulnerability factors.

The description correctly frames the PPI as a tool for assessing the likelihood of living below an income poverty line. This is a strength in terms of clarity, but also introduces a limitation, as noted in the conceptual framework: the PPI is more sensitive to Pathway 1 (Income assets) than to short-term fluctuations in Pathway 2 (Food security). A household engaging in distress sales might use the cash for urgent needs without acquiring durable assets, showing little improvement in PPI. The negative HCI coefficient suggests this may be occurring. The study correctly interprets the PPI within its design limits.

Distinction between Value of harvest and HCI: This is the table's most methodologically important feature. By including both variables, the analysis can isolate the *intensive margin* of commercialization (HCI) from the *extensive margin* of production (Value of harvest). The positive coefficient for Value of harvest and the negative coefficient for HCI in the integrated model would provide powerful evidence for the distress sale hypothesis: producing more is good, but being forced to sell a high proportion of what one produces is detrimental.

The binary measurement of Group membership and Market information is pragmatic but captures only access, not quality, intensity, or effectiveness of use. The non-significance of this in the model, as discussed, could mean that mere access to the market is insufficient without the resources to act on this – a nuance that future qualitative work could explore.

IDP status as a Composite shock is a dummy variable that efficiently captures the multifaceted "contextual vulnerability" described in the conceptual framework. It is a proxy for a bundle of correlated disadvantages: loss of land, disruption of social networks, trauma, and often poorer living conditions. Its large expected negative coefficient quantifies the overwhelming impact of this compounded shock.

Distribution of socio-economic and institutional characteristics of widowed cowpea farmers by displacement status

An analysis of the socio-economic and institutional characteristics of widowed cowpea farmers (Table 3) in the IDP and host communities reveals that both groups have comparable average ages (host: 49 years; IDP: 49.6 years) and similar variability. Members of the host community have marginally more mean years of formal education (5.18 years) than those in IDPs (4.79 years), with comparable variability between the two groups. The host community has slightly more farming experience (23.49 and 21.94 years, respectively) and specific cowpea farming experience (15.83 and 13.53 years, respectively), with similar variability between the host and IDP communities. There is a notable difference in average farm size between the host community (3.41 units) and IDPs (2.23 units), suggesting that IDPs have more limited access to farmland. This disparity can be attributed to the displacement of IDPs from their original places of residence, resulting in the abandonment of their agricultural assets and other resources. The two groups demonstrate analogous levels of group membership, with both reaching approximately 41–42%. However, IDPs exhibit marginally greater access to market information (45%) compared to the host community (39%). However, the primary implication is that IDPs appear to be more constrained in terms of farm size and farming experience, and maintain larger household sizes, possibly due to displacement dynamics. Despite displacement, IDPs maintain similar levels of social integration (group membership) and slightly better access to market information. Additionally, the relatively low levels of formal education observed in both categories underscore the potential requirement for enhanced agricultural extension services. Furthermore, IDPs' larger household sizes and better access to market information may reflect their adaptive strategies in response to displacement.

Table 3. *Distribution of socio-economic and institutional factors of cowpea-growing widowed farmers by displacement status, n=525*

Displacement status		Age	Education	Farm size	Farming experience	Cowpea farming exp.	Household size	Group membership	Market information
Host community	Mean	48.99	5.18	3.41	23.49	15.83	6.54	0.41	0.39
	S.D.	13.77	5.10	2.10	12.38	9.79	2.97	0.49	0.49
	Min.	18	0	0.5	2	1	1	0	0
	Max.	80	20	14	50	50	17	1	1
IDPs	Mean	49.60	4.79	2.23	21.94	13.53	7.86	0.42	0.45
	S.D.	14.04	4.91	1.53	12.61	10.02	2.79	0.50	0.50
	Min.	18	0	0.1	2	1	3	0	0
	Max.	80	20	7.5	50	50	17	1	1

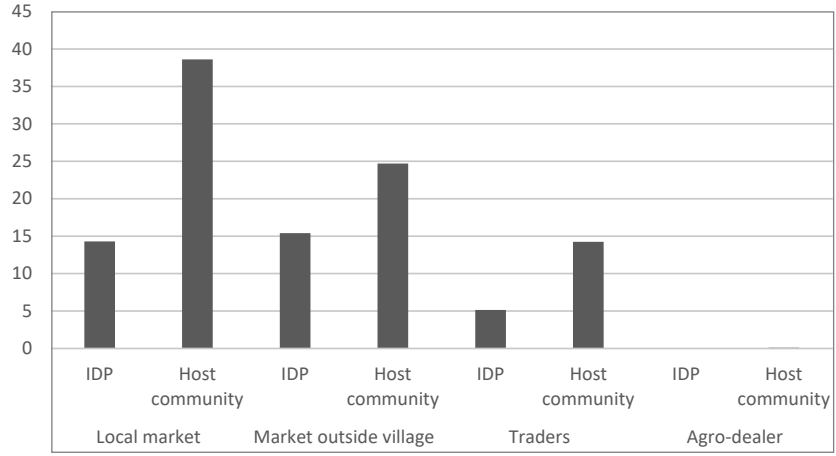
Distribution of marketing channels of cowpea-growing widowed farmers by displacement status

Figure 2 illustrates the distribution of marketing channels used by widowed cowpea farmers, as categorized by their displacement status (host community or IDPs) and access to the market channel. Local markets appear to be the most common marketing channel for both widowed cowpea farmers in the host community (38.6%) and IDPs (14.3%), followed by markets outside the village (24.7% for host community and 15.4% for IDPs) and traders (14.25% for host community and 5.14% for IDPs).

The result further revealed that none (0%) of the IDPs surveyed accessed marketing channels from agro-dealers, and only a negligible number (0.11%) accessed them from informal markets. This suggests that IDPs may face greater challenges in accessing essential agricultural inputs and services compared to widowed farmers in the host communities.

The figure further indicates the minimal use of formal channels, such as agro-dealers, by both the host community and IDP farmers. This could be due to factors such as limited access or low awareness of the services offered. The process of displacement can disrupt social networks, market linkages, and access to resources, making it harder for IDPs to re-establish themselves in new locations. IDPs, especially women, may face security concerns or restrictions on movement that impede their ability to reach distant markets. IDPs often arrive in host communities with limited financial resources, making it difficult to invest in transportation, storage, or the processing facilities needed to access certain markets.

Figure 2. *Marketing channels of cowpea-growing widowed farmers by displacement status (%)*



*Note: * multiple responses*

Household commercialization by widowed cowpea-growing farmers by displacement status

The results in Table 4 showed that the average HCI for the host community was 54.19% with a standard deviation of 16.817. This revealed high market participation among widowed cowpea farmers in the commercialization of cowpea, with very low dispersion among them.

The mean HCI for the IDPs was 55.44%, with a standard deviation of 14.351. This corroborates the findings of Shehu et al. (2024a) and Shehu et al. (2024b), who found that market commercialization was high in the study area despite Boko Haram insurgency, farmer-herder conflict, and incessant floods due to climate change in North-East Nigeria.

Table 4. *Market participation of widowed cowpea farmers by displacement status (n=525)*

Displace-ment status	Variable	N	Mean	S.D.	Minimum	Maximum
Host community	Sales (₦)	386	76,413.8	116,462.3	150	1,125,000
	Value of harvest (₦)	386	134,497.4	165,027.4	1000	1,250,000
	HCI (%)	386	54.2	16.8	10	90
IDPs	Sales (₦)	139	83,767.6	108,919.7	7,500	1,125,000
	Value of harvest (₦)	139	144,813.0	141557.8	20,000	1,250,000
	HCI (%)	139	55.4	14.4	10	90

Progress out of poverty of widowed cowpea farmers by displacement status

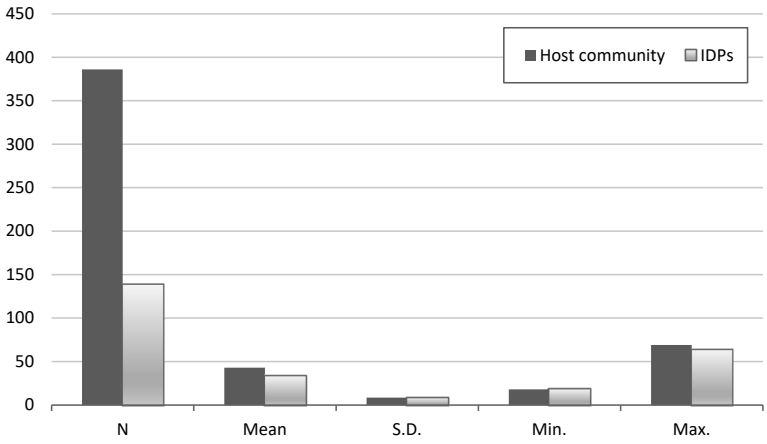
The results in Figure 3 present the Progress out of Poverty Index for widowed cowpea farmers, categorized by their displacement status as either host community or IDP. The average Progress out of Poverty Index score was lower for IDP farmers (33.55) than for host community farmers (42.96). This indicates that displacement has a substantial negative effect on these farmers' ability to escape poverty. The standard deviations for both groups are relatively low, suggesting considerable homogeneity in poverty levels among cowpea farmers within each category. This is probably because displacement often involves the loss of land, livestock, and other assets, making it difficult for IDPs to rebuild their livelihoods. Also, IDPs may have limited access to credit, agricultural inputs, and markets, impeding their ability to invest in productive activities. The trauma of displacement may affect the mental and physical health of IDPs, impacting their ability to engage in productive activities, and possibly discrimination and social exclusion, limiting their access to opportunities and support networks.

Factors influencing the PPI of widowed cowpea farmers in North-East Nigeria

The OLS regression results for the determinants of poverty, as measured by the Progress out of Poverty Index, are presented in Table 5. The model is statistically robust, with an F-statistic of 30.42 ($p \leq 0.01$), indicating that the joint effect of the explanatory variables is significant. The model explains 35.3% of the variation in PPI scores among widowed cowpea farmers (R^2=0.353). This

moderate explanatory power aligns with the conceptual framework's emphasis on the complex, multi-faceted nature of poverty, which is influenced by a broader set of socio-economic, political, and institutional factors beyond those captured here (Scoones 1998).

Figure 3. *Progress out of Poverty Index scores of widowed cowpea farmers by displacement status*



The analysis reveals significant relationships for several key variables, offering insights into the pathways shaping poverty outcomes for this vulnerable group. Consistent with the livelihood assets component of the conceptual framework, human capital in the form of legume farming experience emerged as a positive and significant ($p \leq 0.01$) determinant of PPI. For each additional year of experience, a widow's PPI score increases by 0.108 points. This finding supports the literature positing that accumulated experiential knowledge enhances farmers' technical efficiency, risk management capabilities, and ability to optimize production in marginal environments typical of the North-East (Hudu et al. 2023). This human capital directly strengthens a household's livelihood portfolio, facilitating progress out of income poverty.

Similarly, the total value of the cowpea harvest (a proxy for production scale and natural capital yield) is positively associated with higher PPI scores ($p \leq 0.10$). This underscores the fundamental role of production sufficiency. A larger harvest provides a critical buffer, enhancing both food availability (subsistence pathway) and potential surplus for sale (income pathway), thereby directly contributing to improved household welfare, as found in similar contexts by

Fischer and Hajdu (2015). This variable's significance revealed that the absolute volume of resources, not just the proportion commercialized, is vital for poverty alleviation.

Conversely, household size exerts a strong, negative influence ($p \leq 0.01$) on PPI. Each additional household member is associated with a 1.108-point decrease in the PPI score. This finding powerfully illustrates the "demand" side of the conceptual framework. A larger household size increases consumption needs and dependency burdens, stretching finite resources, particularly critical for a widow managing a household alone, and limiting the capacity for savings or investment, thereby diminishing the poverty-reducing potential of any income generated (Ogwumike–Akinnibosun 2013).

Most strikingly, IDP status is the strongest negative predictor in the model ($p \leq 0.01$). Residing in an IDP settlement is associated with a substantial 7.76-point reduction in PPI compared to widows in host communities. This result provides robust quantitative validation for the framework's foundational element: contextual vulnerability. Displacement represents a catastrophic shock that strips households of key assets, land, livestock, permanent housing, and established social networks (IOM 2023). The magnitude of the coefficient confirms that this loss of physical, natural, and social capital is so profound that it severely constrains widow farmers' livelihood options and significantly deepens poverty, as documented by IDMC (2021). It serves as a critical control variable, establishing the profoundly disadvantaged starting point from which IDP widows engage in commercialization.

It is instructive to note that variables such as formal education, farm size, group membership, and access to market information were not statistically significant in this model. This suggests that for widowed cowpea farmers in this crisis-affected setting, the advantages conferred by these factors may be neutralized by overarching structural constraints. For instance, the benefits of group membership (social capital) may be offset by a lack of resources to leverage collective action, or the utility of market information may be nullified by an inability to act on it due to mobility restrictions or a lack of capital. This aligns with the framework's premise that in high-vulnerability contexts, the returns to certain assets are attenuated.

Table 5. *Factors influencing the PPI of widowed cowpea farmers (n=525)*

Variable	Coefficient	t-value
Age	–0.002 (0.027)	–0.06
Education	–0.001 (0.073)	–0.02
Farm size	–0.091 (0.186)	–0.49
Legume farming experience	0.108 (0.039)	2.77***
Household size	–1.108 (0.143)	–7.75***
Group membership	0.125 (0.671)	0.19
Market information	0.173 (0.747)	0.23
IDP status	–7.760 (0.824)	–9.42***
Value of harvest	0.0000116 (6.35e–06)	1.83*
Sales	–0.0000242 (7.68e–06)	–3.15***
Constant	49.06 (2.049)	23.94
F(10, 514)	30.42***	–
R-squared (%)	35.30	–

Note: Values in parenthesis: robust standard error.

Effects of household commercialization on PPI

The central hypothesis of this study, derived from the dual-pathway conceptual framework, is tested using an integrated OLS regression model in which the Household Commercialization Index (HCI) is analysed. The results of this primary analysis are presented in Table 6. The model is statistically significant ($F(11, 513) = 22.15$; $p \leq 0.01$) and explains approximately 32.1% of the variance in PPI scores.

The coefficient for the HCI is –0.119 and statistically significant at the 1% level ($p \leq 0.01$). Crucially, this effect is estimated while controlling for the total value of harvest, IDP status, household size, farming experience, and other covariates. This finding provides robust, nuanced evidence supporting a core pathway in the conceptual model: for widowed cowpea farmers in North-East Nigeria, a greater degree of market orientation in cowpea production is, on average, associated with a *lower* Progress out of Poverty Index score. Specifically, holding all other factors constant, a one-percentage-point increase in HCI predicts a 0.119-point decrease in a widow's PPI.

This result strongly suggests the dominance of Pathway 2 (Subsistence/Distress channel) over Pathway 1 (Income channel) for this specific vulnerable group. The negative sign indicates that increased commercialization is correlated with worse poverty outcomes. This aligns with the framework's contingency, where by commercialization driven by vulnerability rather

than surplus can undermine well-being. For widows managing households under the strain of displacement (IDP status) and large family sizes (both significant negative predictors in this model), selling a higher proportion of their cowpea harvest likely reflects a distress sale strategy. This is undertaken to meet immediate, pressing cash needs (e.g., healthcare, debt, school fees) at the expense of household food reserves. The resulting reduction in food availability may lead to increased expenditure on market foods later or poorer nutrition, negating any short-term cash income gains and failing to translate into the durable asset accumulation captured by the PPI. This finding empirically validates the hypothesis of Birhanu et al. (2021) regarding the poverty risks posed by the commercialization of staple crops when this compromises subsistence.

This result appears to contradict studies such as Wang et al. (2024) in China and Mgomezulu et al. (2024) in more stable African contexts, which found that commercialization reduced poverty. This divergence is not a methodological discrepancy but a powerful confirmation of the conceptual framework's emphasis on contextual vulnerability. The studies' findings of positive effects typically analyse contexts with lower baseline vulnerability, better market infrastructure, and farmers with greater asset buffers. In contrast, our study focuses on widows in a conflict zone, a group characterized by severely diminished "asset pentagons" (loss of spousal support, land, and social networks). For them, the preconditions for successful, surplus-based commercialization (Pathway 1) are often absent. Therefore, the observed commercialization is of a different nature – a coping mechanism rather than an entrepreneurial strategy. This perfectly illustrates De Janvry and Sadoulet's (2009) point about heterogeneity: the *average* effect of commercialization masks sharply different outcomes for different subgroups. Our finding clarifies that for widows in crisis settings, the common policy prescription of commercialization may be ineffective or even harmful if not preceded by interventions that address their acute vulnerability and asset deficits.

The integrated model accentuates the importance of controlling for confounding factors. The strong, persistent negative effect of IDP status and household size in this model confirms that these vulnerability factors create the conditions under which commercialization becomes detrimental. The positive effect of the value of harvest remains significant; this depicts that overall production scale is beneficial, but the *proportion sold* (HCI) is harmful. This key distinction between selling more because one has a surplus versus selling more of what one has because one must (distress) is only visible in a model that includes both variables.

Table 6. *Effects of household commercialization on PPI (n= 525)*

Variable	Coefficient	t-value
Household Commercialization Index (HCI)	–0.126*** (0.029)	–4.35
Constant	47.34 (1.660)	28.51
F(1, 523)	18.95***	
R-squared	4.70%	

Note: Values in parenthesis: robust standard error; control variables are presented in Table 5.

CONCLUSION AND POLICY IMPLICATIONS

Conclusion

This study sought to examine the effect of household cowpea commercialization on poverty among widowed farmers in North-East Nigeria, a group situated at the critical intersection of gender, conflict, and displacement. Grounded in a revised conceptual framework that distinguishes between surplus-based and distress-driven commercialization, the analysis yields conclusions that are both nuanced and sobering.

The findings robustly demonstrate that, for this vulnerable population, a higher degree of cowpea commercialization is associated with a lower Progress out of Poverty Index (PPI) score, even after controlling for key determinants like production scale, displacement status, and household demographics. This central result validates the dominance of Pathway 2 (the Distress sale/ Subsistence channel) within our conceptual model. It indicates that for widows, particularly those in IDP settings or with large households, commercialization often acts as a coping mechanism rather than a growth strategy. The sale of a greater proportion of the harvest appears to be driven by immediate liquidity needs, likely at the expense of household food security, thereby failing to generate the sustainable income or asset accumulation necessary to improve widows' PPI-based poverty status.

The analysis further clarifies the conditions that shape this outcome. The powerful negative effects of IDP status and household size confirm that contextual vulnerability and high dependency burdens create the preconditions for detrimental commercialization. Conversely, legume farming experience and the total value of harvest were positive factors, underscoring that human capital and production sufficiency remain foundational for welfare. The non-significance of factors such as formal group membership suggests that, in highly volatile environments, the potential benefits of certain forms of social capital are neutralized without complementary resources.

Ultimately, this study concludes that in the crisis-affected landscape of North-East Nigeria, promoting market participation for widowed cowpea farmers without first addressing their glaring deficits in land, security, and social protection risks exacerbating the very poverty it is intended to alleviate.

Policy implications

Derived directly from the empirical findings and the conceptual framework, the following policy implications are proposed to guide interventions that are both effective and sensitive to the unique vulnerabilities of widowed farmers.

The strong link between IDP status and poverty necessitates policies that move beyond immediate humanitarian relief to restore productive assets. Actors rendering humanitarian services, such as government, NGOs, and local community-driven initiatives, should facilitate formal or customary land-use agreements for widows in both host and IDP communities to rebuild natural capital. Also, they should provide direct support in the form of drought-tolerant seeds, small livestock, or simple processing equipment to help rebuild the productive asset base, creating a surplus for genuine market engagement (Pathway 1). They should also support widows in securing land titles, death certificates, and other legal documents to prevent asset stripping and establish economic identity.

To prevent commercialization from undermining subsistence, direct cash or food transfers are needed to meet urgent consumption needs. The federal government should strengthen the cash transfer program by implementing regular, predictable cash transfer programs for widowed households, particularly those with large numbers of dependents. This can reduce the pressure to sell staple food crops for emergency cash and link food assistance to activities that build community or individual assets (e.g., soil conservation, irrigation), simultaneously addressing food gaps and enhancing future productivity.

Furthermore, all the development agents present in North-East Nigeria should consider commercialization only after subsistence is secured and should focus on creating value from genuine surplus. This could be achieved by supporting cooperatives not just for marketing but also for collective bulking, storage, and processing. This will enable members to wait for favourable post-harvest prices and engage in value addition (e.g., producing cowpea flour, snacks like *akara*), thereby increasing income from a smaller, truly surplus quantity. Also, the direct connection of women's cooperatives to institutional buyers (schools, NGOs) for processed cowpea products could create a more stable and remunerative market than the volatile raw grain trade, serving the needs of subsistence before commercialization.

The trauma of conflict and widowhood itself is a barrier to effective economic agency. Therefore, psychosocial support and counselling should be embedded within agricultural extension and livelihood programs to help widows cope with loss and build the resilience needed for long-term planning. Activities should include training extension agents to address the specific technical, social, and mobility constraints faced by widows and the Social Welfare Department in local government areas offering advice tailored to their resource-limited contexts.

A one-size-fits-all approach will fail. The sharp disparity in poverty outcomes necessitates differentiated strategies. Therefore, widows in IDP camps and host communities should be engaged separately when context-specific interventions are designed by all the development actors. The federal government and donor agencies should fund programs that foster the economic integration of widows into host communities by providing shared access to resources (e.g., communal farming plots) and supporting conflict-resolution mechanisms to ease tensions.

REFERENCES

Aderemi, T. – J. Ogebe (2024) Widowhood and multidimensional poverty: Evidence from Nigeria. *South African Journal of Economics*, Vol. 92, No. 3., pp. 386–412. DOI: https://doi.org/10.1111/saje.12376.

Agarwal, B. (1994) Gender and command over property: A critical gap in economic analysis and policy in South Asia. *World Development*, Vol, 22, No. 10., pp. 1455–1478.

Barbelet, V. – C. Wake (2020) *Inclusion and Exclusion in Humanitarian Action: The State of Play.* HPG Working Paper, London (UK), ODI Global, https://odi.org/en/publications/inclusion-and-exclusion-in-humanitarian-action-the-state-of-play/.

Barbelet, V. – S. Njeri – G. Onubedo (2021) *Inclusion and Exclusion in the North-East Nigeria Crisis.* HPG Working Paper, London (UK), ODI Global, https://odi.org/en/publications/inclusion-and-exclusion-in-the-north-east-nigeria-crisis.

Birhanu, F. Z. – A. S. Tsehay – D. A. Bimerew (2021) The effects of commercialization of cereal crops on multidimensional poverty and vulnerability to multidimensional poverty among farm households in Ethiopia. *Development Studies Research*, Vol. 8, No. 1., pp. 378–395, DOI: https://doi.org/10.1080/21665095.2021.2002704.

Bolarinwa, K. A. – L. A. Ogunkanmi – O. T. Ogundipe – O. O. Agboola – O. D. Amusa (2022) An investigation of cowpea production constraints and

preferences among smallholder farmers in Nigeria. *GeoJournal*, Vol. 87, No. 4., pp. 2993–3005, DOI: http://doi.org/10.1007/s10708-021-10405-6.

Cazzuffi, C. – A. McKay – E. Perge (2020) The impact of agricultural commercialisation on household welfare in rural Vietnam. *Food Policy*, Vol. 94., p. 101811, DOI: https://doi.org/10.1016/j.foodpol.2019.101811.

De Janvry, A. – E. Sadoulet (2009) Agricultural growth and poverty reduction: Additional evidence. *The World Bank Research Observer*, Vol. 25, No. 1., pp. 1–20, DOI: https://doi.org/10.1093/wbro/lkp015.

Doss, C. – R. Meinzen-Dick – A. Quisumbing – S. Theis (2018) Women in agriculture: Four myths. *Global Food Security*, Vol. 16, pp. 69–74, DOI: https://doi.org/10.1016/j.gfs.2017.10.001.

Ellis, F. (2000) *Rural Livelihoods and Diversity in Developing Countries.* Oxford, Oxford University Press.

Falola, A. – R. Mukaila – T. F. Lawal – M.A. Akinsuyi (2022) Commercialization of pigeon pea production: Its determinants and constraints. *Jotaf – Journal of Tekirdag Agricultural University* / *Tekirdağ Ziraat Fakültesi Dergisi*, Vol. 19, No. 4., pp. 840–849, DOI: https://doi.org/10.33462/jotaf.1113523.

FAO (2017) *North-East Nigeria*. *Situation Report – October/November 2016*. Published at the website of FAO – Food and Agriculture Organization of the United Nations: https://www.fao.org/fileadmin/user_upload/FAO-countries/Nigeria/ToR/FAO_Sitrep_Northeast_Nigeria_October_November_2016_01.pdf .

FAO – WFP (2018) *Monitoring Food Security in Countries with Conflict Situations: A Joint FAO/WFP Update for the United Nations Security Council.* No. 2018/3, New York (US), Food and Agriculture Organization of the United Nations, World Food Programme. https://openknowledge.fao.org/server/api/core/bitstreams/5bd342f1-abfe-4300-852b-8d28c6839821/content.

Fischer, K. – F. Hajdu (2015) Does raising maize yields lead to poverty reduction? A case study of the Massive Food Production Programme in South Africa. *Land Use Policy*, Vol. 46., pp. 304–313, DOI: https://doi.org/10.1016/j.landusepol.2015.03.015.

Horn, L. N. – S.N. Nghituwamhata – U. Isabella (2022) cowpea production challenges and contribution to livelihood in Sub-Saharan Region. *Agricultural Sciences*, Vol. 13, No. 1., pp. 25–32, DOI: https://doi.org/10.4236/as.2022.131003.

Hudu, M. I. – Z. Abdulsalam – O. A. Ojeleye – D. F. Omokore (2023) Economic Efficiency of Small-scale Irish Potato Farmers in Nigeria and Kenya Under the Potato Initiative Africa Project, *International Journal of Research in Commerce and Management Studies* Vol. 5, No. 6., pp. 73-84 DOI: https://doi.org/10.38193/IJRCMS.2023.5606.

IDMC (2021) *Internal Displacement in a Changing Climate*. *Global Report on Internal Displacement 2021.* Geneva (Switzerland), Internal Displacement Monitoring Center (IDMC), https://api.internal-displacement.org/sites/default/files/publications/documents/grid2021_idmc.pdf.

IITA (2020) *Guide to Cowpea Production in Northern Nigeria*. (by Omoigui, L. O. – A. Y. Kamara – N. Kamai – F. Ekeleme – K .T. Aliyu). Ibadan (Nigeria), International Institute for Tropical Agriculture (IITA).

IOM – International Organization for Migration (2023) *IDP and Returnee Atlas – June 2023. Mobility Tracking – Round 45 – North-East Nigeria*. Nigeria, IOM. Published on the website of IOM on September 19, 2013, https://dtm.iom.int/reports/nigeria-north-east-mobility-tracking-round-45-idp-and-returnee-atlas-june-2023.

Krejcie, R.V. – D.W. Morgan (1970) Determining sample size for research activities. *Educational and Psychological Measurement*, Vol. 30, No. 3., pp. 607–610, DOI: https://doi.org/10.1177/001316447003000308.

Kuma, T. – M. Dereje – K. Hirvonen – B. Minten (2019) Cash Crops and Food Security: Evidence from Ethiopian Smallholder Coffee Producers. *The Journal of Development Studies*, Vol. 55, No. 6., pp. 1267–1284. DOI:10.1080/00220388.2018.1425396.

Melegh, A. (2024) The consolidation of polarization. Hungarian discourses on migration. *Corvinus Journal of Sociology and Social Policy*, Vol. 15, No. 3., pp. 75–104, DOI: https://doi.org/10.14267/CJSSP.2024.3.4.

Mgomezulu, W. R. – M. M. Chitete – B. B. Maonga – L. Kachingwe – H. H. Phiri et al. (2024) Does shifting from subsistence to commercial farming improve household nutrition and poverty? Evidence from Malawi, Tanzania and Nigeria. *Research in Globalization*, Vol. 8., p. 100201, DOI: https://doi.org/10.1016/j.resglo.2024.100201.

Mukaila, R. (2024) Agricultural commercialisation among women smallholder farmers in Nigeria: Implication for food security. *GeoJournal*, Vol. 89, No. 2, Art. No. 42., DOI: https://doi.org/10.1007/s10708-024-11051-4.

National Bureau of Statistics (2022) *State and Local Government Areas Statistics, Charts and Maps.*

Nwagboso, C. – K. S. Andam – M. Amare – T. Bamiwuye – A. Fasoranti (2024) *The Economic Importance of Cowpea in Nigeria: Trends and Implications for Achieving Agri-Food System Transformation*. IFPRI Discussion Paper 02241, Abuja (Nigeria), International Food Policy Research Institute.

Ogutu, S. O. – T. Gödecke – M. Qaim (2019) Agricultural commercialisation and nutrition in smallholder farm households. *Journal of Agricultural Economics*, Vol. 71, No. 2., pp. 534–555, DOI: https://doi.org/10.1111/1477-9552.12359.

Ogwumike, F. O. – M. K. Akinnibosun (2013) Determinants of poverty among farming households in Nigeria. *Mediterranean Journal of Social Sciences*, Vol. 4, No. 2., pp. 365–373, DOI: http://dx.doi.org/10.5901/mjss.2013.v4n2p365.

Peterman, A. (2012) Widowhood and asset inheritance in Sub-Saharan Africa: Empirical evidence from 15 countries. *Development Policy Review*, Vol. 30, No. 5., pp. 543–571, DOI: https://doi.org/10.1111/j.1467-7679.2012.00588.x.

Pingali, P. L. – M. W. Rosegrant (1995) Agricultural commercialization and diversification: Processes and policies. *Food Policy*, Vol. 20, No. 3., pp. 171–185, DOI: https://doi.org/10.1016/0306-9192(95)00012-4.

Rahman, M. M. – M.I. Tabash – A. Salamzadeh – S. Abduli – M. S. Rahaman (2022) Sampling techniques (probability) for quantitative social science researchers: A conceptual guidelines with examples. *SEEU Review*, Vol. 17, No. 1., pp. 42–51, DOI: https://doi.org/10.2478/seeur-2022-0023.

Schreiner, M. (2015) *Simple Poverty Scorecard – Poverty assessment tool Nigeria*. June 26, 2015, Available at: simplepovertyscorecard.com/NGA_2012_ENG.pdf.

Scoones, I. (1998) *Sustainable Rural Livelihoods: A Framework for Analysis.* IDS Working Paper No. 72, Falmer (UK), Institute of Development Studies, University of Sussex.

Shehu, A. – M. I. Kadafur – H. A. Yusuf – N. M. Saddiq (2024a) Gendered path to market participation of small-holder cowpea (vigna unguiculata (L.) walp.) farmers in Nigeria. *Nigerian Journal of Agriculture and Agricultural Technology*, Vol. 4, No. 2., pp. 147–159, DOI: https://doi.org/10.59331/njaat.v4i2.700.

Shehu, A. – M. I. Kadafur – F. Dutse (2024b) Impact of access to traditional market information on household commercialisation and farm income of smallholder cowpea farmers. *Journal of Agribusiness and Rural Development*, Vol 74, No. 4., pp. 402–413, DOI: https://doi.org/10.17306/J.JARD.2024.00004R1.

Simtowe, F. – B. K. Paul – B. M. Wimba – S. B. Bacigale – W. L. Chiuri et al. (2017) Determinants of participation in cavy marketing: Evidence from the Democratic Republic of Congo. *Journal of Agriculture and Rural Development in the Tropics and Subtropics (JARTS)*, Vol. 118, No. 2., pp. 245–257. http://nbn-resolving.de/urn:nbn:de:hebis:34-2017110153644.

Stark, O. – D. E. Bloom (1985) The new economics of labor migration. *The American Economic Review*, Vol. 75, No. 2., pp. 173–178.

Timmer, C. P. (1997) Farmers and markets: The political economy of new paradigms. *American Journal of Agricultural Economics*, Vol. 79, No. 2., pp. 621–627, DOI: https://doi.org/10.2307/1244161.

UNHCR (2017) *North East Nigeria, Vulnerability Screening Report*. Published on the website of UNHCR in December 2017, file:///C:/02_Downloads/UNHCR%20Vulnerability%20Screening%20Report,%20December%202017-1.pdf.

Vasilyeva, R. – V. Voytenkov – A. Urazbaeva (2023) The impact of institutional factors on bilateral migration: The gravity approach. *Corvinus Journal of Sociology and Social Policy*, Vol. 14, No. 1., pp. 55–80, DOI: https://doi.org/10.14267/CJSSP.2023.1.3.

Wang, L. – C. Li – N. Zhu (2024) The effects of agricultural commercialization on the multidimensional poverty of rural households: Evidence from China. *Journal of International Development*, Vol. 36, No. 1., pp. 626–643, DOI: https://doi.org/10.1002/jid.3831.

Witcombe, A. M. – L. K. Tiemann (2022) Potential contribution of groundnut residues to soil N and the influence of farmer management in western Uganda. *Frontiers in Sustainable Food Systems*, Vol. 5, Art. No. 691786, DOI: https://doi.org/10.3389/fsufs.2021.691786.