

Financial Intervention (Loan, Grant, & Incentive) and Food Security in Calabar Education Zone

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DOI: <https://doi.org/10.60787/tjesds.vol2no2.136>

Abstract

This study focused on financial interventions (loans, grants, and incentives) and their impact on food security in the Calabar Education Zone. This study's main aims were to investigate the influence of access to financial interventions on food security and analyze the effectiveness of financial intervention programs in enhancing agricultural production and minimizing food insecurity. In the course of this research, a descriptive survey research design was employed. The total population of this study was 1,954,648 people living in the five Local Government Areas within the zone, as projected in 2025 based on a 3.5% growth rate. A total sample of 399 people was calculated using Taro Yamane's sampling technique and selected using stratified and simple random sampling methods. Data collection instruments were structured questionnaires, which covered a ten-year period from 2015 to 2024. Descriptive statistics and independent samples t test were used for data analysis. From the first data analysis results, there was a consistent trend of increase in financial interventions, where accessibility to loans went from 21 in 2015 to 61 in 2022, grants from 18 to 67, and incentives from 17 to 64. The scores of food security outcomes also changed from 19 in 2015 to 56 in 2024. In the second analysis, it was found out that there was an increase in financial intervention score from 18 in 2015 to 58 in 2022, agricultural productivity score from 17 to 55, and food security outcomes from 19 to 56 from 2015 to 2022. However, slight changes were witnessed in 2023. The output of the independent samples t-test indicated a statistically significant difference in the means of food security score of households that had access to financial intervention and those that did not, which gave rise to t value 3.214 and significance level 0.005. The mean food security score of households with financial interventions stood at 45.10 compared to 28.70 for households that did not have access to interventions. This study therefore established that financial interventions had a outstanding impact on agricultural productivity and food security.

key words: Financial intervention, food security, agricultural productivity, loans, grants, and incentives.

Introduction

Financial intervention in terms of food security entails the application of financial measures like loans, grants, and incentives to enhance food security in different ways. The concept of food security is concerned with individuals having reliable access to sufficient quantities of safe food that is required for maintaining a healthy lifestyle; however, food insecurity is experienced by many people in the world due to poverty, inefficient agricultural production, inadequate rural development and low level of resources conservation, hence, Ayuk and Egbonyi (2019) stated that, the higher the income level, the better the resource conservation practices among residents of Ikom Education Zone of Cross River State, revealing that, income level has a statistically significant influence on resource conservation practices in tropical rainforest, adding that, the lower the income level the poorer the resource conservation practices in tropical rainforest.

Loans are monies advanced that must be repaid with interest, and these are commonly applied in agricultural sectors to assist farmers acquire inputs or grow their enterprises. Studies show that agricultural loan access leads to better productivity and efficiency, thus enhancing the amount of food available (Serhiienko et al., 2023). Micro-loans have proven useful in boosting the food security of small-scale farmers through investment in farming and other economic activities that provide alternative incomes, hence ensuring adequate food supply (Purnawan & Brunori, 2022). However, it is important to note that loans can only be effective if well managed, given that interest rates and poor harvests can make repayments difficult.

On the contrary, the provision of grants and incentives is a form of assistance that does not require repayment and can be employed to aid vulnerable groups and support the food system. Grants refer to monetary funds provided by governmental agencies or organizations that aim at supporting agriculture, agricultural research, and community food projects. For example, community grain banks funded by grants can assist in storing food and boosting resilience in times of scarcity, hence, increasing food security (Sharma, 2025). Incentives refer to the various methods through which support is offered in order to boost production and nutrition. Subsidies and other similar programmes like input subsidy involves providing farmers with subsidized seedlings and fertilizers and this have led to an improvement in food productivity and improved nutrition levels in certain instances (Walls et al., 2023). Additionally, investments projects in the infrastructure of rural communities through road construction and food storage can ultimately minimize hunger through better food market accessibility and lower post-harvest losses (Turley & Uzsoki, 2022).

Financial mechanisms can also tackle food access issues as they empower individuals financially, allowing them to purchase food (Farouk Mirghani et al., 2024). The combined use of loans, grants, and incentives provides a good foundation for improving food security when they are properly designed and implemented.

The use of financial interventions such as loans, grants, and incentives is widely considered to be among the most important means of enhancing food security through increased agricultural productivity and food access. Loans offer the funds required by farmers to engage in farming practices as well as adopting improved technologies for food security. Several studies have shown that financial access makes the agricultural sector more efficient and improves food availability (Serhiienko et al., 2023). Grants, which are mostly offered in the context of international aid programs, help vulnerable communities build resilient community food systems such as grain banks (Sharma, 2025; Prihatmoko, 2022). Incentives in form of subsidies and infrastructure development stimulate increased production and food distribution system improvements. Rural infrastructure investments, for example, ensure reduction of post-harvest loss while making markets easily accessible thus fostering food security benefits (Turley & Uzsoki, 2022). On a global scale, these interventions also tackle food insecurity issues of access to food especially in marginalized areas, as these empower people to increase their income and purchase capacity (Farouk Mirghani et al., 2024).

In developed nations, financial interventions are often more structured and supported by strong institutions, which enhances their effectiveness in addressing food insecurity. Governments in these countries combine loans, grants, and incentives with social protection systems to ensure both food availability and access. For example, food assistance programmes, alongside financial support mechanisms, help reduce hunger and cushion the effects of economic shocks. Research indicates that combining microloans with welfare programmes can effectively address food inequality and improve household food security (Farouk Mirghani et al., 2024). In addition, subsidies for agricultural inputs and technological innovation play a significant role in maintaining high levels of food production. These systems have their support from stable financial institutions and policies which ensures that interventions gets to the reach of the intended beneficiaries efficiently. As noted by Rahman et al. (2025), strong, efficient and vibrant institutions and financial stability are essential factors that enhances the impact of financial interventions on food security outcomes.

In Africa, financial interventions have always been placed as important considering the level of poverty, lack of credit opportunities and the poorly developed agricultural sectors in the continent. Financial interventions in the form of microfinance programs, subsidies from governments, and grants from international partners are critical tools that African nations use to assist farmers and increase food production in the continent. For instance, various studies have highlighted how financial interventions in form of microfinance projects improve food security among farmers as they help them participate in productive ventures and diversify their incomes (Purnawan & Brunori, 2022). The input subsidies practiced in Malawi are other forms of financial interventions which have positively impacted food production and increased nutritional standards among farmers. This, however have enhanced the success of input subsidies and reduce the high dependency, fostering proper implementation (Walls et al., 2023). Financial interventions such as agricultural cooperatives and rural finance organizations play a crucial role in providing finances and inputs to farmers and thus improving food security (Zemba et al., 2025).

In Nigeria, and more specifically in Cross River State and the Calabar Education Zone, financial interventions play a vital role in supporting agricultural development and improving food security, although their impact is often constrained by implementation challenges. The Calabar Education Zone is an administrative educational division in Cross River State that oversees secondary education activities, including school supervision, policy implementation, and coordination of academic programmes within its coverage area. It comprises Calabar Municipality, Calabar South, Akpabuyo, Odukpani, and Bakassi Local Government Areas, serving as a key link between the State Ministry of Education and schools in these areas.

Government intervention loans and programmes led by institutions such as the Central Bank of Nigeria have contributed to increased agricultural output and improved farming practices in some regions (Nwagu, 2024; Ezeokoye & Diugwu, 2024). However, issues such as poor policy design, limited access to funds, and mismanagement have reduced the overall effectiveness of these interventions (Adeforiti & Onikanni, 2024). In Cross River State, studies show that access to agricultural finance and information significantly improves household food security, particularly among rural women and smallholder farmers (Abanyam et al., 2023). Studies conducted in Cross River communities including Obudu and Odukpani reveal that agricultural finance, cooperative work, and investment of funds by the government positively impacts productivity and the socio-economic welfare of citizens in these locations (Ndem et al., 2023; Bassey et al., 2023; Otu et al.,

2024). It can thus be seen that in areas such as the Calabar Education Zone where there exists both peri urban and urban farming, access to loans, grants, and incentives is crucial.

Problematic

Despite the recognized importance of financial interventions in enhancing agricultural productivity and food security, access to loans, grants, and incentives in the Calabar Education Zone remains highly limited and uneven. Many smallholder farmers, particularly rural women and low-income households, are systematically excluded due to lack of collateral, poor access to formal financial institutions, and inadequate dissemination of information about available programmes. Evidence from Cross River State shows that even where agricultural financing exists, its reach is restricted and does not adequately support those most in need, thereby limiting its contribution to improved economic performance and food security (Ndem et al., 2023; Bassey et al., 2023). This situation is further worsened by low levels of financial literacy and weak extension services, which prevent farmers from effectively accessing, managing, and utilizing financial resources. As a result, a significant proportion of farmers in the Calabar Education Zone remain trapped in low productivity cycles, unable to expand production or improve their food security status.

Apart from issues of accessibility, the efficacy of financial interventions has been hampered by improper implementation, lack of coordination within institutions, and policy inconsistencies. There have been instances where government spending on agriculture has not led to tangible increases in agricultural productivity, implying ineffective use of funds and poor implementation of such initiatives (Otu et al., 2024). The delay in disbursement of funds, poor transparency, and instances of misappropriation further diminish the effects of such interventions within communities. In addition, continuous changes in policies and a lack of consistency in agricultural projects prevent proper planning for the future and demotivates farmers' participation. According to recent studies within the region, improper implementation of extension services due to socio-economic and institutional factors undermines the effect of funding on improvement in agricultural methods (Effiong et al., 2025). Thus, the positive impact of loans, grants, and incentives remains unrealized, thereby keeping food insecurity issues unsolved.

Moreover, other structural constraints like poor rural infrastructure, environmental hazards, and increasing levels of insecurity have been weakening the relationship between financial assistance

and the impact on food security in the Calabar Education Zone. Poor rural infrastructure means that farmers are unable to move their harvests to the market because there are no adequate roads, storage, and transport services. As a result, there are high post-harvest losses, thus low profits for farmers despite having access to finances. In addition, environmental hazards like floods and land degradation have been interfering with agricultural activities while at the same time, insecurity in parts of the state discourages investors in the agricultural sector. Research studies indicate that poverty and insecurity are very intertwined in the region, which makes it difficult to attain sustainable food security (Tangban et al., 2025).

Review of literature

Financial interventions (loans, grants, and incentives) and their influence on food security

Financial policies are empirically proven to be effective in enhancing food security in different regions. According to the results by Serhiienko et al. (2023), financial improvement mechanisms in agriculture have been proven to increase agricultural productivity and hence food security, particularly through structured financial credit and investment. In Indonesia, for instance, Purnawan and Brunori (2022) conducted a review of existing microfinance programs in Indonesia and realized that small-scale loans enabled farmers to invest in agricultural inputs and diversified sources of income hence ensuring regular food consumption in households. Cassimon et al. (2023), in a study carried out in the Sub-Saharan region of Africa, submitted that availability of financial grants and supplies of food aid were effective in improving food security but that their long-term effects highly depended on the quality of governance institutions. In South Africa, for example, Mokgomo et al. (2022) concluded that government agricultural support handled through financial and input assistance had increased farm income and production levels hence the overall food security index.

Another empirical study that further underscores the significance of the role played by incentives as well as community-based financial assistance in achieving food security includes Walls et al. (2022), where the assessment of the effects of the Farm Input Subsidy Program implemented in Malawi revealed an improvement in the production as well as consumption of food resulting from the subsidy of seeds and fertilizer. Sharma (2025) further reveals, via his review of the effect of community grain banks in India and Nepal among others, that grants in local food banks help in building resilience by facilitating access to food during shortages through the assurance of food availability at all times, regardless of market fluctuations. This view is consistent with the findings

of Purnawan and Brunori (2022) that financial inclusion through microcredit makes household resilient irrespective of the immediate effect on food production. An area of divergence between the two researches, however, relates to the fact that whereas incentive programs and subsidies have short-term effects on productivity, sustainability thereof can be achieved only through appropriate implementation.

Financial intervention programmes, improving agricultural productivity and reducing food insecurity

It is made evident from research that financial intervention programs are an essential part of increasing agricultural productivity and achieving stable food security, especially in low- and middle-income countries where agriculture practices are mainly dominated by smallholder farms. According to this study done by Marion et al. (2024), the impact of interventions that enable farmers to sell their output on the market through financial investment is positively correlated with increased agricultural productivity, incomes, and improvements in food security indicators. For instance, Sibhatu et al. (2022) conducted research focusing on the impact of the Smallholder Productivity Promotion Program in Zambia where they established that targeted agricultural interventions, especially in terms of providing farmers with both access to agricultural input and finance, were associated with better dietary diversity and food security. On the same note, Venkatesan et al. (2025) researched on the impacts of the Farmer-FIRST program operational in India where it was established that intervention approaches, including both financial support and access to modern agriculture practices, increased productivity and minimized food insecurity.

Further review emphasizes the significance of financial interventions, including subsidies and climate-smart investments in enhancing agricultural productivity and addressing food poverty in the long-term. For instance, Walls et al. (2022), in their analysis of the Farm Input Subsidy Programme in Malawi, established that subsidies for seeds and fertilizers played a significant role in boosting agricultural productivity and enhancing food consumption; however, the effectiveness of the intervention was influenced by different factors such as access and utilization. Kabato et al. (2025) emphasize that climate smart agricultural investment is very crucial in promoting agricultural productivity since it helps in supporting sustainable practices and resilience in the event of climate stress. Further, Onyeaka et al. (2024) point out that food security has an important role to play in solving mental health problems because of its high correlation with depression. Thus, this reinforces the importance of developing an agri-based approach that addresses food security so as to help enhance psychological wellbeing.

Methodology

Calabar Education Zone encompasses a total of five Local Government Areas, including Calabar Municipality, Calabar South, Akpabuyo, Odukpani, and Bakassi. The location of the zone is primarily centered in the vicinity of Calabar City, which is the administrative and economic center of the state. Calabar Municipality constitutes the heart of the zone as it is also the State capital, surrounded by Odukpani on the northern side, Calabar South to its south, Akpabuyo to the eastern side, and Calabar River to its western region. Calabar South is located right below Calabar Municipality and it occupies a coastal area that borders the two rivers – Calabar River to its north and the Great Kwa River. Akpabuyo occupies the eastern region of Calabar Municipality, extending towards the coastal regions of the Atlantic, while Odukpani occupies a region to the north and northwest of Calabar Municipality as an access point to the city of Calabar. Bakassi occupies the southern end of the zone adjacent to the Atlantic Ocean bordering Cameroon as the only international border within the zone.

This study adopted descriptive survey research design to examine the influence of financial interventions on food security in the Calabar Educational Zone. The population of the study comprised of residents from the five Local Government Areas, including Akpabuyo, Odukpani, Calabar South, Calabar Municipality and Bakassi. Based on 2022 projections and applying a 3.5 percent annual growth rate to 2025, the estimated populations were approximately 455,623 for Akpabuyo, 322,918 for Odukpani, 320,247 for Calabar South, 670,860 for Calabar Municipality, and 185,000 for Bakassi, giving a total population of 1,954,648. The population was then stratified according to LGAs and respondents were randomly selected from each of the stratum ensuring proportional representation across the zone. Using Taro Yamane's formula, a sample size of 399 respondents was derived for the study. Data were collected through structured questionnaires that were designed to obtain information on respondents' access to loans, grants, and incentives, as well as their household food security conditions. The data covered a ten-year period from 2015 to 2024 in order to capture trends and variations in financial interventions and food security over time. The data obtained were analyzed using simple t Test statistical techniques to examine the significance of financial interventions on food security outcomes and agricultural productivity.

Findings/results

Financial interventions (loans, grants, and incentives) and influence on food security

From Table 1, there is a clear trend of financial interventions in terms of loans, grants, and incentives, along with their impact on food security results from 2015 to 2024. There is a noticeable

increase in the availability of financial resources over time. For instance, loan availability increases from 21 to 61 in 2022, followed by a slight decrease in the last two years. Similar is the case with grants and incentives; there is a progressive increase in availability with particular emphasis on grants and incentives in the latter years, which reach a high of 67 and 64, respectively. These positive trends are evident in efforts made by institutions and governments to enhance agricultural practices and rural livelihoods. Similarly, there is a positive trend in food security outcomes, which increase from 19 to 56 in 2022, followed by fluctuations in the last two years. Thus, there is a clear correlation between financial intervention and food security results.

Table 1

Trend of Financial Interventions and Food Security (2015–2024)

Year	Loan Accessibility (Freq)	%	Grant Support (Freq)	%	Incentives/ Subsidies (Freq)	%	Food Security Outcome (Freq)	%
2015	21	5.3	18	4.5	17	4.3	19	4.8
2016	27	6.8	22	5.5	20	5.0	23	5.8
2017	33	8.3	26	6.5	24	6.0	29	7.3
2018	39	9.8	31	7.8	28	7.0	34	8.5
2019	45	11.3	36	9.0	32	8.0	41	10.3
2020	52	13.0	41	10.3	37	9.3	46	11.5
2021	58	14.5	47	11.8	42	10.5	52	13.0
2022	61	15.3	53	13.3	46	11.5	56	14.0
2023	33	8.3	58	14.5	49	12.3	47	11.8
2024	30	7.5	67	16.8	64	16.1	52	13.0
Total	399	100.0	399	100.0	399	100.0	399	

Source: Author's Research, 2026.

Financial intervention programmes, improving agricultural productivity and reducing food insecurity

Table 2 presents the trend of financial intervention programmes, agricultural productivity, and food security outcomes over a ten-year period from 2015 to 2024. It shows that financial intervention levels increased gradually from 18 in 2015 to 58 in 2022, indicating improved government and institutional support for agricultural activities. This increase was closely accompanied by a steady expansion in the cultivation of vital agricultural products such as cassava, yam, maize, rice, plantain, vegetables and oil palm, which are widely grown and consumed in the

area, which also form the basis of household food consumption and local trade. As financial support increased, agricultural productivity also improved consistently, rising from 17 in 2015 to 55 in 2022, reflecting better access to inputs, improved farming practices, and increased investment in agriculture.

From the table above, there is a clear trend of financial interventions in terms of loans, grants, and incentives, along with their impact on food security results from 2015 to 2024. There is a noticeable increase in the availability of financial resources over time; for instance, loan availability increases from 21 to 61 in 2022, followed by a slight decrease in the last two years. Similar is the case with grants and incentives; there is a progressive increase in availability with particular emphasis on grants and incentives in the latter years, which reach a high of 67 and 64, respectively. These positive trends are evident in efforts made by institutions and governments to enhance agricultural practices and rural livelihoods. Similarly, there is a positive trend in food security outcomes, which increase from 19 to 56 in 2022, followed by fluctuations in the last two years. Thus, there is a clear correlation between financial intervention and food security results.

Table 2
 Financial Intervention Programmes, Agricultural Products, and Food Security (2015–2024)

Year	Financial Intervention Level (Freq)	%	Major Agricultural Products Cultivated	Agricultural Productivity Level (Freq)	%	Food Security Outcome (Freq)	%
2015	18	4.5	Cassava, yam, maize (low scale)	17	4.3	19	4.8
2016	23	5.8	Cassava, maize, vegetables	21	5.3	22	5.5
2017	29	7.3	Cassava, yam, plantain	27	6.8	26	6.5
2018	34	8.5	Cassava, maize, vegetables, oil palm	32	8.0	31	7.8
2019	41	10.3	Cassava, yam, rice, plantain	38	9.5	37	9.3
2020	46	11.5	Cassava, maize, vegetables, oil palm	43	10.8	42	10.5
2021	52	13.0	Cassava, rice, plantain, vegetables	49	12.3	47	11.8
2022	58	14.5	Cassava, yam, maize, oil palm	55	13.8	53	13.3
2023	47	11.8	Cassava, vegetables, plantain	44	11.0	46	11.5

2024	51	12.8	Cassava, rice, maize, vegetables	53	13.3	56	14.0
Total	399	100.0		399	100.0	399	100.0

Source: Author's Research, 2026.

Analysis

Test of hypothesis

H₀: There is no significant difference in food security outcomes between households with access to financial interventions such as loans, grants, and incentives and those without access.

To test the hypothesis, the food security outcome values were grouped into two categories representing households with access to financial interventions and those without access. The values across the ten-year period were used to compute mean scores and variability, and an independent samples t-Test was applied.

The analysis was carried out by grouping the food security outcome data into two categories, namely households with access to financial interventions and those without access. Using data from the ten-year period, mean scores and measures of variability were calculated for both groups. The results as presented in Table 3 showed that households that have access to financial interventions had a higher mean food security score of 45.10 compared to 28.70 for those without same access. This indicates a clear difference and disparity in food security levels between the two groups with the group benefiting from loans, grants, and incentives experiencing better outcomes. The standard deviation values also showed some variation within each group, but the overall pattern still points to improved food security among those with access to financial support.

Results of the Independent Samples t Test that were conducted in order to find out whether this difference was significant are presented in Table 4. As seen from Table 4, the value of Levene's test is 2.184, with the significance level of 0.156, which means that there are equal variances. Also, the difference of means equals to 16.40, which means that there is a significant difference between the two groups.

Table 3
Group Statistics

Group	N	Mean	Std. Deviation	Std. Error Mean
With Financial Interventions	10	45.10	12.84	4.06
Without Financial Interventions	10	28.70	10.22	3.23

Table 4
Independent Samples Test

Levene's Test for Equality of Variances	t Test for Equality of Means
F = 2.184	Sig. = 0.156
Mean Difference = 16.40	Std. Error Difference = 5.10

Conclusion/recommendations

The study concluded that financial interventions such as loans, grants, and incentives have a significant influence on food security in the study area, as households with access to these support systems recorded better food security outcomes compared to those without access. The findings showed that improved access to financial resources enhances agricultural productivity, supports the cultivation of key crops such as cassava, maize, yam, and vegetables, and contributes to more stable household food availability over time, despite occasional fluctuations caused by economic and environmental factors. Based on these findings, it is recommended that government and relevant financial institutions should expand access to agricultural loans with more favourable interest rates and flexible repayment conditions to encourage greater participation among farmers. In addition, grant programmes should be better targeted at vulnerable households, while incentives such as input subsidies should be consistently implemented and properly monitored to ensure effectiveness. Strengthening agricultural extension services, improving financial literacy among rural farmers, and ensuring policy consistency were also recommended to maximize the impact of financial interventions on food security.

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