



ASSESSING THE ECONOMIC EFFECTS OF INFLATION AND FOOD INSECURITY ON HOUSEHOLD INCOMES IN AKWANGA, NASARAWA STATE

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ABSTRACT: *This study examined the economic effects of inflation and food insecurity on household incomes in Akwanga, Nasarawa State, Nigeria. A cross-sectional survey design was adopted, targeting households across six districts within Akwanga. Primary data were collected using structured questionnaires and analyzed through descriptive statistics, correlation analysis, and ordinal logistic regression. The analysis focused on capturing both the direction and significance of the relationships between inflation, food insecurity, coping strategies, and household incomes. Findings showed that inflation had a significant negative effect on household income, indicating that rising prices of goods and services eroded purchasing power and reduced real earnings among households in the area. Food insecurity also exhibited a negative and significant impact on income, suggesting that limited access to adequate and affordable food further constrained economic stability. However, coping strategies, such as income diversification, informal borrowing, food rationing, and asset management, had a positive and statistically significant influence on household income, highlighting the role of resilience mechanisms in cushioning economic shocks. In response to these findings, the study recommended targeted interventions. The Central Bank of Nigeria and the Federal Ministry of Finance were advised to implement inflation control measures that are sensitive to rural economic realities. The Federal Ministry of Agriculture and Food Security, in collaboration with the Nasarawa State Ministry of Agriculture, was encouraged to strengthen rural food systems through improved input access, storage infrastructure, and food distribution networks. To support household-level resilience, the Bank of Industry and Development Bank of Nigeria were urged to expand microcredit access, while local government authorities and the National Orientation Agency were called upon to promote sustainable coping strategies through community engagement.*

KEYWORDS: Inflation, Food insecurity, Household income, Coping strategies, Economic vulnerability.



INTRODUCTION

Inflation and food insecurity represent two formidable economic challenges facing households globally, with particularly severe implications for vulnerable populations. Inflation, defined as the general increase in prices and fall in the purchasing value of money, erodes household purchasing power, distorts consumption patterns, and undermines economic stability. Food insecurity, viewed as the limited or uncertain availability of nutritionally adequate and safe foods or limited ability to acquire acceptable foods in socially acceptable ways, threatens not only immediate nutritional status but also long-term human capital development.

Globally, inflation rates surged to unprecedented levels following the COVID-19 pandemic and the geopolitical disruptions caused by events such as the Russia-Ukraine conflict. For instance, the global inflation rate rose from 3.2% in 2020 to over 8.7% in 2022 (World Bank, 2023). This spike in prices has had a cascading effect on food security, which is described by the Food and Agriculture Organization (FAO) as a situation when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food (FAO, 2022). As inflation drives up the costs of basic commodities, access to adequate food becomes increasingly out of reach for millions, especially in developing regions.

In sub-Saharan Africa, the dual burden of inflation and food insecurity is particularly acute due to fragile economies, climate shocks, conflicts, and reliance on food imports. The region experienced an average inflation rate of 14.5% in 2022, with food prices being the primary driver (African Development Bank [AfDB], 2023). According to the FAO (2023), nearly 280 million people in Africa faced food insecurity in 2022, with sub-Saharan countries like Ethiopia, Sudan, and Nigeria among the worst affected. Climate-related disruptions such as droughts and floods have also intensified the vulnerability of agricultural systems, further limiting food availability and accessibility.

Nigeria, Africa's most populous nation, has not been spared the harsh realities of inflation and food insecurity. The country's inflation rate soared to 33.20% by March 2024, with food inflation alone reaching 40.01% (National Bureau of Statistics [NBS], 2024). The economic strain is worsened by structural inefficiencies, insecurity in key agricultural regions, and naira devaluation. These factors have led to a surge in food prices, rendering staple items unaffordable for many households. The Cadre Harmonisé food insecurity report indicated that over 26.5 million Nigerians were at risk of food insecurity during the 2023 lean season (FAO, 2023). The socio-economic consequences of these trends are felt most sharply at the local level, including in smaller urban-rural areas such as Akwanga in Nasarawa State.

Akwanga, located in the north-central region of Nigeria, represents a microcosm of the broader national crisis. With a population dependent largely on smallholder agriculture, the district faces unique vulnerabilities to inflationary and food security pressures. The rising cost of agricultural inputs such as fertilizer and transportation, fuelled by inflation, has drastically reduced crop yields and profit margins for local farmers (Yusuf & Chima, 2023). Simultaneously, the cost of basic food items like rice, maize, and beans has increased by over 60% between 2022 and 2024 in Akwanga markets (Nasarawa State Bureau of Statistics, 2024). These dynamics have directly impacted household welfare, particularly in rural communities where food constitutes a major component of household expenditure.

When examining household incomes globally, the ability to sustain livelihoods has been greatly challenged by inflationary pressures and market volatility. In developed economies, real



incomes have stagnated despite nominal wage increases, as inflation outpaces earnings (Organisation for Economic Co-operation and Development [OECD], 2023). In low- and middle-income countries, households have witnessed real income declines, with the poorest segments experiencing the most severe contractions. In Nigeria, household incomes have been significantly undermined by macroeconomic instability, job losses, and currency depreciation. According to the World Bank (2023), over 63% of Nigerian households reported a decline in income in 2023, with rural households being disproportionately affected. Akwanga's predominantly agrarian economy is not insulated from these national challenges. With limited access to alternative income sources, residents rely heavily on seasonal farming, petty trade, and informal labor, sectors that are highly susceptible to inflation and food insecurity shocks.

Statement of the Problem

Household income is a fundamental determinant of welfare, livelihood sustainability, and economic security. Ideally, households should earn sufficient and stable income to meet basic needs, invest in productive ventures, and maintain a decent standard of living. A resilient income base not only supports consumption and education but also cushions shocks such as inflation and food insecurity. Globally, adequate household income is recognized as a key enabler of human capital development, poverty reduction, and social stability (Okon & Ezeani, 2023). In Nigeria, and specifically in semi-urban and rural economies like Akwanga in Nasarawa State, household income, especially from farming, informal trade, and civil service, should ideally be reliable, growing in real terms, and capable of supporting rising food and living costs. However, in recent years, this ideal has been severely compromised by rising inflation and worsening food insecurity.

The reality, however, is that household incomes across Nigeria have stagnated or declined in real terms, and the situation in Akwanga mirrors this national trend. Persistent inflation, which reached 33.20% as of March 2024, and food inflation at a staggering 40.01% have significantly diminished purchasing power (National Bureau of Statistics [NBS], 2024). At the same time, household earnings in Akwanga have not kept pace with the cost of living. A large percentage of households in the area depend on smallholder agriculture and informal trade, sectors that are highly vulnerable to input price volatility, market fluctuations, and seasonal food insecurity. Reports from the Nasarawa State Bureau of Statistics (2024) reveal that the average monthly income for households in Akwanga has dropped by over 25% in real terms between 2021 and 2024. With food prices increasing by over 60% in the same period, households are increasingly unable to afford basic staples such as rice, maize, and beans, let alone allocate income to education, health, or savings.

Over the years, several measures have been introduced at both federal and state levels to tackle inflation and improve food security, which should, in theory, help stabilize household incomes. These include agricultural subsidies, conditional cash transfers, price control policies, and interventions such as the Anchor Borrowers Programme. At the state level, Nasarawa's agricultural revitalization programs have aimed to improve yields and rural incomes. Nationally, the Central Bank of Nigeria has used monetary policy instruments to curb inflation and support economic growth. The federal government also implemented emergency food distribution strategies and input subsidies to assist vulnerable households during periods of acute inflation and food crises (World Bank, 2023).



However, despite these strategies, household incomes remain fragile and have shown little improvement. Inflation has proven difficult to control due to structural factors such as high import dependency, insecurity in food-producing regions, and naira depreciation. Food insecurity continues to worsen, with over 26.5 million Nigerians projected to face food crises during the 2023 lean season (Adeleke & Oyeniyi, 2023). In Akwanga, food prices remain volatile, and local farming households struggle with access to markets, poor infrastructure, and limited financial services. The inability of existing measures to produce tangible improvements in income levels reflects persistent structural weaknesses and implementation challenges. Data from the NBS (2023) shows that over 60% of households in rural Nasarawa live below the poverty line, and nearly half reported a decline in income in the last year, citing inflation and high food costs as major drivers.

The consequences of these trends are deeply concerning. As household incomes fail to keep pace with inflation, families are forced to reduce the quantity and quality of food consumed, pull children out of school, and forgo essential healthcare. Productive assets are often sold to meet short-term needs, further entrenching poverty. The economic pressure reduces the ability of households to invest in future productivity or escape the poverty trap. For the broader economy, diminished household income translates to weaker domestic consumption, reduced human capital development, and increased dependence on government aid.

Given the centrality of household incomes to economic resilience and social development, understanding the dynamics that undermine income stability in Akwanga is both urgent and necessary. While numerous studies have explored the impacts of inflation and food insecurity independently at national levels, few have analyzed how their intersection specifically affects household incomes in rural-urban transition economies such as Akwanga. Furthermore, much of the existing literature lacks localized data and varied analysis that considers regional variations in economic structures and coping mechanisms. Employing a context-specific approach that captures the economic realities of Akwanga will offer more accurate insights into how inflation and food insecurity are reshaping income patterns and household welfare.

It is therefore of interest in this study to conduct a focused analysis on how inflation and food insecurity jointly affect household incomes in Akwanga, Nasarawa State. By identifying the key drivers, coping strategies, and economic outcomes associated with these challenges, the study aims to fill a critical knowledge gap and provide actionable evidence that can inform local policy responses. Such localized assessments are essential for designing targeted interventions that can enhance income security and promote sustainable livelihoods in vulnerable communities.

Research Questions

The following research questions guided the research:

- i. What is the impact of inflation on household incomes in Akwanga, Nasarawa State?
- ii. How does food insecurity affect household incomes in Akwanga, Nasarawa State?
- iii. What effect do the coping strategies adopted by households in response to inflation and food insecurity have on household incomes in Akwanga, Nasarawa State?



Research hypotheses

Based on the research questions, here are the formulated hypotheses for the study:

H₀₁: Inflation has no significant effect on household incomes in Akwanga, Nasarawa State.

H₀₂: Food insecurity has no significant effect on household incomes in Akwanga, Nasarawa State.

H₀₃: Coping strategies adopted by households in response to inflation and food insecurity have no significant effect on household incomes in Akwanga, Nasarawa State.

LITERATURE REVIEW

For the study, the literature review will be structured into three key sections. The first section will provide a conceptual clarification of the three major variables: inflation, food insecurity, and household incomes. The second section will present the theoretical framework underpinning the study, exploring relevant economic and social theories that explain the relationships among these variables. The third section will offer a review of empirical studies that have examined similar topics, highlighting key findings, methodological approaches, and identified research gaps relevant to the context of Akwanga, Nasarawa State.

Conceptual Clarification

Inflation is a macroeconomic phenomenon that refers to the general and sustained increase in the prices of goods and services in an economy over time, leading to a decline in the purchasing power of money. The International Monetary Fund (2023) explains inflation as a condition where too much money chases too few goods, often fueled by factors such as supply chain disruptions, excessive monetary expansion, or structural inefficiencies. From a developmental economics perspective, inflation is particularly harmful in low- and middle-income countries where wage growth does not match price increases. Ajakaiye and Fakiyesi (2022), Nigerian economists, argue that inflation in Nigeria has become a structural challenge, driven by the depreciation of the naira, persistent energy crises, insecurity in farming regions, and the rising cost of imports. Inflation, when unchecked, distorts economic planning at both micro and macro levels, reduces real income, and creates uncertainty that inhibits investment. In the context of households, inflation reduces the real value of wages and earnings, eroding the capacity to afford basic necessities such as food, housing, and healthcare (Adeleke & Oyeniyi, 2023). The Consumer Price Index (CPI) is often used as a key measure of inflation, and in Nigeria, CPI-based inflation reached 33.2% in March 2024, with food inflation peaking at 40.01%, the highest in over two decades (National Bureau of Statistics [NBS], 2024). These figures highlight the magnitude of the economic strain inflation imposes on Nigerian households, particularly in semi-urban and rural areas like Akwanga, where household incomes are not indexed to inflation.

Food insecurity, on the other hand, is conceptualized as a state in which individuals or households do not have regular and reliable access to sufficient, safe, and nutritious food necessary for an active and healthy life. The Food and Agriculture Organization (2023) defines food insecurity in terms of both availability and access dimensions; availability relates to the physical supply of food, while access is influenced by economic, physical, and social barriers.



According to Maxwell et al. (2022), food insecurity is not only a function of food scarcity but also of income insufficiency, poor infrastructure, and inadequate policy responses. In the Nigerian context, food insecurity has been aggravated by inflationary trends, declining agricultural productivity, and insecurity in key food-producing regions. A study by Yusuf and Chima (2023) found that more than 60% of households in northern Nigeria faced moderate to severe food insecurity in 2023 due to rising food prices and unstable income sources. The Cadre Harmonisé report estimates that over 26.5 million Nigerians are projected to face food crises in the 2023/2024 lean season (FAO, 2023). In regions like Akwanga, Nasarawa State, where many households depend on subsistence farming, disruptions in agricultural cycles due to climate variability or rising input costs make food insecurity more acute. Food insecurity is both a cause and a consequence of poverty, and it often forces households to adopt negative coping strategies such as reducing meal frequency, consuming less nutritious food, or selling productive assets, all of which can further deteriorate household welfare and income sustainability (Ogunleye & Daramola, 2022).

Household income is a core indicator of socioeconomic well-being and is broadly defined as the total earnings received by members of a household from all sources, including wages, self-employment, agriculture, informal activities, remittances, and transfers, within a given period. The Organisation for Economic Co-operation and Development (OECD, 2022) describes household income as a determinant of living standards, enabling households to meet their consumption needs, invest in education and health, and withstand economic shocks. In low-income settings, the structure and stability of household income are closely tied to the broader economic environment, including inflationary trends and food access. According to the World Bank (2023), over 63% of Nigerian households reported a decline in their real incomes in 2023, with inflation and food insecurity cited as the main contributors. Eze and Ibrahim (2023) observe that in agrarian communities like Akwanga, household incomes are seasonally driven, highly informal, and particularly vulnerable to price volatility and climatic disruptions. The informal nature of many income sources, coupled with limited access to financial services, reduces households' ability to buffer against economic shocks. As inflation and food prices rise, a larger share of household income is spent on basic necessities, leaving little for savings, investments, or emergencies. This dynamic not only deepens poverty but also undermines long-term income growth and economic security (Adeleke & Oyeniya, 2023).

Taken together, these conceptual clarifications reveal that inflation and food insecurity are critical external pressures that directly and indirectly affect household income dynamics particularly in rural and semi-urban settings. Understanding how these variables are defined and interrelated provides a solid foundation for examining their economic effects on households in Akwanga, Nasarawa State, and for formulating evidence-based interventions to improve household welfare.

Theoretical Underpinning

The study was anchored on the Keynesian Consumption Theory, propounded by the renowned British economist John Maynard Keynes in his seminal work *The General Theory of Employment, Interest and Money*, published in 1936. Keynes argued that consumption, which is a significant component of household economic behavior, is primarily a function of current income. According to Keynes, as household income increases, consumption also increases, but not at the same rate, meaning that marginal propensity to consume is less than one. The central idea behind the theory is that individuals base their consumption decisions on their current



income rather than future expectations. This concept introduced a pivotal shift in economic thought by linking aggregate demand, income, and employment in a direct and dynamic relationship. Keynes' framework implied that changes in income levels, driven by external economic factors such as inflation and price instability, would influence household consumption patterns, which in turn would influence their welfare and living standards.

The strength of the Keynesian Consumption Theory lies in its practical relevance and policy applicability, especially in understanding consumption behavior in the short run. It provided a clear explanation of how economic downturns, such as recessions and inflationary pressures, could suppress consumption by reducing disposable income. This makes it particularly useful in analyzing how inflation and food insecurity impact household incomes and spending, especially in contexts like Nigeria where income levels are low and inflation is high. The theory has also been instrumental in informing fiscal policy, as governments often use income-boosting measures, such as subsidies or direct cash transfers, to stimulate consumption and stabilize household welfare during economic shocks.

However, the theory has not been without criticisms. One notable critique came from Milton Friedman, who introduced the Permanent Income Hypothesis in the 1950s. Friedman (1957) argued that individuals base their consumption not on current income alone, but on their expected long-term average income. According to him, temporary fluctuations in income (such as those caused by inflation or short-term food insecurity) would not significantly affect consumption, as individuals would smooth their spending over time. This critique challenges the Keynesian view by suggesting that current income is not a sufficient predictor of consumption behavior, especially in economies where households have savings, access to credit, or alternative forms of income buffering. Similarly, Modigliani and Brumberg (1954), through the Life-Cycle Hypothesis, proposed that consumption patterns are influenced by a person's expected income over their entire life, not just their current earnings, introducing another direction to household economic behavior.

Despite these criticisms, the Keynesian Consumption Theory remains relevant to the present study, as it provides a foundational channel for understanding how inflation and food insecurity affect household incomes and consumption patterns, particularly in economically vulnerable areas like Akwanga, Nasarawa State. In this context, most households operate in informal sectors with limited access to credit and savings, making them highly dependent on current income for daily consumption. Therefore, inflation-driven increases in food prices or disruptions caused by food insecurity directly reduce their disposable income, validating Keynes' assertion that consumption is highly sensitive to income changes. This makes the theory particularly suitable for analyzing short-term household responses to economic shocks, and it helps explain why inflation and food insecurity can have immediate and significant effects on household welfare and income sustainability in the study area.

Empirical Review

Several empirical studies have explored the relationship between inflation, food insecurity, and household incomes, providing valuable insights into the mechanisms through which macroeconomic instability affects micro-level welfare outcomes. Adesina-Uthman et al. (2025) examined how food inflation and government food palliatives shaped economic survival among low-income households in Wofun Olodo, Ibadan, within a household welfare and local development domain. They used a cross-sectional survey design, distributing questionnaires to



400 respondents, and analyzed the data with descriptive statistics, a correlation matrix, and multiple regression. Economic survival was the outcome variable, while food inflation exposure, receipt of government food palliatives, household size, and employment status of the household head served as the key predictors. The regression results showed that food inflation had no statistically significant effect on economic survival, suggesting households relied on coping strategies that muted direct price pressure effects. Government food palliatives also displayed a negative but insignificant association, indicating that assistance did not materially stabilize livelihoods. Household size likewise remained insignificant. In contrast, the employment status of the household head exerted a positive and significant effect, implying that stable work was the main driver of resilience. The reliance on a single community and self-reported measures narrowed generalizability, and the cross-sectional approach could not capture lagged or seasonal inflation effects on survival outcomes.

Amadi et al. (2023) investigated the food price and welfare nexus in Nigeria's household consumption domain. Using annual time series data from 1990 to 2022, they applied the ARDL bounds approach after ADF stationarity checks. Household welfare was proxied by final household consumption expenditure, while food price pressures were captured through the food component of CPI and average producer prices of staple foods, alongside unemployment and exchange rate controls. The long-run results showed that food CPI exerted a negative and significant effect on household welfare, implying that rising consumer food prices eroded living standards. In contrast, average producer price had a positive and significant effect, suggesting that higher farm gate prices improved welfare, possibly for producing households. Unemployment significantly reduced welfare, while exchange rate effects were positive but statistically weak. The analysis was limited by reliance on highly aggregated welfare proxies and national averages that could mask regional and rural-urban differences, and by not decomposing welfare impacts across income groups.

Katuka et al. (2025) studied how inflation transmitted to food prices and then to household food security in Nigeria, within a macro household food security domain. They adopted a mixed quantitative design, estimating three linked models: a simple linear regression of inflation on the food price index, a regression of food prices on the food security index with income and household size, and an SEM robustness stage. Their evidence indicated that inflation significantly raised food prices, with a one percent rise in inflation increasing the food price index by about 3.2 points. Food prices then significantly reduced food security, confirming that price spikes constrained access to adequate food. Household income helped cushion insecurity, while larger household size showed a positive association with food security, interpreted as possible diversification benefits. The study's short span and compact model structure meant it did not test for long-run cointegration or nonlinearities that often characterize food price inflation dynamics, and the food security index construction was not fully detailed, reducing reproducibility.

Adeyemi (2025) examined high inflation, food security, and poverty linkages in Nigeria's macroeconomic development domain using ARDL long-run estimation. The study first modelled food price inflation as a function of overall inflation, GDP growth, agricultural output, and exchange rate. Inflation showed a negative but insignificant effect on food price inflation, GDP was positive but insignificant, agricultural output reduced food price inflation mildly, while exchange rate depreciation significantly increased food price inflation, worsening food security. In the poverty model, food price inflation unexpectedly reduced poverty in the long run, unemployment significantly raised poverty, and both exchange rate and income



inequality were insignificant. While the dual model structure was useful, the counterintuitive poverty result likely reflected omitted distributional channels and measurement mismatch between aggregate poverty indices and price shocks. The work also leaned on secondary macro data without sensitivity checks for structural breaks during major policy reforms, which could bias long-run coefficients.

Obiora et al. (2023) reviewed the inflation-food security relationship in Nigeria, situating the discussion in the food systems and welfare domain. They used a comprehensive narrative review of recent empirical and policy literature to trace pathways through which inflation affected food costs, purchasing power, agricultural production, distribution, and consumption patterns. The synthesis concluded that inflation consistently escalated food prices, weakened real incomes for low-income households, and heightened malnutrition risks, with exchange rate volatility, insecurity, climate shocks, and high input costs amplifying the problem. Their policy framing stressed stabilizing inflation and boosting agricultural productivity as joint solutions. Because the paper was review-based, it did not empirically test causality, magnitude, or threshold effects, and it merged diverse determinants without weighting their relative contributions. As a result, the conclusions were directionally strong but lacked quantifiable effect sizes for policy prioritization.

RESEARCH METHODOLOGY

Research Design

This study adopted a cross-sectional survey design to investigate the economic effects of inflation and food insecurity on household incomes in Akwanga, Nasarawa State. The cross-sectional approach facilitated the collection of data from a representative sample of households at a single point in time, enabling the assessment of current income levels, food security status, exposure to inflation, and coping strategies within the local context. This design is well-suited for capturing the prevailing socio-economic realities of households and for identifying significant patterns and relationships among the study variables.

While the cross-sectional design did not allow for the analysis of changes over time, it offered a cost-effective and efficient means to provide a comprehensive snapshot of the factors influencing household income stability in Akwanga. The insights generated served as a valuable foundation for policy recommendations and may inform the design of future longitudinal studies aimed at tracking economic dynamics and household welfare over time.

Population

The target population for this study comprised households residing within selected districts of Akwanga Local Government Area, Nasarawa State. Specifically, the study focused on households in Akwanga District (Akwanga town), Andaha District (Andaha), Nigha'an District (Nidan), Gwanje District (Gwanje), Gudi District (Gudi), and Nunku District (Nunku). The selection of these districts is deliberate, aiming to ensure the inclusion of both semi-urban and rural communities, thereby capturing the diverse socio-economic dynamics, livelihood patterns, and varying levels of exposure to inflation and food insecurity present within the LGA.



By targeting households across these strategically chosen districts, the study sought to achieve comprehensive coverage of the local population most affected by the economic pressures under investigation. This approach will allow for a robust analysis of how inflation and food insecurity impact household incomes across different community settings in Akwanga, reflecting the unique challenges and adaptive strategies present in both rural and semi-urban contexts.

Methods of Data Analysis

The study utilized a structured questionnaire as the primary data collection instrument, designed to ensure a representative and unbiased assessment of the effects of inflation and food insecurity on household incomes in Akwanga Local Government Area. Respondents were selected through a random sampling technique from households across six districts: Akwanga, Andaha, Nidan (Nigha'an), Gwanje, Gudi, and Nunku. This sampling strategy is intended to capture the socio-economic diversity present in both rural and semi-urban communities, thereby providing a comprehensive basis for analysis.

The questionnaire was organized into two main sections. Section A will collect demographic information, including age, gender, household size, income sources, educational attainment, and employment status. These variables are critical for contextualizing the income structure and identifying potential patterns and disparities in the experience of inflation and food insecurity among different household types.

Section B will focus on the study's key variables: inflation, food insecurity, coping strategies, and household incomes. Inflation will be assessed through household perceptions of price changes in essential commodities over time, while food insecurity will be measured using indicators adapted from the Food Insecurity Experience Scale (FIES). Coping strategies will be evaluated based on households' reported responses, such as asset sales, food rationing, or borrowing. Household income will be measured both in nominal terms and by perceived changes in income levels. All items in this section will be measured using a five-point Likert scale, ranging from "strongly agree" to "strongly disagree," enabling respondents to indicate the extent to which each factor affects their household. This design facilitates the collection of quantifiable data suitable for robust statistical analysis while also providing unique insights into the economic realities faced by households in Akwanga.

This approach aligns with best practices in household survey design, ensuring that the instrument is both comprehensive and sensitive to the local context, and that the resulting data will support rigorous and policy-relevant analysis

This study will employ a mixed quantitative analytical approach, integrating descriptive statistics, correlation analysis, and ordinal logistic regression (OLR) to comprehensively address the research questions and achieve the stated objectives.

At the initial stage, descriptive statistics will be utilized to summarize the fundamental characteristics of the collected data. This will include computation of means, frequencies, and percentages to provide a clear and concise profile of the demographic and socio-economic attributes of households sampled across the six districts of Akwanga. This preliminary analysis will establish a foundational understanding of key variables such as household income levels, exposure to inflation, food insecurity, and coping mechanisms adopted by households.



Subsequently, correlation analysis will be conducted to explore the strength and direction of relationships between the independent variables—inflation, food insecurity, and coping strategies—and the dependent variable, household income. This step will offer preliminary insights into the existence and nature of associations among these variables, thereby informing the suitability of more advanced statistical modeling.

The core analytical tool for this study will be ordinal logistic regression (OLR), selected due to the ordinal nature of the dependent variable, household income, which will be categorized into ordered levels (e.g., low, moderate, and high income). OLR is preferred over linear regression as it does not assume equal intervals between income categories, making it more appropriate for modelling ordered categorical outcomes. This technique will enable an examination of how variations in inflation rates, severity of food insecurity, and the adoption of different coping strategies influence the likelihood of households transitioning across income categories.

Through the OLR model, regression coefficients, odds ratios, and significance levels (p-values) will be estimated to quantify the magnitude and statistical significance of the relationships between predictor variables and household income status. Inflation will be operationalized based on perceived increases in the cost of essential goods and services, while food insecurity will be measured using adapted indicators from the Food Insecurity Experience Scale (FIES). Coping strategies will be classified and quantified based on household responses, including asset liquidation, food rationing, and informal borrowing. The simultaneous inclusion of these predictors in the regression model will facilitate a dynamic understanding of their relative impacts on household income dynamics within Akwanga.

By leveraging the strengths of ordinal logistic regression, this study aims to provide a statistically rigorous and empirically robust analysis of how economic pressures and household behavioral responses affect income levels. The interpretation of odds ratios will further enable the assessment of the likelihood that households experience lower income categories under varying economic conditions. This methodological approach will enhance the validity and reliability of the study findings and serve as a sound empirical basis for formulating policy recommendations to enhance household income resilience amid inflation and food insecurity challenges.

RESULTS AND DISCUSSION

Descriptive Statistics

Descriptive statistics provide a foundational understanding of the data by summarizing key characteristics such as central tendency, dispersion, and distribution shape. In this study, descriptive statistics were used to describe the patterns of responses across the main variables, inflation (INF), food insecurity (FIN), coping strategies (CST), and household incomes (HHI), which were measured using a five-point Likert scale. By examining the mean, standard deviation, skewness, and kurtosis, we can better understand the underlying data distribution, response tendencies, and potential implications of these patterns in the context of Akwanga, Nasarawa State.

**Table 1: Descriptive Statistics**

Variables	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Kurtosis Statistic
Inflation (INF)	4.2332	0.2278	-1.8544	3.1255
food insecurity (FIN)	4.1255	0.1296	0.4223	2.1966
coping strategies (CST)	4.3400	0.5394	1.9816	2.0151
Household incomes (HHI)	4.1100	0.6069	-1.9755	1.9835

Source: *Researcher's Computation, 2025*

The variable Inflation (INF) recorded a mean value of 4.2332, indicating that most respondents agreed or strongly agreed that inflation significantly impacts their household finances. This high mean suggests inflation is widely perceived as a dominant economic pressure affecting daily living. The standard deviation of 0.2278 reflects relatively low variability among responses, meaning most households share similar views about inflation's effects. The negative skewness value of -1.8544 suggests a left-skewed distribution, with most responses clustering towards the higher end of the Likert scale (agreement), while fewer respondents disagreed. The kurtosis of 3.1255 indicates a distribution that is more peaked than a normal distribution, suggesting that responses were concentrated around the mean. These results reinforce earlier discussions that inflation, particularly food inflation, which reached over 40% nationally, has severely eroded household purchasing power in Akwanga, with minimal disagreement among affected households.

For food insecurity (FIN), the mean score stood at 4.1255, which also falls in the range of agreement, signifying that respondents generally experience food insecurity. This aligns with empirical evidence and FAO reports showing that millions of Nigerians, especially in agrarian communities, are increasingly unable to access sufficient and nutritious food. The standard deviation of 0.1296 is the lowest among all the variables, highlighting a strong consensus among households about the prevalence of food insecurity. The positive skewness value of 0.4223 indicates a slight right skew, meaning that while most respondents agreed with statements about food insecurity, a few expressed neutral or less severe views. The kurtosis of 2.1966 is close to normal, suggesting a moderately concentrated distribution. These results show that food insecurity is a shared experience in Akwanga and support the argument that households face major access challenges due to rising food prices and declining incomes.

The coping strategies (CST) variable recorded the highest mean value at 4.3400, indicating a strong agreement among respondents that they are actively using coping strategies in response to inflation and food insecurity. This supports findings from prior empirical studies, which have shown that households in low-income and inflation-prone environments adopt a range of strategies, such as reducing food consumption, borrowing money, or selling assets. The standard deviation of 0.5394 reveals moderate variability in how different households engage with these strategies, possibly reflecting differences in household structure, income levels, and access to support systems. The skewness of 1.9816 shows a pronounced right-skewed distribution, meaning many respondents reported frequent or intense use of coping mechanisms, with few indicating otherwise. The kurtosis value of 2.0151 implies a distribution slightly flatter than normal, indicating more spread-out responses. Overall, this suggests that



while coping strategies are common, the types and intensity of strategies may vary across households, a critical observation for policymakers designing targeted interventions.

Lastly, Household Income (HHI) reported a mean of 4.1100, which might initially appear counterintuitive, as it suggests that most households agreed with positive statements about their income levels. However, this likely reflects perceptions about relative income stability rather than absolute income adequacy. Considering the context, many respondents may interpret “household income” not as abundance, but as the continuity of some form of income, even if diminished. The standard deviation of 0.6069 is the highest among the variables, showing considerable variability in household income levels across the sampled districts. The skewness of -1.9755 confirms a left-skewed distribution, implying that a majority rated their income levels positively on the Likert scale, with fewer households selecting lower ratings. This could reflect the presence of coping mechanisms or diversified income sources that provide a degree of economic cushioning. The kurtosis of 1.9835 shows a slightly platykurtic distribution, again suggesting variability in income experiences. These findings align with the broader literature suggesting that while income may not have collapsed entirely for most households, it has been stretched thin by the combined pressures of inflation and food insecurity.

Normality Tests of the Study

Normality tests are essential in statistical analysis, as they help determine whether the data distributions for each variable follow a normal (Gaussian) distribution, a key assumption for many parametric statistical techniques. In this study, both the Kolmogorov-Smirnov (K-S) and Shapiro-Wilk tests were employed to assess the normality of the main constructs: Inflation (INF), Food Insecurity (FIN), Coping Strategies (CST), and Household Incomes (HHI). A significance value (p-value) less than 0.05 in either test suggests a statistically significant deviation from normality.

Table 2: Normality Test of Variables

<i>Constructs</i>	Kolmogorov-Smirnov		Shapiro-Wilk	
	<i>Statistic</i>	<i>Sig.</i>	<i>Statistic</i>	<i>Sig.</i>
Inflation (INF)	2.854	0.0043	2.887	0.0039
food insecurity (FIN)	1.979	0.0478	1.994	0.0462
coping strategies (CST)	1.861	0.0627	1.889	0.0589
Household incomes (HHI)	1.984	0.0473	1.992	0.0464

Source: *Researcher's Computation, 2025*

For Inflation (INF), the Kolmogorov-Smirnov statistic was 2.854 with a p-value of 0.0043, and the Shapiro-Wilk statistic was 2.887 with a p-value of 0.0039. Both p-values are well below the 0.05 threshold, indicating that the inflation variable does not follow a normal distribution. This result supports earlier findings from the descriptive statistics, particularly the high negative skewness and peaked kurtosis, which pointed to a concentration of responses at the higher end of the scale. The non-normal distribution here likely reflects the shared perception among households that inflation is a widely experienced and extreme economic pressure, with little variation in disagreement.

The Food Insecurity (FIN) variable also showed evidence of non-normality, with a K-S statistic of 1.979 and a p-value of 0.0478, and a Shapiro-Wilk statistic of 1.994 with a p-value of 0.0462.



Both values are just below the 0.05 significance level, indicating marginal but statistically significant deviations from normality. This finding is consistent with the slightly skewed and peaked distribution observed in the descriptive results, where a large proportion of respondents reported moderate to high food insecurity. Although the deviations are not extreme, they still warrant caution when applying parametric tests that assume normality.

In contrast, the Coping Strategies (CST) variable yielded a K-S statistic of 1.861 and a p-value of 0.0627, while the Shapiro-Wilk test returned a statistic of 1.889 and a p-value of 0.0589. Both p-values exceed the 0.05 significance threshold, suggesting that the data for coping strategies does not significantly deviate from normality. This relatively normal distribution may reflect a broader range of household responses to economic shocks, with some households employing more coping mechanisms than others depending on their income levels and access to resources. It suggests greater heterogeneity in how households respond to inflation and food insecurity, and this variation makes the coping strategies variable more amenable to parametric analysis.

Lastly, the Household Incomes (HHI) variable showed a K-S statistic of 1.984 and a p-value of 0.0473, and a Shapiro-Wilk statistic of 1.992 with a p-value of 0.0464. These values fall just under the 0.05 mark, confirming a statistically significant deviation from normality. This is consistent with the earlier descriptive findings, where the high negative skewness and broad standard deviation indicated non-symmetric data. The income variable's non-normal distribution reflects the wide disparities in household income levels and the disproportionate effect of inflation and food insecurity on income sustainability across different districts of Akwanga.

Correlation analysis

In this study, Pearson's pairwise correlation was employed to assess the linear relationships between the independent variables, Inflation (INF), Food Insecurity (FIN), and Coping Strategies (CST), and the dependent variable, Household Incomes (HHI). This provides initial insight into how strongly each factor relates to household income levels in Akwanga, Nasarawa State. Additionally, Variance Inflation Factor (VIF) was used to test for multicollinearity, a condition where independent variables are highly correlated with each other, which can distort regression estimates. According to the general rule of thumb, a VIF value greater than 10 indicates serious multicollinearity and the need for corrective measures, while values below 5 suggest acceptable levels.

Table 3: Pairwise correlation and Multicollinearity Results

	HHI	INF	FIN	CST	
HHI	1 -----				Centered VIF
INF	-0.6118 (0.0000)	1 -----			1.45896
FIN	-0.5083 (0.0000)	0.6862 (0.0000)	1 -----		2.85252
CST	0.7024 (0.0000)	0.5424 (0.0000)	0.4131 (0.0000)	1 -----	1.65862

Source: *Researcher's Computation, 2025*



The correlation between Inflation (INF) and Household Income (HHI) was -0.6118 , and the p-value (0.0000) confirms that the relationship is statistically significant. This negative correlation indicates that as inflation increases, household incomes tend to decline. This aligns with previous discussions and empirical findings showing that inflation erodes purchasing power and disproportionately affects households with fixed or low incomes. In Akwanga, where many residents rely on agriculture or informal trade, rising prices for food and essential goods can directly reduce real income and limit spending capacity. The strength of this negative correlation highlights the pervasive impact of inflation on household economic well-being.

Similarly, Food Insecurity (FIN) showed a negative correlation of -0.5083 with Household Income, also statistically significant at the 1% level ($p = 0.0000$). This implies that as food insecurity intensifies, household incomes decrease. This finding reinforces the earlier narrative that food insecurity not only results from low income but can also worsen income levels by forcing households to divert resources from productive activities to survival-based spending. In Akwanga, households experiencing food scarcity may be compelled to sell off income-generating assets, reduce labor productivity, or incur debts, all of which contribute to income instability. The moderately strong negative correlation confirms that food insecurity is both a consequence and a driver of reduced household income.

In contrast, Coping Strategies (CST) had a positive and strong correlation with household income, reported at 0.7024 with a p-value of 0.0000 , indicating statistical significance. This result suggests that households employing a range of coping strategies tend to maintain relatively higher income levels compared to those that do not. It reflects the resilience of households that, despite inflation and food insecurity, are able to adapt through mechanisms such as diversification of income sources, informal borrowing, or asset management. These adaptive behaviors may help buffer against economic shocks and preserve income streams. However, while coping strategies may provide short-term relief, their sustainability and long-term effects on household welfare remain subject to further investigation.

Regarding multicollinearity, the centered VIF values for all independent variables were well within acceptable limits: Inflation (1.45896), Food Insecurity (2.85252), and Coping Strategies (1.65862). Since none of the values exceeded the critical threshold of 10, multicollinearity is not a concern in this study. This means the independent variables are sufficiently distinct from one another to be included together in the regression model without inflating the variance of coefficient estimates. The absence of multicollinearity supports the robustness of subsequent inferential analysis using ordinal logistic regression, ensuring that the effects of each variable on household income can be interpreted reliably and independently.

Ordinal Regression Results

The results of the Ordinal Logistic Regression (OLR) analysis offer critical insights into how inflation (INF), food insecurity (FS), and coping strategies (CS) influence household incomes in Akwanga, Nasarawa State. OLR is particularly appropriate for this study because the dependent variable, household income, is ordinal, measured in ordered categories (e.g., low, moderate, and high). This model estimates how changes in the independent variables shift the odds of a household being in a higher or lower income category.

**Table 4: Ordinal Regression Parameter Estimate****Method: ML - Ordered Logit (Newton-Raphson / Marquardt steps)****Dependent Variable: HHI**

Variable	Coefficient	Odd Ratios	Std. Error	z-Statistic	Prob.
INF	-0.08792	0.9158	0.041607	2.113087	0.0411
FS	-0.029	0.9714	0.00994	2.917409	0.0035
CS	0.0692	1.0717	0.029346	2.35806	0.0344
Limit Points					
LIMIT_2: C(4)	11.94967	5.366115	2.226875	0.026	
LIMIT_4: C(5)	14.99183	5.80074	2.584468	0.0098	
LIMIT_5: C(6)	17.06047	6.070158	2.810548	0.0049	
Pseudo R-squared	0.568801	Akaike criterion	2.521347	info	
Schwarz criterion	2.820067	Log likelihood	-19.2135		
Hannan-Quinn criteria	2.57966	Restr. likelihood	-26.2767	log	
LR statistic	14.12642	Avg. log likelihood	-0.96067		
Prob(LR statistic)	0.002738				

Source: *Researcher's Computation, 2025*

Starting with Inflation (INF), the coefficient is -0.0879, which indicates a negative relationship between inflation and household income. The odds ratio of 0.9158 (less than 1) confirms that as inflation increases, the odds of a household being in a higher income category decrease. This result is statistically significant with a p-value of 0.0411 (less than 0.05), supporting earlier descriptive and correlational findings. Inflation, particularly food and commodity price inflation, evidently erodes purchasing power and lowers real incomes, especially for low-income households that already operate at subsistence levels. This outcome highlights the argument that inflation is a critical destabilizing factor for household economies in Akwanga.

Regarding Food Insecurity (FS), the coefficient is also negative (-0.029), and the odds ratio of 0.9714 indicates that increased food insecurity reduces the likelihood of a household moving into a higher income bracket. The effect is statistically significant at the 1% level ($p = 0.0035$), showing a strong and reliable relationship. This reinforces the notion that food insecurity, beyond being a consequence of low income, actively contributes to income instability. Households facing food insecurity are more likely to divert resources from productive activities to meet immediate nutritional needs, often through distress sales, borrowing, or labor reallocation, all of which compromise income potential. The finding supports earlier reviews and aligns with studies showing the bidirectional relationship between food insecurity and income loss.

In contrast, Coping Strategies (CS) showed a positive coefficient of 0.0692, with an odds ratio of 1.0717, greater than 1, indicating that the more coping mechanisms a household employs, the more likely it is to remain or advance to a higher income category. This relationship is also statistically significant ($p = 0.0344$). This result reflects the adaptive capacity of households to mitigate the negative effects of inflation and food insecurity through various means such as diversifying income sources, reducing consumption, informal borrowing, or leveraging social



networks. It affirms the earlier finding from the correlation analysis that coping strategies play a moderating or buffering role in household economic outcomes. However, while the positive effect is encouraging, the long-term sustainability and effectiveness of such strategies remain uncertain, particularly when households rely on negative or non-resilient coping mechanisms like selling assets or withdrawing children from school.

DISCUSSION OF FINDINGS

Findings from the study revealed that inflation had a negative and statistically significant effect on household incomes in Akwanga, Nasarawa State. This suggests that rising inflation, particularly in food and essential commodities, continues to erode household purchasing power, reducing the real value of income and limiting households' capacity to maintain a decent standard of living. This result supports the growing body of evidence showing that inflation disproportionately affects economically vulnerable households. For instance, Amadi et al. (2023) found that rising food prices, driven by inflation, significantly lowered household welfare in Nigeria, especially among low-income earners. Similarly, Obiora et al. (2023) highlighted how inflation weakens household income and access to food, often triggering food insecurity and social vulnerability. However, the finding contrasts with that of Adesina-Uthman, Ademuyiwa, Olusanya and Olure-Bank (2025), who observed an insignificant impact of food inflation on economic survival in Ibadan. Their study suggests that in certain urban areas, households may have developed stronger adaptive mechanisms or benefitted from community safety nets, which are less prevalent in semi-urban regions like Akwanga.

The study also established that food insecurity significantly reduces household income. This reinforces the argument that food insecurity is not merely a consequence of low income but also a driver of continued income instability. Households facing food insecurity often divert resources from productive activities to meet immediate food needs, sell off income-generating assets, or reduce labor productivity due to undernourishment. This finding aligns with the work of Katuka et al. (2025), who demonstrated that food price increases, caused by inflation, worsened household food insecurity and reduced economic stability. It is also consistent with Adeleke and Oyeniyi (2023), who found that food insecurity plays a critical role in shaping income dynamics in rural Nigerian households. Furthermore, the result echoes the conclusions of Obiora et al. (2023), who identified inflation-induced food insecurity as a primary channel through which household welfare deteriorates. However, Adeyemi Tijani (2025) reported a counterintuitive finding that food price inflation reduced poverty in the long run, an outcome likely influenced by macro-level modelling limitations and the use of aggregated data that may not capture grassroots realities, such as those present in Akwanga.

In contrast, coping strategies were found to have a positive and statistically significant influence on household income. This indicates that households that actively engage in coping mechanisms, such as income diversification, informal credit use, food rationing, and asset management, are better positioned to maintain or improve their income levels despite economic challenges. This finding reflects the adaptive capacity of households in responding to inflationary shocks and food access constraints. It is consistent with Gonzalez and Dizon (2020), who showed that coping strategies in low-income settings can moderate the adverse effects of inflation and food insecurity. The result also aligns with Rahman and Sarker (2022), whose study found that adaptive behaviors among low-income urban households helped



maintain income flows under inflationary pressure. Moreover, the result resonates with the findings of Adesina-Uthman et al. (2025), where the employment status of the household head, a proxy for economic adaptation, was the strongest determinant of survival in an inflationary environment. These insights emphasize the resilience of economically active households, particularly in regions with limited formal social protection systems.

CONCLUSION AND RECOMMENDATIONS

This study set out to assess the economic effects of inflation and food insecurity on household incomes in Akwanga, Nasarawa State, with a focus on how households adapt through coping strategies. The findings affirm that inflation significantly undermines household income, reflecting its power to erode purchasing power and reduce real earnings, particularly in semi-urban economies with informal income structures. Food insecurity was also found to negatively impact income, as affected households divert limited resources toward basic sustenance, further weakening economic stability. However, coping strategies were shown to exert a positive effect on household income, suggesting that adaptive behaviors, though varied in form, can help households cushion economic shocks. These outcomes have three major implications: inflation remains a key threat to income sustainability, food insecurity perpetuates income fragility, and household resilience mechanisms play a central role in economic survival.

Based on the findings, several targeted policy recommendations can be made to address the negative impacts of inflation and food insecurity on household incomes in Akwanga, Nasarawa State.

- i. Given the significant effect of inflation on household income, it is imperative for the Central Bank of Nigeria (CBN) to implement more inclusive and locally responsive monetary policies aimed at stabilizing prices, particularly food inflation. This may include tightening the monetary base to control excessive liquidity while also ensuring that interest rates are adjusted in ways that do not stifle rural economic activity. The Federal Ministry of Finance should also collaborate with the Nigerian Bureau of Statistics (NBS) to enhance inflation tracking in semi-urban areas like Akwanga, where price changes may differ from national averages and disproportionately affect households.
- ii. To address the persistent impact of food insecurity, the Federal Ministry of Agriculture and Food Security, in partnership with the Nasarawa State Ministry of Agriculture, should invest in rural food systems by improving access to farm inputs, irrigation, storage facilities, and farm-to-market infrastructure. Expanding targeted food assistance programs through the National Emergency Management Agency (NEMA) and the Nasarawa State Emergency Management Agency (NASEMA) would also help to directly alleviate food insecurity in high-risk communities. In addition, the National Social Investment Programme (NSIP) should intensify household-level food palliative distribution, ensuring that it reaches vulnerable populations in remote areas without political bias or logistical delays.
- iii. Given the positive influence of coping strategies on household income, support for household resilience should be institutionalized through community-based livelihood programs. The Nasarawa State Ministry of Commerce, Industries and Cooperatives should expand microenterprise support schemes that encourage income diversification,



especially for women and informal workers. The Bank of Industry (BoI) and Development Bank of Nigeria (DBN) should tailor microcredit products to meet the needs of rural households, offering flexible repayment terms and financial literacy training. Additionally, the National Orientation Agency (NOA) and local government authorities in Akwanga should invest in community sensitization campaigns to promote effective and sustainable coping mechanisms that do not involve negative trade-offs, such as asset depletion or child labor. These coordinated actions would not only address the root causes of income erosion but also strengthen the capacity of households to withstand future economic shocks.

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