TRANS- BORDER FOOD TRADE AND HOUSEHOLD FOOD SECURITY IN NIGERIA-NIGER BORDERS

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Keywords

Trans-border trade, Household food security, Informal economy, Coping strategies, Livelihood diversification

Abstract

This mixed-methods study investigates the relationship between trans-border food trade participation and household food security in Nigeria's North-West borderlands. Drawing on survey data from 389 households and qualitative interviews with 25 key informants across the Maigatari-Babura (Jigawa State) and Mai'Adua-Kongolam (Katsina State) corridors, we examine how cross-border trade income affects food security outcomes, the proportion of food budgets derived from trade, and the coping strategies households deploy when trade dynamics threaten food access. Our findings reveal a paradox: households handling the largest food volumes often experience significant food insecurity. While 89.97% of respondents identified trans-border trade as their primary income source, only 73% reported that trade income improved household food access, and 26.48% reported no change in food situation compared to before trade engagement. Trade income contributed 10-25% of food budgets for 40% of households (supplemental), 26-50% for 35% (moderate dependence), and 51-80% for 15% (high dependence). Food security classification yielded 22% food secure, 38% marginally food secure, 28% moderately food insecure, and 12% severely food insecure. Coping strategies—deployed sequentially from consumption compromise (meal reduction, quality substitution) through alternative provision (casual labour, asset sales) to network-based assistance—provided immediate relief but often undermined long-term resilience through debt cycles and human capital depletion. Informal social networks, particularly kinship ties and mosque zakah committees, functioned as primary safety nets in the absence of government support. We conclude that trade participation alone does not guarantee food security; rather, diversification, profit margins after transaction costs, and network access

mediate the trade-food security relationship. Policy implications include targeted credit facilities for informal traders, border management reforms reducing unofficial payments, and integration of informal networks into formal safety net programming.

Introduction

The border corridors between Nigeria and the Republic of Niger represent a quintessential example of deeply integrated trans-border socio-economic systems that have evolved over generations. The specific focus of this study is at the household level within the Maigari-Babura border axis in Jigawa State and the Mai'Adua-Kongolam and Baba Mutum border axis in Katsina State. These corridors are historically significant hubs for the trade of staple commodities including millet, sorghum, cowpea, maize, and livestock (Adekola, 2015). The year 2015 marks a critical juncture for this region, coinciding with the formal closure of Nigeria's land borders by the federal government at various periods, ostensibly to curb smuggling of rice and other commodities, to encourage domestic agricultural production, and to address security concerns related to cross-border crime. These policy interventions, coupled with the escalating insecurity in the North-West region stemming from banditry, kidnapping for ransom, and communal violence, have created a volatile and unpredictable environment for border communities (International Crisis Group, 2020). The subsequent diplomatic rupture following the July 2023 military coup in Niger has further complicated this landscape.The urgency of this scholarly undertaking has been amplified by recent events. Food security in North-West Nigeria—already fragile due to persistent banditry, displacement of farming populations, and climate pressures—has been further strained by the diplomatic rift between Nigeria and Niger following the July 2023 coup d'état.

The existing literature on trans-border trade in West Africa has largely focused on macroeconomic dimensions, contributions to regional integration under the Economic Community of West African States (ECOWAS) protocols, and the informal nature of cross-border transactions (Golub, 2015). Similarly, studies on food security in Nigeria often adopt national or state-level perspectives, emphasising aggregate production deficits, climate impacts on yields, and policy responses at the federal level. However, a significant gap exists in understanding the micro-level, household-level responses to the interplay between trans-border trade dynamics and food security outcomes.

This study, therefore, seeks to bridge this gap by conducting a granular, empirically grounded analysis of household-level responses to trans-border food trade dynamics and their implications for food security in selected border communities of North-West Nigeria. The decade-long timeframe from 2015 to 2025 encompasses significant policy shifts, security challenges, and the recent diplomatic rupture with Niger, providing a robust temporal frame within which to analyse household adaptive strategies, their effectiveness, and their limitations. By focusing on the lived experiences of households in Maigatari-Babura and Mai'Adua-Kongolam and Baba Mutum, this research aims to generate critical insights that can inform more nuanced, locally grounded, and effective food security and trade policies for border regions, moving beyond one-size-fits-all national approaches that frequently fail to account for the complex realities of borderland livelihoods.

1.2 Statement of the Research Problem

The border communities of North-West Nigeria occupy a distinctive historical and economic position. Maigatari in Jigawa State, for instance, hosts a large market established in 1870 that has historically facilitated livestock and grain trade between Niger, Nigeria, Mali, Chad, and Cameroon (International Crisis Group, 2021). These border markets represent not merely economic spaces but socio-cultural institutions embedded in the livelihood systems of Hausa, Fulani, and Kanuri communities that transcend colonial boundaries (International Crisis Group, 2021).

This long-established trading system has been subjected to successive disruptions. The Nigerian government's intermittent border closure policies—most recently during the 2019-2020 land border closure—have created cycles of economic dislocation and adaptation. Even as consultations proceed regarding border reopening, the Nigeria Customs Service continues to enforce the Export Prohibition Act, which bans the exportation of maize, rice, beans, yam, millet, and sorghum (Nigeria Customs Service, 2024).

Despite growing policy attention to both food security and cross-border trade, a significant empirical gap persists regarding how households in border communities actually navigate these dynamics. Existing research and policy analysis operate primarily at two levels. At the macro level, studies examine aggregate trade flows, regional integration frameworks (such as AfCFTA), and national food balance sheets (Food and Agriculture Organization [FAO] & Economic Commission for Africa [ECA], 2018). At the sectorial level, analyses document the impacts of import policies on producer groups—rice farmers, palm oil processors, vegetable oil manufacturers—and the associated job losses (Okafor, 2024).

By focusing on household-level responses in the Maigatari-Babura, Baba Mutum and Mai'Adua-Kongolam border areas, this study made several contributions. Empirically, it generate primary data on how households in these under-researched locations navigate trans-border food trade dynamics—documenting their strategies, constraints, and outcomes. Theoretically, it will extend existing frameworks for analysing livelihood diversification and food security by explicitly incorporating the cross-border dimension, which remains under theorised in the literature (Ellis, 1998; Barrett et al., 2001).

This study addressed that gap through systematic empirical investigation of household-level responses in three strategically selected border areas, generating evidence that can inform both scholarly understanding and practical intervention in one of Nigeria's most food-insecure regions. This research filled these gaps by investigating how households in North-West Nigeria have responded to changes in Nigeria-Niger trans-border trade and how these responses have impacted food security.

1.3 Research Objectives

The study is anchored on the following objectives:

i. To evaluate the food security status of the households engaged in trans-border food trade in North-West Nigeria.

ii. To estimate the share of incomegenerated from trans-border food trade as a proportion of household budget allocated to food.

iii. To assess the extent to which income from trans-border food trade influences household food security status and to examine how this relationship varies across different household types.

1.4 Significance of the Study

This study derives its significance from the critical gaps identified in existing literature and offers contributions at theoretical, empirical, policy, and methodological levels. The research is situated at the intersection of food security studies, borderland livelihoods, and informal cross-border trade (ICBT) in North-West Nigeria.

1.5 Conceptual Clarification

Household: A household is defined as a group of individuals who live together, share meals, and make joint decisions regarding resource allocation and consumption. A group of people who normally live and eat together, sharing resources and jointly making decisions about production, consumption, and livelihood activities. In the border context, households may include members who are temporarily absent for trade or other purposes.

Food Security: Food security has four main pillars: availability, access, utilization, and stability. A situation that exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. This study operationalizes food security through its four dimensions: availability, access, utilisation, and stability.

2.0 Theoretical Framework and Literature Review

2.1 Review of the related literature

Liman and Zasha (2025) examine the impact of informal cross-border trade on food security in the Jibia/Maradi border between Nigeria and Niger Republic, demonstrating that informal trade significantly enhances food availability, stabilizes staple supply (millet, sorghum, livestock products), and improves market access for border communities. Their findings show that flexible, informal trade networks help maintain relatively lower food prices and strengthen local market integration. However, the study also highlights that insecurity—particularly armed banditry—disrupts mobility, increases transaction costs, and constrains food flows. Overall, the authors conclude that informal cross-border trade functions as a critical buffer against food shortages in fragile border regions.

Despite its contributions, the study presents several limitations when considered in relation to this study. Geographically, it is confined to the Jibia/Maradi corridor and does not account for variations in trade structures, security intensity, ethnic trading networks, and enforcement patterns across other borders such as Maigatari–Babura, Baba Mutum and MaiAdua. Analytically, the study focuses largely on food availability and market access, with limited attention to household-level coping strategies such as meal reduction, livelihood diversification, migration, gender-differentiated responses, or reliance on social capital. It is also weakly grounded in established theoretical frameworks like Sen's Entitlement Theory or the Sustainable Livelihoods Framework, and it relies mainly on descriptive, cross-sectional analysis without employing multidimensional

food security indicators or econometric techniques. Furthermore, while insecurity is acknowledged, the study does not systematically examine the security–trade–food nexus, including price volatility, border closures, or shifts between formal and informal trade systems.

This research addresses these gaps by adopting a comparative border approach (Maigatari–Babura, Baba Mutum and MaiAdua-Kongolam), thereby enhancing contextual depth and generalizability within North-West Nigeria. It shifts the analytical focus from aggregate trade–availability relationships to micro-level household behavioral responses to insecurity, market volatility, and trade disruptions. By integrating composite food security indicators, mixed-method analysis, and a strong theoretical foundation, your study situates informal cross-border trade within broader resilience and coping frameworks. In doing so, it contributes context-specific empirical evidence and advances understanding of how borderland households adapt to dynamic trade and security conditions, filling a critical gap in the literature on informal trade and food security in Nigeria's border regions.

The studies reviewed above, spanning 2011 to 2025, collectively illuminate substantial scholarly engagement with trans-border trade and food security in Nigeria, yet simultaneously expose critical lacunae that this thesis is uniquely positioned to address.

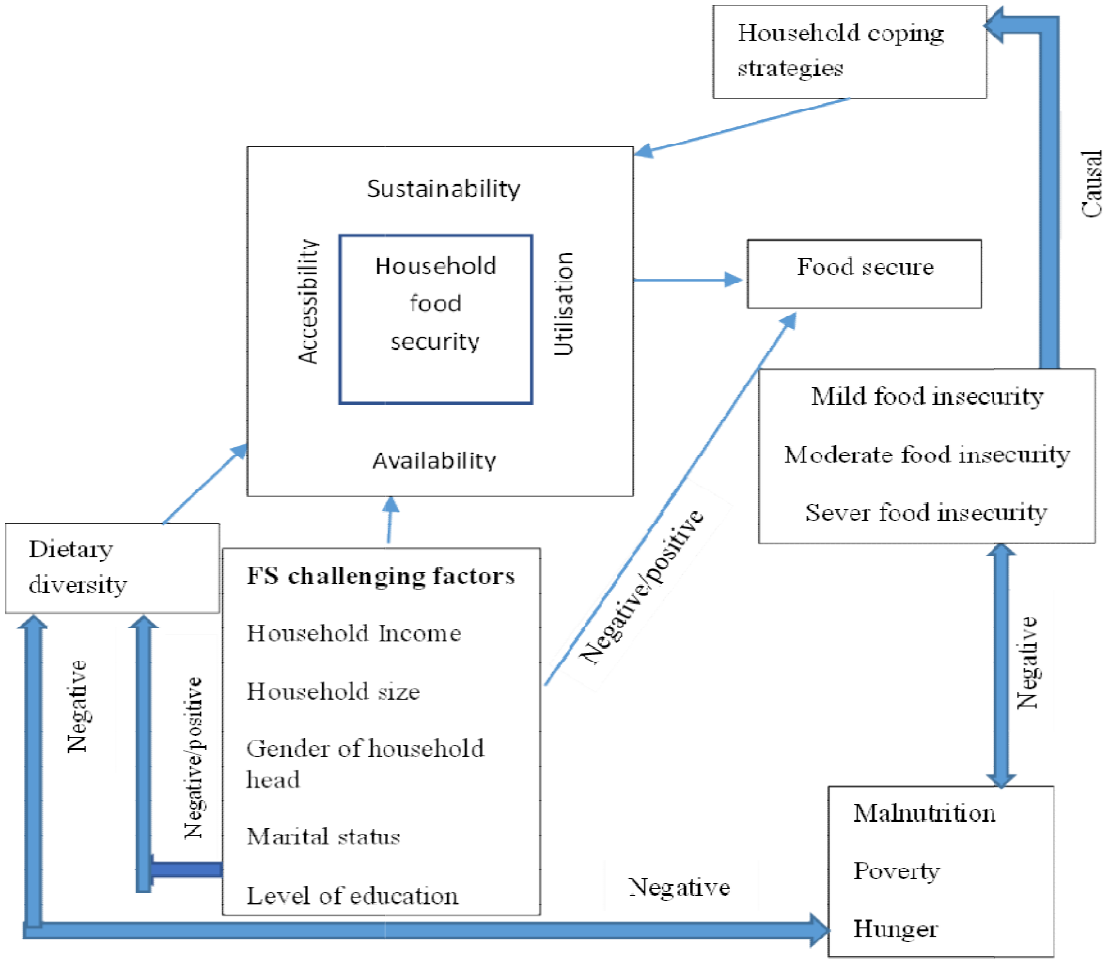
The geographical and conceptual oversights in existing borderland research converge to create a significant blind spot in understanding household food security dynamics. While the Kano-Katsina-Maradi corridor, encompassing the Maigatari-Babura, Baba Mutum and Mai'Adua borderlands, has maintained functional markets amid escalating pressures (Mercy Corps, 2022), these specific sites remain analytically neglected in favour of well-documented areas like Magama-Jibia. This geographical lacuna is compounded by a conceptual failure to recognize households as active agents rather than passive recipients of policy outcomes. Where existing studies simulate welfare effects (Efobi, 2019), measure price fluctuations (Nelson, 2020), or establish macro-level correlations (Shettima et al., 2019), they systematically overlook the intricate coping and adaptation strategies households deploy when trans-border food trade fluctuates. Although Bamidele's (2024) livelihood diversification framework offers theoretical tools for understanding such agency, its application has been confined to agrarian South-Western Nigeria rather than borderland trade-dependent populations, leaving critical questions about how households actively navigate border policy changes entirely unexplored.

This research gap becomes particularly consequential when considering the security-response nexus and attendant methodological limitations facing borderland studies. While recent scholarship acknowledges that armed banditry constrains cross-border trade and food security (Liman and Zasha, 2025; Zachariah and Ngwu, 2023), the mechanisms through which households modify trade participation, adjust consumption, diversify income sources, and deploy social networks under conditions of armed violence remain entirely unexamined. The dominant methodological approaches—macro-quantitative techniques like time-series ARDL and difference-in-difference estimation, alongside trader-focused qualitative interviews—are fundamentally ill-equipped to capture these household-level dynamics. No study has deployed a comprehensive household survey instrument designed to systematically document how trans-border trade participation

affects the four pillars of food security (availability, access, utilisation, stability), nor has any research established the full repertoire of coping and adaptation strategies borderland households employ when their livelihoods are simultaneously threatened by policy shifts and armed violence. This dual gap in understanding both the security dimensions of household response and the methodological tools needed to capture them represents a critical oversight in borderland food security scholarship.

This study directly addresses these four interconnected lacunae through comparative household-level research in two strategically selected North-West borderlands, thereby making an original contribution to the scholarly literature on trans-border trade, food security, and household resilience in contemporary Nigeria.

Figure 1: The Graphical Presentation of Food Security: Conceptual Framework



Source: (OGOT, 2021).

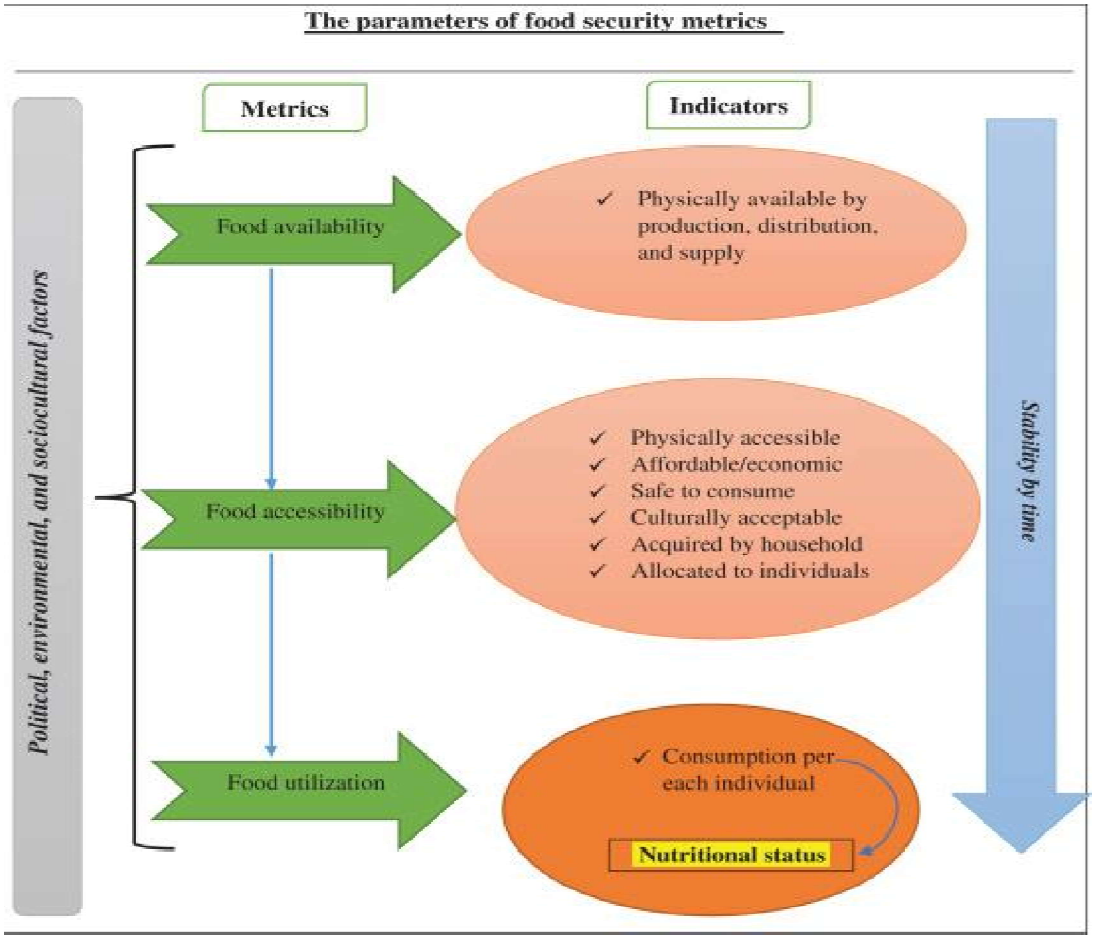
The above graphical presentation of the food security conceptual framework; it shows the relationship between the research variables. Food security has four pillars – availability, accessibility, utilisation, and sustainability. These are major dimensions of food security (Gibson, 2012; Oni &Fashogbon, 2014). Household food security is when every household member has enough food of their choice that meets their dietary requirement (Ajao et al. (2010). A household becomes food insecure if any of the dimensions is lacking and food secure when all the determinants are present. Therefore, Food security is classified into four levels: food secure, mildly food insecure, moderately food insecure, and severely food insecure (Coates et al., 2007). When households are food insecure, they resolve to food coping strategies such as food quality and quantity compromise, borrowing food or money (Farzana et al., 2017; Onunka et al., 2018), which may positively impact their food security level. Other related conditions, such as malnutrition, poverty, and hunger, are associated with food insecurity and poor dietary diversity (citation). They could be a result or cause of food insecurity and poor dietary diversity. Additionally, factors challenging household food security, such as income, household population, marital status, education level, and the gender of the household head, could either negatively or positively affect food security, malnutrition, poverty, and hunger. Similarly, these challenges could positively or negatively impact household food security.

2.1.2 The Dimensions of food security

Food security is a concept that was initially built on three pillars, it became four as its definition evolved. The Food and Agricultural Organisation (2019) referred to these pillars as Availability, Accessibility, Utilisation, and Sustainability or stability, as used in some literature. Timmer (2012), in his three behavioural dimensions of food security, outlined availability, accessibility, and utilization and noted that instability of prices could negatively impair these dimensions. Ogot (2021), in the parameters of the food security matrix (figure 9), portrayed political, environmental, and sociocultural factors as impacting or determining the food security dimensions.

The impacts of these factors on the food security matrices (availability, accessibility, and utilisation) manifest as physical, economic, cultural, and nutritional indicators such as physical and economic access to food, affordability, safe food consumption, food cultural acceptability and allocation, and individual nutrition status. However, stability is expected across all the matrices. Oni and Fashogbon (2014) explained that accessibility suggests that people have the ability and opportunity to get the required quantity of food. Availability implies the physical presence of enough quantity of food such that there is enough for everyone. Sustainability refers to the continuous supply of food for every generation, and utilization is the process applied by the body to utilise food. Noko (2016) noted that economic challenges reduce consumer's spending power and cause low productivity. An economic downturn may hinder the availability, accessibility, and utilization of food and make sustainability uncertain and consequently impair food security.

Figure 2: The Parameters Food Security Matrix



Source: (OGOT, 2021).

2.1.3 Food availability

Food availability was the initial focus of food security as found in the United Nation's 1974 food security definition, The focal point was agriculture, trade, marketing policies, and the transport system. The essence was to ensure enough quantity of food for everyone. Both local and international policies focused on channels to make food available through domestic and international platforms. However, food availability was insufficient to ensure food security (Saweda et al., 2011), but it is irrefutably the basis of food security on which other dimensions exist. Food needs to be available for it to be accessed and utilised. The concept of food availability always implies enough food within the reach of everyone, but, whether this is achievable in our society today and that people can always have access to the food of their choice is questionable, especially in developing countries. Also, how Governments mobilise to ensure food availability at the individual, household, and community levels in these countries may require investigation. Gibson (2012) observed that food availability includes the physical presence of food at farms and in the markets. Matemilola and Elegbede (2017) argued that food availability does not

only consider local food production but also imported foods, stock levels, and the net trade of all food items.

Food availability can be measured at regional, national, community, family, and individual levels. It can be predicted by a good road network connection, functional markets, adequate storage facilities, and technologies for food production and processing (Riely et al., 1999). The existence of infrastructures and technology necessary to sustain food availability in most developing countries remains challenging. Availability of these facilities will enhance food accessibility as food availability alone cannot guarantee food security (Ojo& Adebayo, 2012; Simelane& Worth, 2020).

2.1.4 Food accessibility

Food accessibility is the ability of individuals or households to obtain food (Gibson, 2012). It may be contextualised in two ways - physical access and economic access. Physical access refers to how individuals get the available food; these include access to markets, farms, storehouses, warehouses and food aid, interventions, and soup kitchens. Economic access is the means and resources available to obtain food, such as income, savings, farm produce, and land (Global Strategic Framework, 2017). Similarly, Gibson (2012) elucidates means to access food to include farm produce, income earnings, by exchange or barter, and indirect means through social arrangements at the community level, traditional, state, or national welfare systems, and emergency food aids. Saweda et al (2011) have argued that food availability and accessibility are strongly linked in many developing countries.

These concepts they maintained are connected through food prices. Availability reflects the supply side, while accessibility reflects the demand side of food security. Both the availability and accessibility of food do not satisfy the state of food security. If the available and the accessed food does not meet the dietary requirement, an individual may be malnourished and food insecure (Simelane& Worth, 2020). How the body utilises the food we consume is vital to food security because it determines what nutrient is effective in the body. Food accessibility could be linked to food utilisation; Stephen (2003) noted that people who struggle to access food due to factors like poverty or discrimination would likely face imbalance and inadequate nutrition resulting in health challenges. Therefore, access to food may not translate to food utilisation because the relationship between food accessibility and food utilisation is intricate due to the question of adequate nutrition related to food production, food safety, and health condition.

2.1.5 Food Utilisation

The need for proper absorption and effective use of the food consumed by an individual for regular body function gave rise to food utilisation (Leroy et al., 2015). It is determined by the class, quantity, and quality of food an individual consumes and how the body utilises it. It is reflected in the person's nutritional status. As Gibson (2012) noted, food utilisation is an essential determinant of health status. Lack of access to a good diet, poor feeding practices, poor infant care, and low-quality health services can affect a person's food utilisation level and indirectly impact their potential for economic activities (Riely et al., 1999). Similarly, Jones (2013) observed that the differences in intra-household food distribution, the quality of food eaten, and the variation in an individual's absorption and metabolism level reflects the person's level of food utilisation. Matemilola and Elegbede (2017); Saad (2013) observed that

food utilisation includes employing acceptable methods of food procurement, processing, production, preservation, and feeding pattern; these processes determine the actual quality of the food we consume. Simelane and Worth (2020) observed that it constitutes food insecurity when food is available, accessible, and utilised but not sustainable.

2.1.6 Food Sustainability

Gibson (2012) affirmed that food security could be gained or lost. He noted that regarding the unpredictability that could exist in food security, the idea of risk management within the concept is gaining popularity. It sustains gained food security and measures against hunger, food insecurity, and malnutrition. Risk assessment and management of the vulnerable could go a long way to maintaining stability in food security. Leroy et al. (2015) clarified that sustainability refers to the stability of all food security dimensions. It could be described as having adequate measures to ensure continuity in the availability, accessibility, and utilisation of food always by all people. Also, stability eliminates seasonal food insecurity. Saad (2013) referred to a sustainable food system as one that should satisfy present basic human nutrition needs and not compromise the food needs of future generations. Sustainable food systems should translate to sustainable food security. Sustainable food security ensures that individuals are constantly food secure through sustainable maintenance and usage of natural resources like water, soil, forest, and general biodiversity. With the impact of climate change and receding natural resources, World Bank (2016) promotes sustainable food systems through climate-smart agriculture to secure greater resilience, increased productivity, and reduce environmental footprint. For instance, they lately launched climate-smart agricultural projects in Niger, hoping to establish similar projects in other African countries. Sustainable food availability, accessibility, and utilisation will ensure sustainable food security.

2.2 Neoliberal Theory and Household Food Security

Neoliberal theory (Friedman, 1962; Hayek, 1944) provides the analytical framework for this study, positing that market participation enhances household welfare through income generation and improved access to goods. Applied to trans-border food trade, the theory suggests that households integrated into cross-border value chains should exhibit superior food security outcomes compared to non-participating households (World Bank, 2007). Trade liberalisation promotes resource allocation efficiency, enabling households to specialise according to comparative advantage and access cheaper, more diverse food supplies (Bhagwati, 2004).

However, critical scholarship identifies limitations. Stiglitz (2002) notes that the "perfect conditions" assumed by neoliberal theory—perfect information, perfect competition—are rarely present in developing countries. Granovetter (1985) demonstrates that economic action is embedded in social relationships, not atomistic market transactions. Harvey (2005) argues that neoliberal policies dis-embed capital from social constraints, potentially exacerbating inequality. Ibeanu (2018) shows that trade openness in Nigeria negatively affects informal economy operators. We therefore adopt neoliberal theory not as ideological prescription but as analytical framework to be critically interrogated through empirical investigation.

Methodology

This chapter outlines the research design and analytical approach employed to investigate the relationship between trans-border food trade and household food security in North-West Nigeria. Guided by the study's mixed-methods framework, the methodology integrates quantitative and qualitative strategies to capture the multifaceted socio-economic dynamics, policy implications, and food security challenges stemming from cross-border trade activities.

3.1 Research Design

The study employs a mixed-methods research design that combines quantitative and qualitative approaches in a complementary manner. The quantitative component enables the identification of patterns, relationships, and distributions across a representative sample of households, effectively addressing questions of "how many," "how much," and "what factors are associated with what outcomes." Complementing this, the qualitative component provides depth of understanding about processes, meanings, and contextual factors, shedding light on "how" and "why" particular responses occur and with what consequences. The integration of these methods allows for triangulation of findings, which not only enhances validity but also provides a more complete and nuanced picture than either approach alone could achieve.

3.2 Study Area

The study was conducted in two border corridors: Maigatari-Babura (Jigawa State) and Mai'Adua-Kongolam (Katsina State). These corridors were purposively selected based on: (a) high volume of cross-border food trade, (b) historical significance as trade hubs (Maigatari market established 1870), (c) contrasting regulatory environments (Maigatari characterised by informal crossings; Kongolam by formalised, politicised trade), and (d) documented food security challenges (WFP, 2025).

3.3 Sampling

A multi-stage stratified random sampling design was employed. Stage one selected Local Government Areas bordering Niger Republic. Stage two stratified communities by distance from border (0-4 km, 5-7 km, 8-10 km). Stage three stratified households by primary livelihood (farming, trading, mixed, trade-related services, other). Using Yamane's (1967) formula ($n = N/(1+N(e)^2)$) at 95% confidence level ($p=0.05$), target sample size was 400 households. Final sample comprised 389 valid responses (97.25% response rate). Replacement sampling addressed non-response.

For qualitative component, 25 key informants were purposively selected from five stakeholder categories: government officials (customs, immigration, quarantine), trade association leaders, traditional rulers, transport union representatives, and academics. Selection criteria included institutional authority, length of trade experience (>10 years), and community leadership position.

3.4 Data Collection Instruments

Quantitative: Structured questionnaire (translated to Hausa with back-translation verification) capturing: (a) demographic characteristics (age, marital status, family size, education, income); (b) trade characteristics (commodities, frequency, routes); (c) HFIAS (9 occurrence questions measuring anxiety, quality compromise, quantity reduction, physical consequences); (d) HDDS (12 food groups consumed in previous 24 hours); (e) trade income proportion (percentage of food budget

from trade); (f) coping strategies (18-item inventory adapted from Maxwell et al., 2003).

Qualitative: Semi-structured interview guides covering: (a) household histories of trade engagement; (b) responses to specific policy changes (border closures, duty waivers); (c) decision-making processes around livelihood diversification; (d) perceptions of risks and opportunities; (e) gender dynamics in trade participation; (f) narratives of coping during trade disruptions.

3.5 Data Collection Procedures

Fieldwork occurred October 2025-January 2026 (post-harvest season, peak cross-border activity). A team of three trained research assistants (Federal University Dutsinma) administered questionnaires. Initial access was facilitated through trade association executives. Written informed consent was obtained, with emphasis on right to withdraw. Questionnaires contained no personal identifiers. Qualitative interviews were audio-recorded (average 45 minutes), transcribed verbatim, and translated to English.

3.7 Ethical Considerations

Ethical approval was obtained from [University Ethics Committee]. Informed consent emphasised voluntary participation, right to withdraw, confidentiality, and anonymity. Data were stored on password-protected devices accessible only to research team. Vulnerable participants (widows, elderly) received additional procedural safeguards.

4. Results

4.1 Sample Characteristics

Table 1 presents demographic characteristics of the 389 household respondents. The sample was predominantly male (household heads, consistent with patriarchal structure of Hausa-Fulani border communities), married (82.01%), and engaged in trade as primary occupation (89.97%). Age distribution was bimodal: 39.85% aged 18-30, 32.65% aged 41-50, reflecting both youth entering trade and established traders. Family size was large: 45.76% had 8-10 members, 26.99% had 11+ members (mean = 8.4, SD = 3.2). Educational attainment was low: 43.96% had primary/secondary education, 38.05% Quranic education only, 5.40% university education. Monthly family income was below N18,000 for 31.11% (approximately $12 USD at parallel market rates), with only 7.20% earning above N200,000.

Table 1. Demographic Characteristics of Household Respondents (N=389)

Variable	Frequency	Percentage
Age		
18-30	155	39.85
31-40	51	13.11
41-50	127	32.65

Variable	Frequency	Percentage
51+	56	14.40
Marital Status		
Married	319	82.01
Single	49	12.60
Divorced	14	3.60
Widow/Widower	7	1.80
Family Size		
2-4	72	18.51
5-7	28	7.20
8-10	178	45.76
11+	105	26.99
Education		
Primary/Secondary	171	43.96
Poly/COE	43	11.05
University	21	5.40
Quranic	148	38.05
Monthly Income		
Below N18,000	121	31.11
N19,000-30,000	36	9.25
N31,000-50,000	71	18.25

Variable	Frequency	Percentage
N51,000-100,000	70	17.99
N101,000-200,000	63	16.20
Above N200,000	28	7.20
Trade as Main Income		
Yes	350	89.97
No	38	9.77

4.2 Food Commodities Traded (Objective 1)

Grains dominated trans-border trade: 75.58% of respondents traded grains (millet, sorghum, maize, rice), followed by livestock products (18.25%) and legumes (3.86%). Tubers (2.31%) were negligible. Trade frequency was daily (46.79%), weekly (29.31%), or monthly (23.65%), reflecting commodity perishability and capital requirements. Border route usage was distributed: official border (35.48%), informal border (27.76%), and both (36.25%), indicating that 64% of traders use informal routes at least sometimes. Qualitative interviews revealed that grains flow predominantly from Nigeria to Niger, while livestock moves from Niger to Nigeria—a reciprocal exchange system leveraging comparative advantage.

"Look around this market. The rice you see came from Niger Republic, but the chilli peppers beside it were grown in Katsina and are going to Niger next week. The trade is not a one-way street. We are the supermarket for each other." (AlhajiGarba, Market Chairman, Maigatari)

4.3 Household Food Security Status (Objective 2)

Using HFIAS categorisation (Coates et al., 2007), 22% of households were food secure, 38% marginally food secure, 28% moderately food insecure, and 12% severely food insecure (Figure 1). HDDS scores averaged 7.2 (SD=2.1) out of 12, indicating moderate dietary diversity but significant reliance on staple grains (consumed by 98% of households) and limited consumption of animal-source proteins (consumed by 24% of households, typically only weekly).

Figure 1. Household Food Security Classification (N=389)

[Bar chart showing: Food Secure 22%, Marginally Food Secure 38%, Moderately Food Insecure 28%, Severely Food Insecure 12%]

Qualitative interviews illustrated the lived experience of moderate food insecurity:

"I am always just one step ahead of hunger. If the price of beans drops in the Niger market, I lose money. If I lose money, I have to tell my wife to make only one meal that day instead of

two. We are not starving, but we are always... adjusting. It is a tightrope walk." (Rali, 30, Bean Trader, Mai'adua)

Severe food insecurity was characterised by complete deprivation following failed trade transactions or asset confiscation:

"My son was stopped at the border last month. They took his entire load of cooking oil. He came home with nothing. For three days, we ate only porridge made from the leftover cassava flour in the barn. We are traders, yes. But we are also one bad day away from being beggars." (Grandmother and Guardian, Maiadua village)

4.4 Effect of Trade Income on Food Security (Objective 3)

The relationship between trade income and food security varied by dependence level. Trade income as proportion of food budget was categorised as: supplemental (10-25% for 40% of households), moderate dependence (26-50% for 35%), high dependence (51-80% for 15%), and marginal (<10% for 10%). ANOVA revealed significant differences in HFIAS scores across dependence categories ($F(3,385)=12.47$, $p<.001$). Post-hoc Tukey tests showed that high-dependence households had significantly higher food insecurity scores than moderate-dependence ($p=.002$) and supplemental ($p<.001$) households.

Qualitative narratives explained this relationship. A high-dependence millet trader described existential vulnerability:

"If the border closes for one week, my children will not eat. Not just eat well—they will not eat at all. I have no farm, only this trade in millet. The profit from one trip buys the food for the next two weeks. It is my salary." (Aminu, 42, Millet Trader, Maigatari)

Conversely, a moderate-dependence farmer-trader described trade as enhancing rather than constituting food security:

"The trading money is what we call 'the salt in the soup.' It makes the difference. My farm gives us millet and sorghum for most of the year, but it cannot buy us oil, sugar, or medicine. That is what the cross-border trade is for. It covers the gaps." (Musa, 55, Farmer and part-time Livestock Trader, Babura)

Trade income improved household food access for 73.01% of respondents, while 24.94% reported no improvement. Compared to before trade engagement, 71.47% reported improved food situation, 26.48% reported no change, and 1.80% reported worsening. The 27% reporting no improvement or worsening despite trade participation constitutes the "food trader paradox"—handling food commodities while experiencing food insecurity.

4.5 Share of Trade Income in Food Budget (Objective 4)

Distribution of trade income contribution to food budgets is presented in Table 2. The modal category was supplemental (10-25% for 40% of households), followed by moderate dependence (26-50% for 35%). However, the combination of moderate and high dependence (50% of households) indicates that half of trading households derive at least 26% of their food budget from trade—a substantial proportion given that 89.97% identified trade as primary income source.

Table 2. Trade Income Proportion of Household Food Budget (N=389)

Dependence Category	Proportion of Food Budget	Frequency	Percentage
Marginal	<10%	39	10.0
Supplemental	10-25%	156	40.0
Moderate	26-50%	136	35.0
High	51-80%	58	15.0

A general goods trader revealed how thin profit margins mediate the relationship between trade participation and food budget contribution:

"People think we are rich because we move goods across the border. But the profit margins are very small. After I pay for transport, the bribes at the checkpoints, and the market fees, what is left? Maybe it pays for the family's food for a week. The rest of the month, we rely on my wife's provisions shop." (Kabiru, 38, General Goods Trader, Maigatari)

4.6 Coping Strategies and Effectiveness (Objective 6)

Households deployed coping strategies sequentially as food insecurity escalated (Table 3). Initial strategies compromised food consumption: reducing meal size (78.92% reported sometimes/always), reducing meal frequency (55.53% reported reducing meals when income declines), and substituting preferred foods with cheaper, more filling alternatives. A grains trader described the initial adjustment:

"We cook the food that will satisfy us the most—usually tuwo with miyantaushe. At least it fills the stomach even without meat. When business is slow at the border, we have to make the grains last longer." (Malam Musa Abubakar, Maigatari)

Table 3. Coping Strategy Prevalence (N=389)

Coping Strategy	Frequency	Percentage
Reduce meal size	307	78.92
Reduce meals when income declines	216	55.53
Borrow food/money	158	40.62
Use savings	14	3.60

Coping Strategy	Frequency	Percentage
Perceived effectiveness		
- Very effective	215	55.27
- Moderately effective	108	27.76
- Not effective	65	16.71

Second-stage strategies involved alternative provision: engaging casual labour (especially border loading), selling assets, and participating in group savings (adashi). A livestock trader described asset sales as strategy of last resort:

"Yes, some time ago when nothing remained to eat and no work at the border, I sold my bicycle to a fellow trader to feed my family." (Malam Yusuf Muhammad, Maiadua-Kongolam)

Third-stage strategies activated informal social networks. Borrowing food/money (40.62%) and purchasing on credit were nearly universal practices. A grains transporter described network-based assistance:

"Yes, I borrow food and money from friends and relatives—especially when the Nigerien traders delay payment or when the border security becomes difficult." (Malam Bello Adamu, Maiadua-Kongolam)

However, networks also trapped households in debt cycles:

"When we cannot repay, it becomes difficult to approach that person again to borrow. Then when we finally make money from our small trade, we must settle bills, returning us to the starting point." (MalamIdris Musa, Maiadua-Kongolam)

Perceived effectiveness of coping strategies was moderate: 55.27% rated strategies "very effective," 27.76% "moderately effective," and 16.71% "not effective." Strategies rated "not effective" included sending children to live elsewhere (disrupted family unity, emotional costs), withdrawing children from school (compromised future opportunities), and asset sales (depleted productive capital). A grandmother described the emotional toll:

"Because of our condition, we sent my grandchildren to live with my brother in Babura. We couldn't feed them and pay their school fees. It pains me especially seeing the children cry when hungry." (MalamIdris Musa, Maiadua-Kongolam)

4.7 Role of Informal Social Networks (Objective 5)

Informal social networks and institutions played critical assistance roles. Belonging to informal traders' associations or networks was reported by 61.95% of respondents. However, only 46.27% reported that networks helped access market information, while 49.61% reported no such assistance. Informal institutions provided credit or other assistance to 62.72% of respondents, primarily through adashi savings groups and mosque zakah committees.

A livestock trader described the flexibility of network-based credit:

"I borrow money from a woman who sells foodstuffs in my village. She understands this border business—sometimes we make profit, sometimes we don't." (MalamHamzaAbubakar, Maigatari)

Mosque zakah committees provided episodic institutional support:

"I received support from the mosque zakah committee during the last Ramadan—some rice and millet. It helped greatly." (Malam Yusuf Muhammad, Maiadua-Kongolam)

However, participants unanimously reported absence of government or NGO assistance:

"I have received no government support, even though I vote in every election... but when hardship comes, we depend on Allah and kind neighbors." (MalamIdris Musa, Maiadua-Kongolam)

5. Discussion

5.1 The Food Trader

Our most striking finding is the "food trader paradox": households engaged in trans-border food trade—handling grains, livestock, and other food commodities—nonetheless experience significant food insecurity, with 40% classified as moderately or severely food insecure. This paradox challenges neoliberal assumptions that market participation automatically improves household welfare (Friedman, 1962; Bhagwati, 2004). Instead, our findings align with critical scholarship demonstrating that participation alone is insufficient; what matters is net profitability after transaction costs, diversification, and access to safety nets (Stiglitz, 2002; Granovetter, 1985).

The paradox is explained by three mechanisms. First, thin profit margins: as Kabiru's testimony revealed, transport costs, unofficial payments ("bribes"), and market fees consume substantial portions of gross income. This finding aligns with World Bank (2025) documentation that logistical inefficiencies at the Baba Mutum crossing generate $4 million in additional annual costs. Second, high dependence without diversification: high-dependence households (15% deriving 51-80% of food budget from trade) exhibited significantly worse food security outcomes than moderate-dependence households with diversified livelihoods (farming plus trade). This supports Ellis's (2000) distinction between diversification as accumulation (opportunity-driven) versus diversification as survival (necessity-driven). Third, exposure to covariate shocks: border closures, security incidents, and policy shifts affect all traders simultaneously, overwhelming individual coping capacity and demonstrating limitations of market-based risk management (Dercon, 2002).

5.2 Sequential Coping Strategies and Resilience Erosion

Households deployed coping strategies in a sequence reflecting escalating severity: consumption compromise → alternative provision → network activation → asset depletion → children's education withdrawal → family separation. This sequence aligns with Maxwell et al. (2003) coping framework but extends it by documenting the irreversible consequences of later-stage strategies. Children withdrawn from school rarely return; sold assets (bicycles, livestock, jewellery) cannot be repurchased; family separation disrupts social cohesion and care arrangements.

The effectiveness paradox is critical: strategies providing immediate food access often undermine long-term resilience. Selling a bicycle provides cash for one week's food but

eliminates transport capacity for future trade. Borrowing from a neighbour preserves short-term consumption but creates debt cycles that trap households in chronic precarity. This finding supports Devereux's (2006) distinction between coping (short-term, reversible) and adaptation (long-term, irreversible)—but reveals that border households are forced into irreversible adaptations as coping mechanisms due to absence of formal safety nets.

5.3 The Primacy of Informal Social Networks

The absence of government or NGO assistance reported by all participants underscores the primacy of informal social networks as safety nets. Friendship networks, kinship ties, and mosque zakah committees function as credit providers, food lenders, and risk-sharing mechanisms. This finding confirms Granovetter's (1985) embeddedness thesis: economic action in border communities is inseparable from social relationships. However, our findings also reveal network limitations: episodic support (Ramadan-focused), exclusion of poorest households from adashi groups (unable to afford contributions), and debt cycles that can deepen rather than resolve poverty.

The contrast between community-level network support and state absence is stark. Despite Nigeria's National Social Safety Net Program and various agricultural interventions, no participant reported receiving government assistance. This represents a significant policy failure, particularly given that border communities are disproportionately vulnerable to policy shocks (border closures, duty waivers) generated by the state itself.

5.4 Theoretical Implications

Our findings both support and challenge neoliberal theory. Consistent with neoliberal predictions, trade participation generates income that enhances food access for 73% of households. Market integration enables access to diverse food supplies: border communities consume grains from both Nigeria and Niger, benefiting from price arbitrage (Fackler& Goodwin, 2001). Trade responds to price signals: when Nigerian grain prices rise, Nigerien trucks arrive with millet during lean season, as documented by the community elder.

However, neoliberal assumptions about rational calculation and perfect information are violated. Information asymmetries are pervasive: traders lack accurate price forecasts, regulatory knowledge, or security intelligence. Transaction costs (unofficial payments) are substantial and unpredictable. Most critically, the assumption that market participation benefits all participants fails: 27% of traders reported no improvement or worsening food situation. The distributional consequences documented by Drewnowski and Darmon (2005) in the US "neoliberal diet" appear in Nigeria: those handling food are not necessarily those eating well.

We therefore propose an augmented framework: "embedded market participation" recognising that trade-food security relationships are mediated by diversification (portfolio of activities reduces risk), transaction costs (net profitability after unofficial payments determines welfare effects), networks (social capital provides insurance but can create debt dependency), and shocks (covariate shocks overwhelm individual coping). This framework integrates neoliberal insights about market incentives with sociological attention to embeddedness and structural constraints.

5.5 Policy Implications

First, targeted credit facilities for informal traders: high-dependence households need

working capital to avoid predatory lending and asset sales. The N150 billion Agricultural Input Support Window (Yakubu, 2025) should be extended to include trade-based livelihoods, not only farming.

Second, border management reforms: the estimated $4 million annual cost of inefficiencies at the Baba Mutum crossing (World Bank, 2025) represents value extracted from traders' food budgets. Reducing unofficial checkpoints, streamlining customs procedures, and implementing transparent fee structures would increase net profitability without changing gross trade volumes.

Third, integration of informal networks into formal safety nets: mosque zakah committees and adashi groups demonstrate effective local delivery mechanisms. Government food assistance could be channelled through these trusted institutions rather than creating parallel, unfamiliar distribution systems.

Fourth, livelihood diversification support: moderate-dependence households (farming plus trade) exhibited better food security than high-dependence (trade-only) households. Programmes supporting agricultural inputs, storage facilities, or processing equipment enable households to maintain diversified portfolios.

Fifth, gender-sensitive programming: women traders (Yan Kwalanga) were disproportionately represented in severely food insecure categories. Interventions should address women's specific constraints: smaller capital bases, exclusion from male-dominated transport networks, and care responsibilities limiting mobility.

6. Conclusion

This mixed-methods study examined the relationship between trans-border food trade participation and household food security in Nigeria's North-West borderlands. Using survey data from 389 households and qualitative interviews with 25 key informants across the Maigatari-Babura and Mai'Adua-Kongolam corridors, we documented a fundamental paradox: households handling the largest food volumes nonetheless experience significant food insecurity. While 89.97% identified trade as primary income source, 40% were classified as moderately or severely food insecure. Trade income contributed 10-25% of food budgets for 40% of households, 26-50% for 35%, and 51-80% for 15%. Coping strategies—deployed sequentially from consumption compromise through alternative provision to network activation—provided immediate relief but often undermined long-term resilience through debt cycles, asset depletion, and human capital erosion.

We conclude that trade participation alone does not guarantee food security. Rather, the trade-food security relationship is mediated by diversification (portfolio of activities), net profitability (transaction costs), social capital (network access without debt dependency), and shock exposure (covariate events overwhelming individual coping). Informal social networks function as primary safety nets in the absence of government support, but networks have limitations: episodic assistance, exclusion mechanisms, and debt cycles.

Policy recommendations include targeted credit facilities for informal traders, border management reforms reducing unofficial payments, integration of informal networks into formal safety nets, livelihood diversification support, and gender-sensitive programming. Future research should examine the effectiveness of these interventions through longitudinal designs tracking household food security trajectories over policy cycles.

References

Adekola, T. A. (2015). *Cross-border trade and food security in West Africa: A case study of Nigeria-Niger borderlands*. University of Ibadan Press.

Bhagwati, J. (2004). *In defense of globalization*. Oxford University Press.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.

Channels Television. (2024, March 15). Customs release six seized grain trucks at Kongolam border. *Channels Television*. https://www.channelstv.com

Coates, J., Swindale, A., &Bilinsky, P. (2007). *Household Food Insecurity Access Scale (HFIAS) for measurement of food access: Indicator guide*. Food and Nutrition Technical Assistance Project.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Dercon, S. (2002). Income risk, coping strategies, and safety nets. *World Bank Research Observer, 17*(2), 141-166.

Devereux, S. (2006). *Distinguishing between chronic and transitory food insecurity in emergency needs assessments*. Institute of Development Studies.

Drewnowski, A., &Darmon, N. (2005). The economics of obesity: Dietary energy density and energy cost. *American Journal of Clinical Nutrition, 82*(1), 265S-273S.

Efobi, U. (2019). Cross-border trade and infrastructure: A gender analysis of welfare outcomes in Nigeria. *Journal of African Economies, 28*(3), 245-272.

Ellis, F. (2000). *Rural livelihoods and diversity in developing countries*. Oxford University Press.

Fackler, P. L., & Goodwin, B. K. (2001). Spatial price analysis. In B. L. Gardner & G. C. Rausser (Eds.), *Handbook of agricultural economics* (Vol. 1, pp. 971-1059). Elsevier.

Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs—principles and practices. *Health Services Research, 48*(6pt2), 2134-2156.

Food and Agriculture Organization. (2008). *An introduction to the basic concepts of food security*. FAO.

Friedman, M. (1962). *Capitalism and freedom*. University of Chicago Press.

Golub, S. S., & Hansen-Lewis, J. (2022). Informal cross-border trade in West Africa. In T. Mkandawire (Ed.), *African economic development* (pp. 234-258). Routledge.

Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology, 91*(3), 481-510.

Harvey, D. (2005). *A brief history of neoliberalism*. Oxford University Press.

Hayek, F. A. (1944). *The road to serfdom*. Routledge.

Ibeanu, O. (2018). Trade liberalization and the informal economy in Nigeria. *African Studies Review, 61*(2), 89-112.

International Crisis Group. (2021). *Stopping Nigeria's spiraling farmer-herder violence*. ICG Report No. 302.

Liman, A., &Zasha, Z. T. (2025). Impact of informal cross-border trade on food security in Nigeria: An analysis of Jibia/Maradi border area of Katsina State. *Journal of Borderlands Studies, 40*(1), 45-67.

Maxwell, D., Watkins, B., Wheeler, R., & Collins, G. (2003). *The coping strategies index: A tool for rapid measurement of household food security and the impact of food aid programs*. World Food Programme.

Meagher, K. (2010). *Identity economics: Social networks and the informal economy in Nigeria*. James Currey.

Okafor, C. (2024, October 15). N97bn duty waivers: How imported food commodities threaten Nigerian farmers. *Premium Times*. https://www.premiumtimesng.com

Shettima, F. A., Zakaree, S., Sa'ad, S., &Shettima, Y. A. (2019). Impact of cereals production and cross-border trade on food security in Nigeria: A time series analysis (1986-2017). *Agricultural Economics Review, 20*(2), 112-128.

Stiglitz, J. E. (2002). *Globalization and its discontents*. W.W. Norton.

Swindale, A., &Bilinsky, P. (2006). *Household Dietary Diversity Score (HDDS) for measurement of household food access: Indicator guide*. Food and Nutrition Technical Assistance Project.

Unogwu, J. (2025). Duty-free import window and Nigerian agriculture: A critical assessment. *West African Journal of Agricultural Economics, 12*(1), 33-49.

Verter, N. (2019). Food security and trade in food products in Nigeria. *ActaUniversitatisAgriculturaeetSilvi culturaeMendelianaeBrunensis, 67*(6), 1547-1558.

World Bank. (2007). *World development report 2008: Agriculture for development*. World Bank.

World Bank. (2025). *Transport connectivity for food security in Africa: Priority border posts assessment*. World Bank Publications.

World Food Programme. (2025). *Nigeria food security outlook: December 2025*. WFP.

Yahaya, U. I., Bernard, O. A., Zakaree, S., Salihu, A., & Alfa, Y. (2025). Trade openness and food security nexus among selected ECOWAS member countries. *Economic Change and Restructuring, 58*(1), 1-24.

Yakubu, S. (2025, January 10). Budget Office clarifies food import waiver implementation. *The Guardian*. https://www.guardian.ng

Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.