

Farming Households' Vulnerability to Livelihood Insecurity in Urban and Rural Areas of Ekiti State, Nigeria

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ABSTRACT

Purpose: The agricultural sector in Nigeria faces multifaceted challenges that heighten the vulnerability of farming households. This study examined key drivers of vulnerability- climate change, biological hazards, socio-infrastructure deficits, economic hardship, and political instability among rural and urban households in Ekiti State, Nigeria.

Research Method: The study employed a two-stage sampling procedure to select a total of 336 farming households. Data were analyzed using descriptive statistics such as mean and standard deviation, and an ordinal logistic regression model.

Findings and Values: Drought was the most severe insecurity in both urban ($\bar{x} = 2.35$) and rural ($\bar{x} = 2.13$) areas, followed by kidnapping and cattle encroachment. Regression analysis showed that age, farming experience, and household size influenced kidnapping vulnerability in rural areas, while education reduced cattle encroachment vulnerability in urban areas. Only 25.4% of urban and 17.6% of rural farmers adopted resilience strategies. The study recommends targeted interventions such as rural security strengthening, enforcement of Ekiti State's anti-grazing laws, and community-based surveillance to reduce vulnerability and protect livelihoods, especially in rural Ekiti State where threats are more pronounced.

Keywords: Farming household, Livelihood insecurity, Vulnerability, Cattle encroachment, Rural, Urban.

INTRODUCTION

The agricultural sector plays a pivotal role in our world, as it interacts closely with the environment and relies heavily on natural resources for production. This sector is fundamental to the livelihoods of over 2.5 billion people globally, underscoring its significance for development (Abubakar 2021). Urgent action is needed to fortify agricultural systems and make them more resilient (FAO 2021).

Nigeria, in particular, stands out as an agrarian nation, with approximately 70% of its population engaged in the agricultural sector (Muhammad

et al. 2015). Over the years, this sector has diversified into various domains, including production, manufacturing, sales, services, and enterprise (Bamigboye *et al.* 2021).

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However, with Nigeria's population surging from 206.1 million people in 2020 to an expected 400 million by 2050 (World Bank 2021), there is an urgent need to boost agricultural productivity through advanced technologies and innovations. Ensuring food security and nutrition (FAO 2021) necessitates not only expanding agricultural land but also maximizing production gains from existing resources to meet the rising food demand due to rapid population growth (Fitton *et al.* 2019). Vulnerability, in the context of agriculture, encompasses multiple dimensions (Nath 2011, Thabane 2015, Sujakhu *et al.* 2018) and can be measured in various ways. Birkmann (2006) defines vulnerability as the diminished capacity of an individual or group to cope with, resist, and recover from the impact of natural or man-made hazards. According to Turner *et al.* (2003), vulnerability refers to the likelihood of a system, sub-system, or its components experiencing harm due to exposure to a hazard or stressor. In this study, vulnerability is viewed as the inability of individuals or groups to build resilience against any form of insecurity threatening their livelihood.

The agricultural sector is particularly susceptible to natural hazards compared to other sectors such as industry, commerce, and tourism. Its heavy reliance on weather and climatic factors, coupled with the intensity of these factors, makes it vulnerable and leads to reduced expectations for agricultural output. This heightened vulnerability has detrimental effects on crop and livestock yields, forestry, ecosystems, and the overall human food chain (FAO 2021). In response, FAO has developed a comprehensive approach to resilience, encompassing natural hazards, food chain crises, and conflicts.

Despite the agricultural sector's significant contribution to the Nigerian economy, it faces several challenges, including an inefficient land tenure system, climate change impacts, high production costs, inadequate transportation infrastructure, limited access to capital, substantial pre and post-harvest losses, and poor market access (FAO 2021). These issues render farmers vulnerable to livelihood insecurity. Sujakhu *et al.* (2018) conducted a livelihood vulnerability assessment, categorizing

vulnerability into four levels: very highly vulnerable, highly vulnerable, moderately vulnerable, and least vulnerable. Farming activities are not limited to rural areas; farmers in urban settings also cultivate crops within their cities. This study identifies key factors that define the vulnerability of households and communities in both urban and rural areas. These factors include exposure to climate change variability, biological hazards, socio-infrastructure challenges, economic disparities, and political uncertainties.

Turner *et al.* (2003) asserted that vulnerability primarily centers on risk, whereas resilience pertains to coping strategies. Several vulnerability assessment approaches have been developed over time, including the Southern Africa Vulnerability Initiative (SAVI) framework, the Household Economy Approach (HEA), and the Household Livelihood Security Analysis (HLSA). This study adopted the HLSA approach, which is rooted in sustainable livelihood principles (Frankenberger *et al.* 2002). The HLSA is a multidisciplinary framework that integrates Participatory Rapid Appraisal and Rural Rapid Appraisal techniques to analyze both quantitative and qualitative data affecting livelihoods, encompassing aspects such as food security, health, economics, education, and empowerment (Lindenberg 2002).

Empirical studies across Nigeria and Sub-Saharan Africa have applied these frameworks to assess household vulnerability. For example, Muhammad-Lawal *et al.* (2012) interviewed 120 respondents in Ekiti State, Nigeria, to assess farming households' vulnerability to climate change. The study identified shocks such as droughts, pest and disease outbreaks, and flooding, alongside trends like price fluctuations, policy inconsistencies, poor access to credit, and seasonal manpower shortages. The findings revealed that irregular rainfall negatively affected productivity, income, and living standards. Households responded by diversifying income sources to cope with climate variability. Similarly, Thabane (2015) classified household vulnerability into high, moderate, and low levels, and reported a 7.8% increase in highly vulnerable households between 2009

and 2013.

Yang *et al.* (2020) emphasized that food and livelihood security are essential elements within the sustainable livelihood framework. Their study identified multiple conditions such as natural, human, social, physical, financial, cultural, and informational, as determinants of livelihood assets. Guido *et al.* (2020), Bacon *et al.* (2021) also highlighted how climate variability and multi-hazard conditions such as high food prices, plant diseases, and political or economic instability, compound livelihood vulnerability among smallholder farmers.

To address these challenges, Ado *et al.* (2019) and Mutea *et al.* (2019) stressed the importance of building resilience through adaptive coping strategies that ensure food availability, accessibility, utilization, and stability, as well as income and asset protection. While these previous studies have provided important insights, most have primarily concentrated on climate-related shocks and their impact on agricultural productivity. However, there remains a significant empirical gap in understanding how multiple dimensions of vulnerability such as biological, socio-infrastructural, economic, and political, interact to influence livelihood insecurity in both urban and rural farming contexts. Moreover, few studies comparatively assess coping strategies adopted by farming households across different settlement types.

This study addresses this empirical gap by examining not only climate-induced vulnerabilities but also broader factors affecting livelihood security. It aims to compare rural and urban disparities and identify adaptive strategies employed by farming households to withstand various forms of livelihood threats adopted by farming households in Ekiti State.

MATERIALS AND METHODS

Study area

This study was conducted in Ekiti State, located in the South West region of Nigeria.

Geographically, Ekiti State lies between latitudes 7°15'N and 8°5'N and longitudes 4°45'E and 5°45'E (Olorunfemi & Fasinmirin 2017). The research focused on farming household heads residing in Ado Local Government Area (LGA), representing the urban population, and Ido/Osi LGA, representing the rural population. The choice of Ado LGA was based on its status as the state capital and its urban features, such as high population density, presence of modern infrastructure, multiple markets, and a lot of urban development projects. Farming still exists in peri-urban communities within the Ado LGA such as Igrigiri, Ago Aduloju, Igbo Aso, Aso Ayegunle, Oke Osun, Emirin, Erinfun, Ilamuo, Ajebamidele, Temidire, and Ureje. Ido/Osi LGA was selected as the rural counterpart due to its distinct agricultural profile, low population density, compared with Ado LGA, and presence of traditional farming practices. The area hosts a government-established farm settlement in Orin-Ekiti and benefits from the nearby Ero Dam, which supports irrigation and fish farming. Ido/Osi LGA also comprises several agrarian communities, including Orin, Ayetooro, Ipepe, Omieranko, Iniwe, Okefolo, Oke-Eniju, Borisade, Oke-Egan, Eforo, Aba Gara, Sakete, Alepupa, Ajowa, among others.

Data collection and analysis

The study employed a two-stage sampling procedure to select participants. In the first stage, two LGAs (Ado and Ido/Osi) were purposively selected to represent urban and rural farming populations, respectively, based on their demographic and agricultural characteristics. In the second stage, six farming communities were randomly selected from each LGA. From Ado LGA, the selected farming communities included Igrigiri, Ago Aduloju, Temidire, Emirin, Ureje, and Oke Osun. From Ido/Osi LGA, selected farming communities were Orin, Ayetooro, Okefolo, Borisade, Oke-Egan, and Alepupa. A list of farming households was obtained from the local extension office and used as the sampling frame. Using simple random sampling, a total of 336 farming household heads were selected: 201 from Ado LGA and 135 from Ido/Osi LGA. The sample distribution, as at the time of data collection between April

and May 2022, reflects the higher concentration of farming households in Ado LGA, where agriculture is still practiced at a considerable scale despite urbanization. In contrast, Ido/Osi LGA is predominantly rural with more dispersed farming settlements. The proportional allocation was guided by the observed population of active farming households in each LGA at the time of data collection. Primary data were collected through a structured questionnaire administered as an interview schedule, allowing for clarity and accommodating varying literacy levels among respondents. Information gathered included household characteristics, levels of livelihood insecurity and measures adopted to build resilience.

To assess livelihood vulnerability, respondents were asked to indicate the extent to which various challenges affected their livelihoods across five categories: climate change, biological hazards, socio-infrastructural, economic, and political risks. Responses were recorded using a 3-point Likert scale (1 = not vulnerable, 2 = vulnerable, 3 = highly vulnerable) for five categories of livelihood insecurity, using nineteen (19) items. Mean scores and standard deviations were computed for each indicator, and the indicators were ranked to determine the most pressing sources of livelihood insecurity in both urban and rural areas.

In addition, responses from farming households regarding measures taken to enhance resilience against insecurity were computed and expressed as a percentage of the total respondents who reported taking specific actions. These percentages reflect the proportion of respondents in each area who adopted any resilience-building measure.

Ethical considerations were observed during data collection. Verbal informed consent was obtained from all participants after explaining the objectives and voluntary nature of the study. Participants were assured of confidentiality and anonymity, and that their responses would be used solely for academic purposes. The study protocol was approved in the Department of Agricultural Extension and Rural Development,

Federal University, Oye Ekiti.

The study employed an Ordinal Logistic Regression (OLR) model to predict the factors influencing the perceived vulnerability of livelihood insecurity among farming households. Respondents rated various livelihood challenges on an ordinal scale (1 = not vulnerable, 2 = vulnerable, 3 = highly vulnerable). The OLR model was chosen because the dependent variable is ordinal in nature, allowing for estimation of the probability that a respondent would perceive a given challenge as more or less vulnerable, based on their socio-economic and farm characteristics. This approach preserves the natural order of vulnerability levels in the analysis.

An Omnibus test was conducted to determine the significance of the explanatory variables. Specifically, the vulnerability indices for kidnapping and cattle encroachment on farmlands, categorized as not vulnerable, vulnerable, and highly vulnerable, were regressed against socio-economic characteristics, including age, years of schooling, farming experience, household size, and farm size. This study modeled kidnapping and cattle encroachment on farmlands as dependent variables due to their prominence as key threats to farming households' livelihood in Ekiti State. This decision was based on multiple studies and reports that identified these factors as major sources of rural insecurity and agricultural disruption in the region. Olutegbe & Ogungbaro (2022) examined the efficacy of the Ekiti State Anti-Grazing Law and highlighted persistent cattle encroachment on farmlands as a major cause of conflict between herders and farmers, despite the enactment of the law.

Similarly, Ilori & Adeleye (2021), Buhari & Ediagbonya (2023) reported an increase in kidnappings targeting farmers, which has led to abandonment of farmlands and reduced agricultural output. These threats not only endanger the lives of farmers but also disrupt farming activities, thereby worsening livelihood insecurity. Data analysis was performed using the IBM Statistical Package for Social Scientists

(SPSS).

The study also evaluated the fitted OLR model through the Omnibus test and assessed the model's effectiveness. The model was defined as follows, following the approach used by Sujakhu *et al.* (2018):

$$\ln \left(\frac{P(Y \leq j | X)}{1 - P(Y \leq j | X)} \right) = \alpha_j + \sum_{i=1}^5 \beta_i X_i + e$$

Where;

- Y represents vulnerability to livelihood insecurity on a 3-point scale (highly vulnerable = 3, moderately vulnerable = 2 and invulnerable = 1)
- $j = 1, 2, 3$
- α = threshold
- $\beta_1 - \beta_5$ are estimated parameters
- $X_1 - X_5$ represent the socio-economic characteristics (Age, years of schooling, farming experience, household size and farm size)
- e represents the error term

RESULTS AND DISCUSSION

Socio-economic characteristics of head of farming household

In summarizing the socio-economic characteristics of the heads of farming households presented in Table 1, the findings indicate that the mean age of household heads in urban areas was 47 years while in rural areas, it was 57 years. This suggests that rural farmers tend to be older, possibly due to youth migration to cities. These findings are consistent with Adeyemo and Kuhlmann (2009), who reported that most urban farmers in Southwestern Nigeria were within the middle-aged bracket of 41–50 years. Similarly, Kehinde *et al.* (2024) found that rural household heads in Nigeria had a mean age of 57 years, indicating they remain within the productive age group, despite being older

than their urban counterparts are. Table 1 also reveals that the average number of years of schooling for respondents is higher in urban areas (11 years) compared to rural areas (7 years). This disparity in educational attainment has implications for livelihood vulnerability, as education enhances access to information, better decision-making, adoption of improved technologies, and diversification of income sources. Therefore, lower educational levels among rural households may limit their adaptive capacity and increase their susceptibility to livelihood shocks, contributing to higher vulnerability levels.

Conversely, farmers in rural areas have more years of farming experience and larger household sizes, with an average of 25 years of experience and 7 persons per household, whereas in urban areas, the corresponding figures are 17 years of experience and 4 persons per household. Larger household sizes may place additional pressure on limited resources in rural areas, contributing to heightened vulnerability.

Similarly, greater farming experience in rural areas may suggest accumulated adaptive knowledge; however, without complementary resources such as access to credit to purchase farm inputs, extension services and training on various adaptive strategies, market access to reduce post-harvest losses, even experienced farmers may remain vulnerable, as they are unable to capitalize fully on their knowledge and skills. Rural farmers also cultivate larger land areas, averaging 2 hectares compared to 1 hectare among urban farmers, reflecting the urban land constraints that limit production potential and increase livelihood risk. The persistence of land fragmentation in Nigeria further exacerbates this challenge (Apata *et al.* 2019).

Ranking of livelihood insecurity

Based on the mean scores of livelihood insecurity presented in Table 2, drought emerged as the highest-ranked concern in both urban and rural areas, with mean values of $\bar{x} = 2.35$ and $\bar{x} = 2.13$ respectively. This suggests that farming households in both locations perceive

Table 1. Head of Farming Household Characteristics.

Characteristics	Mean $\pm$ SD		Mean $\pm$ SD	
	Urban	~	Rural	~
Age (yrs.)	47.20 $\pm$ 14.01	47 years	57.15 $\pm$ 11.29	57 years
Schooling (yrs.)	10.77 $\pm$ 4.80	11 years	6.89 $\pm$ 4.58	7 years
Farming Experience (yrs.)	16.58 $\pm$ 13.03	17 years	24.96 $\pm$ 11.27	25 years
Household size (NOP)	4.11 $\pm$ 2.83	4 persons	6.75 $\pm$ 3.04	7 persons
Farm size (ha)	0.74 $\pm$ 1.37	1 hectare	1.82 $\pm$ 4.09	2 hectares

Ha – hectare; NOP – Number of Persons; SD – Standard Deviation; Yrs. – years; ~ – Approximately
Source: Field Survey, 2022

themselves as vulnerable to climate-related shocks, particularly drought, which directly threatens crop yields and food security. The slightly higher score in urban areas may reflect limited access to land and irrigation facilities.

This finding underscores the precariousness of farmers' livelihoods and the need for targeted adaptation support. Eze (2018), using the Normalized Rainfall Index (NRI), similarly observed that households were exposed to both mild and severe drought events, which adversely affected land use and the natural environment, ultimately leading to reduced agricultural output.

Regarding biological hazards, cattle encroachment on farmlands ($\bar{x}$ = 2.13) ranked as the primary concern in urban areas, while kidnapping ($\bar{x}$ = 2.68) took the top spot in rural areas. These findings highlight serious threats to the safety of farming households, leading to disruptions in food production, displacement, and reduced farm productivity. Rural households reported higher exposure to kidnapping ($\bar{x}$ = 2.68) and cattle encroachment on farmlands ($\bar{x}$ = 2.64) than their urban counterparts, highlighting their heightened vulnerability to multiple, compounding sources of biological insecurity. This indicates that there are insufficient policy safeguards for vulnerable farming households facing recurring threats. This aligns with Efobi (2025), who noted that continuous cattle grazing often leads to conflict with crop farmers, and with several other studies (Mbah *et al.* 2020, Lumun *et al.* 2020, Beetseh *et al.* 2021, Bello & Abdullahi 2021, Ojo *et al.* 2023), which have emphasized how farmers-herders conflicts, cattle rustling, kidnapping, and banditry contribute

significantly to livelihood insecurity through loss of life, displacement, and food insecurity.

Socio-infrastructure insecurity was also a key concern, with high transportation costs ranking highest ($\bar{x}$ = 2.26 in urban and $\bar{x}$ = 2.13 in rural areas). These costs directly reduce household income and profitability. Olagunju & Akinbile (2020) emphasized that the high cost of transportation significantly erodes farmers' incomes, implying that it negatively affects the livelihood of farming households.

In the category of economic insecurity, high prices ($\bar{x}$ = 2.54) were the top concern in urban areas, while high wages ($\bar{x}$ = 2.29) dominated in rural areas. This reflects market volatility and high production costs, respectively. The finding of high wages in rural areas suggests that rural farmers, who typically have larger farm sizes as previously reported, may bear heavier labor costs than their urban counterparts, further heightening their vulnerability to livelihood disruptions. Omotayo *et al.* (2022) reported that the COVID-19 pandemic, which led to movement restrictions, contributed to increased food prices in Nigeria. The study also indicated that food insecurity deepened during the pandemic, rising from 18.4% to 27.1%.

Finally, for political insecurity, insufficient legal protection ($\bar{x}$ = 2.41 in urban areas and $\bar{x}$ = 2.44 in rural areas) was the most cited issue. This implies that there are insufficient robust policy safeguards for vulnerable farming households. Osuagwu & Osabohein (2018) reported that households benefitting from legal and social protection

Table 2. Ranking of Livelihood Insecurity.

Category	Livelihood insecurity	Urban		Rural	
		Mean $\pm$ SD	Rank	Mean $\pm$ SD	Rank
Climate change	Drought	2.35 $\pm$ 0.848	1 st	2.13 $\pm$ 0.853	1 st
	Flood	1.82 $\pm$ 0.807	2 nd	1.65 $\pm$ 0.813	2 nd
	Fire outbreak	1.35 $\pm$ 0.590	4 th	1.19 $\pm$ 0.444	3 rd
Biological hazards	Poor soil fertility	1.44 $\pm$ 0.654	3 rd	1.01 $\pm$ 0.121	4 th
	Pest and diseases	2.10 $\pm$ 0.809	2 nd	2.08 $\pm$ 0.890	3 rd
	Kidnapping	1.72 $\pm$ 0.826	4 th	2.68 $\pm$ 0.468	1 st
	Cattle encroachment on farmlands	2.13 $\pm$ 0.904	1 st	2.64 $\pm$ 0.541	2 nd
	Theft	1.94 $\pm$ 0.835	3 rd	1.19 $\pm$ 0.444	5 th
	Sickness	1.64 $\pm$ 0.737	5 th	1.03 $\pm$ 0.170	6 th
Socio-infrastructural	Farmers clash	1.37 $\pm$ 0.578	6 th	1.34 $\pm$ 0.613	4 th
	Land shortage	1.69 $\pm$ 0.827	3 rd	1.17 $\pm$ 0.433	3 rd
	Lack of mechanization	2.05 $\pm$ 0.882	2 nd	1.84 $\pm$ 0.883	2 nd
	High cost of transportation	2.26 $\pm$ 0.869	1 st	2.13 $\pm$ 0.876	1 st
Economic	High price	2.54 $\pm$ 0.685	1 st	2.11 $\pm$ 0.895	2 nd
	Lack of savings	2.33 $\pm$ 0.807	3 rd	2.10 $\pm$ 0.969	3 rd
	High wages	2.46 $\pm$ 0.781	2 nd	2.29 $\pm$ 0.781	1 st
Political	Insufficient legal protection	2.41 $\pm$ 0.795	1 st	2.44 $\pm$ 0.826	1 st
	Corruption	2.18 $\pm$ 0.794	3 rd	2.28 $\pm$ 0.843	2 nd
	Inconsistent government policy	2.35 $\pm$ 0.793	2 nd	2.20 $\pm$ 0.827	3 rd

Note: The scale used was a 3-point Likert scale (1 = not vulnerable, 2 = vulnerable, 3 = highly vulnerable).

Source: Field Survey, 2022

measures had better agricultural outcomes, implying that weak institutional support systems contribute to increased livelihood vulnerability. Overall, urban farmers reported slightly higher mean scores under climate change and economic insecurity, while rural farmers experienced more severe threats from biological hazards and political factors. These findings suggest that rural farmers face more multidimensional and compounding vulnerability.

Measures adopted by farming households to build resilience to their livelihood insecurity

Table 3 presents the measures adopted by farming households to enhance resilience in response to livelihood insecurity. These measures encompass activities such as diversifying income sources, cultivating drought-resistant crops, firearm possession, enrollment in agricultural insurance programs, and gaining access to subsidized agricultural inputs and climate information. The results indicate that a significant majority, comprising 57.2% of farming households in urban areas, build resilience by diversifying their income sources, but much less so in rural areas (15.6%).

This suggests that urban farmers have greater access to non-farm income opportunities to enhance their livelihood security by reducing dependence on climate-sensitive agricultural income. Based on Bamigboye *et al.* (2021) in Ekiti State, 62.9% of rural farm households combines farming with non farm income opportunities which included a diverse range of activities such as manufacturing, sales, services, and enterprises. Their study noted that these non farm activities contributed about 40% of total household income, showing how non farm activities significantly augment agricultural earnings.

In contrast, planting drought-resistant crops was the most common strategy among rural households (39.3%), reflecting their continued dependence on agriculture and vulnerability to climate-related shocks. Access to climate information was fairly similar across both locations (urban: 20.9%; rural: 21.5%), indicating a general awareness of weather risks, though not necessarily the means to act on such information. Adoption of agricultural

insurance was low in both areas (only 12.9% in urban and 3.75% in rural areas). This may be because of limited availability, awareness, or affordability of these agricultural insurance programs, particularly in rural settings. Access to subsidized agricultural inputs was also low (urban: 13.4%; rural: 13.3%), suggesting insufficient policy reach. Alarming, some households reported carrying arms (urban: 10.9%; rural: 11.9%), reflecting rising insecurity and limited state protection, especially in rural communities.

Overall, only 25.4% of urban and 17.6% of rural households were classified as resilient by having some adaptive capacity, based on their adoption of at least one resilience-building strategy. These figures indicate a low level of adaptive capacity relative to the multiple risks households face. The gap between risk exposure and resilience measures underscores the insufficiency of institutional and policy safeguards for vulnerable farming communities. These findings align with Olawuyi & Ijila (2023), who reported limited resilience capacities among food-insecure farming households in Nigeria. A better understanding of household vulnerability is essential for designing context-specific interventions to strengthen resilience and promote long-term livelihood security.

Ordinal logistic regression model results for vulnerability to kidnapping and cattle encroachment on farmland

The ordinal logistic regression model examined the socio-economic factors influencing the vulnerability of farming households to kidnapping and cattle encroachment on farmlands in both urban and rural contexts. In addition to the methodological justification for using an ordinal logistic regression model, the choice of kidnapping and cattle encroachment on farmlands as dependent variables was adapted because of their relatively high mean scores in the vulnerability ranking (see Table 2). Respondents consistently identified these issues as the most severe forms of livelihood insecurity across rural and urban areas, warranting deeper statistical investigation into their underlying predictors. Five predictors were included in the

model: age, schooling years, farming experience, household size, and farm size.

The results are summarized in Tables 4 and 5. The Omnibus Test (Table 4) shows that for kidnapping in rural areas, the likelihood ratio chi-square value is 25.90, with a p-value of 0.000, indicating that the model is statistically significant, and the predictors collectively explain variation in vulnerability status. However, in urban areas, the model is statistically insignificant, with a likelihood ratio chi-square of $\chi^2 = 8.419$ and a p-value of 0.135. This implies that the selected variables do not meaningfully predict kidnapping vulnerability in urban setting. Conversely, when examining the Omnibus Test results for cattle encroachment on farmlands, both urban and rural areas models are statistically significant, indicating good model fit and predictive utility. In urban areas, the likelihood ratio chi-square is 17.548 with a p-value of 0.004, while in rural areas, it is 26.055 with a p-value of 0.000.

Table 5 presents details, including the Wald chi-square values, significance levels, and Exp (B) – odds ratios/exponential values of B. For kidnapping in rural areas, three variables were significant. Age is a significant predictor ($\chi^2 = 14.137$, $p < 0.001$, $\text{Exp}(B) = 0.894$) indicating that older farmers are less vulnerable to kidnapping, possibly due to stronger social networks, local knowledge, or reduced exposure due to lower mobility. Farming experience also significantly increases vulnerability ($\chi^2 = 4.214$, $p < 0.040$, $\text{Exp}(B) = 1.047$), suggesting that long-standing farmers may be more exposed or targeted due to their accumulated assets. Household size is significant ($\chi^2 = 10.096$, $p < 0.001$, $\text{Exp}(B) = 1.319$), implying that larger households may attract more attention or face higher exposure to insecurity. Specifically, a one-unit increase in age decreases the odds of vulnerability to kidnapping by 10.6 percent, while farming experience and household size increase the odds by 4.7 percent and 31.9 percent respectively. Kidnapping was found to be a significant threat in rural areas. This aligns with findings by Olutegbe & Ogunbaro (2022), which highlighted increased incidents of farmer abductions due to rural-urban fringe

Table 3. Measures Adopted by Farming Households to Build Resilience to their Livelihood Insecurity.

Measures	Urban Frequency (%)	Rural Frequency (%)
Other sources of income	115 (57.2)	21 (15.6)
Planting drought-resistant crops	75 (37.3)	53 (39.3)
Carrying of arms	22 (10.9)	16 (11.9)
Agricultural insurance	26 (12.9)	5 (3.75)
Access to subsidized agro-inputs	27 (13.4)	18 (13.3)
Access to climate information	42 (20.9)	29 (21.5)
Percentage (%) resilient	25.4	17.6

Source: Field Survey, 2022

Table 4. Omnibus Test.

Variable		Likelihood Ratio Chi-Square	Df	Sig.
Kidnapping	Urban	8.419	5	0.135
	Rural	25.904	5	0.000
Cattle encroachment on farmlands	Urban	17.548	5	0.004
	Rural	26.055	5	0.000

Dependent Variables: Kidnapping, Cattle encroachment on farmlands.

Df = degree of freedom (5 predictors: age, schooling years, farming experience, household size, farm size).

a. Compares the fitted model against the thresholds-only model. Sig. = Significance.

Source: Field Survey, 2022

insecurity and weak enforcement of anti-grazing laws. Rural farmers' isolation and poor access to security infrastructure make them more vulnerable.

Schooling years and farm size were not statistically significant. For cattle encroachment in urban areas, only schooling years was significant ($\chi^2 = 6.030$, $p = 0.014$, $\text{Exp}(B) = 0.574$), indicating that more educated farmers are less vulnerable, potentially due to greater awareness of Ekiti State anti-grazing laws, more secure land tenure, or access to information. For each additional year of schooling, vulnerability decreases by about 43 percent.

In rural areas, all variables except farm size were significant predictors of vulnerability to cattle encroachment. Age ($\chi^2 = 14.685$, $p < 0.001$, $\text{Exp}(B) = 0.907$) and schooling years ($\chi^2 = 4.570$, $p = 0.033$, $\text{Exp}(B) = 0.554$) were negatively associated with vulnerability, while farming experience ($\chi^2 = 5.397$, $p = 0.020$, $\text{Exp}(B) = 1.051$) and household size ($\chi^2 = 10.443$, $p = 0.001$, $\text{Exp}(B) = 1.279$) increased the likelihood of vulnerability. These

results indicate that older farmers in rural areas are less vulnerable, higher education reduces vulnerability, more experience may correlate with longer exposure, and large households may increase exposure or require more farmland, which might increase grazing conflict risks.

CONCLUSIONS

This study extensively examined the vulnerability of farming households to livelihood insecurity in both urban and rural areas. The key findings indicate that rural farming household heads tend to be older than their urban counterparts are, while they also cultivate larger expanses of land. Both urban and rural areas face various forms of livelihood insecurity, including climate change, biological hazards, socio-infrastructure challenges, economic instability, and political threats. Among these, drought, kidnapping, and cattle encroachment on farmland emerged as the most severe stressors, with rural areas experiencing a higher level of vulnerability, particularly to kidnapping and cattle-related damages on their farmland. The regression analysis revealed that age, farming experience, and household size were significant

Table 5. Tests of Model Effects.

Dependent Variable	Location	Source	Type III	Wald Chi-Square	Std. Error	Sig.	Exp(B)
Kidnapping	Rural	Age		14.137	0.030	0.000*	0.894
		Schooling years		1.953	0.287	0.162	0.669
		Farming experience		4.214	0.023	0.040*	1.047
		Household size		10.096	0.087	0.001*	1.319
		Farm size		0.168	0.051	0.682	1.021
Cattle encroachment on farmlands	Urban	Age		2.012	0.017	0.156	1.024
		Schooling years		6.030	0.226	0.014*	0.574
		Farming experience		0.171	0.019	0.679	1.008
		Household size		3.842	0.079	0.050	1.166
		Farm size		0.641	0.136	0.424	0.897
	Rural	Age		14.685	0.026	0.000*	0.907
		Schooling years		4.570	0.276	0.033*	0.554
		Farming experience		5.397	0.022	0.020*	1.051
		Household size		10.443	0.076	0.001*	1.279
		Farm size		0.988	0.048	0.320	1.049

Dependent Variables: Kidnapping, Cattle encroachment on farmlands.

Model: (Threshold), Exp – Exponential.

* Significant at $p < 0.05$.

Source: Field Survey, 2022

predictors of kidnapping vulnerability in rural areas. Specifically, younger farmers, those with more farming experience, and larger households were more likely to be vulnerable to kidnapping. For cattle encroachment, years of schooling significantly reduced vulnerability in urban areas, while in rural areas, age, education, experience, and household size were all significant factors influencing vulnerability. These findings underscore the importance of tailored interventions based on demographic and socio-economic characteristics.

To reduce vulnerability to kidnapping and cattle encroachment, pragmatic policy actions

should include strengthening rural security systems, enforcing the Ekiti State anti-grazing law, and promoting community-based surveillance initiatives. Targeted support should also focus on increasing security-related awareness among urban and rural households, providing extension services on conflict-sensitive farming practices, and empowering farming households, particularly those with limited experience or large household sizes. Enhancing farmers' resilience through non-farm income opportunities to augment agricultural earnings, adoption of climate-smart practices through planting of drought-resistant crops, and affordable agricultural insurance schemes is

crucial. These efforts should be supported by effective information dissemination to farming households, and backed by coordinated action from government, and local authorities to mitigate sustainably livelihood insecurity in both urban and rural areas of Ekiti State.

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