

Comparative Performance and Sustainability Assessment of Government Agricultural Financing Schemes among Rice Farmers in South-East Nigeria

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Received: 10-December-2025

Accepted: 20-December-2025

Published: 25-December-2025

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This article is published in the **MSI Journal of Sustainable Agriculture and Food Systems**

ISSN xxxx-xxxx (Online)

Volume: 1, Issue: 1 (Jul-Dec) 2025

ABSTRACT: This study evaluated a comparative performance and sustainability assessment of Federal Government agricultural financing schemes among rice farmers in South-East Nigeria. Specific objectives were to assess the performance of rice-farmer beneficiaries through net returns analysis compared with non-beneficiaries, and to evaluate the sustainability of Federal Government agricultural financing intervention schemes in South-East Nigeria. A multi-stage sampling technique was used to select 543 respondents (264 beneficiaries and 279 non-beneficiaries) from Anambra, Ebonyi, and Enugu States. Data were analyzed using net return analysis, a Z-test for significant differences, and a sustainability index. Results showed that beneficiary rice farmers achieved a significantly higher net return (₦4,517,896.65) and return on investment (1.20) compared to non-beneficiaries (₦848,007.64 and 0.42, respectively). The sustainability assessment of the schemes based on repayment rates Anchor Borrowers' Programme (36.5%), FADAMA (38.2%), and IFAD-VCDP (3.3%) fell below the 50% sustainability threshold, indicating weak financial discipline

while SMEDAN, NIRSAL, and Youth Empowerment were 60.5%. The study concludes that while these financial interventions significantly boost farmers' profitability, their long-term viability is threatened by widespread low repayment, risking the continuity of these crucial programs. The study recommends that poorly performing schemes should be redesigned, and farmers and other stakeholders should develop a monitoring and follow up mechanisms to ensure that the funds are used for the intended purposes.

Keywords: *Rice Farmers, Agricultural Credit Scheme, Net Return, sustainability assessment, South-East Nigeria.*

INTRODUCTION

Agriculture remains a major contributor to Nigeria's GDP, with smallholder farmers playing a dominant role by producing over 90% of the food consumed in the country. According to Awokunle (2025) and Trading Economics. (2025), smallholders form the backbone of food supply across low-income areas in Nigeria, especially South-East Nigeria. Despite the prominence of crude oil in national revenue, agriculture continues to sustain a large share of the population and underpins national development. Yet, decades of underinvestment, inadequate financing, and weak institutional frameworks have constrained the sector's ability to achieve its full potential (Adaji, 2025). The persistent inability of smallholder farmers to access affordable and timely credit has further limited productivity improvements. According to the World Bank (2021), although agriculture employs a significant proportion of Africa's population, the sector receives only about 1% of total bank lending. Thus, chronic credit exclusion continues to hinder farmers' capacity to adopt modern technologies, expand production, and enhance productivity.

Agricultural credit in Nigeria includes loans, input-for-credit schemes, and guarantee instruments designed to support farm production, processing, storage, and marketing activities (Awokunle, 2025). To close the financing gap and stimulate agricultural growth, the Federal Government introduced several intervention schemes such as the Anchor Borrowers' Programme (ABP), Agricultural Credit Guarantee Scheme Fund (ACGSF), Agricultural Credit Support Scheme (ACSS), and the Commercial Agriculture Credit Scheme (CACs) (Onwuaroh *et al.*, 2024 and Makinde *et al.*, 2024). These programs were

initiated to expand credit access, boost productivity, reduce poverty, and strengthen food security. Rice farmers, particularly in South-East Nigeria, have been major targets due to the region's significant contribution to domestic rice production and Nigeria's push toward rice self-sufficiency (Central Bank of Nigeria [CBN], 2021).

Although these schemes mark major progress toward addressing long-standing credit challenges, concerns persist regarding their effectiveness and sustainability. Past studies including Udoka and Duke (2016) and Okoh (2015) highlight that agricultural financing in Nigeria often remains inadequate and poorly implemented. Farmers frequently report delays in disbursement, insufficient loan amounts, unfavourable interest rates in some schemes, and weak monitoring mechanisms. Many rice farmers receive amounts significantly lower than they demand, reducing their capacity to purchase essential inputs like fertilizers, improved seeds, agrochemicals, and mechanization services. Consequently, despite government interventions, the performance of rice farmers in South-East Nigeria has not improved as expected.

Evidence reveals persistent gaps between credit demanded and credit received, raising questions about the operational efficiency of these schemes. Additionally, rising inflation, escalating input prices, administrative bottlenecks, and increasing loan defaults challenge the long-term sustainability of these interventions (Ogbu and Ocholi, 2024). Although many farmers participate in credit programs, it remains unclear whether this participation results in superior financial performance, particularly when measured through net returns, compared to non-beneficiaries. Without such evidence, policy decisions may rely on assumptions rather than empirical findings.

Existing literature on agricultural financing in Nigeria has explored credit adequacy (Agbada, 2015; Agunuwa *et al.*, 2015), agricultural credit delivery challenges (Udoka and Duke, 2016), expenditure patterns (Okoh, 2015), and ACGSF operations (Nwankwo, 2013). However, few studies conduct performance-based comparisons between beneficiaries and non-beneficiaries using net returns as a financial performance indicator. Furthermore, limited research has examined the sustainability of financing schemes within the specific context of rice farmers in South-East Nigeria.

To fill these gaps, this study considered the following specific objectives: (i) to assess the performance of rice-farmer beneficiaries through net returns analysis compared with non-beneficiaries, and (ii) to evaluate the sustainability of Federal Government agricultural financing intervention schemes in South-East Nigeria.

MATERIAL AND METHOD

The study was carried out in South-East Nigeria, comprising Abia, Anambra, Ebonyi, Enugu, and Imo States. The region lies between latitudes 4°10'–7°08'N and longitudes 5°30'–9°27'E, with a population of 16.3 million people (National Population Commission, NPC, 2006) and estimated population of 29 million (NPC, 2024). It falls within the rainforest ecological zone and covers about 10.95 million hectares. The climate is humid, with annual rainfall of 2000–3000 mm, mean temperature of 28°C, and two marked seasons, rainy (March–October) and dry (November–February). Farming is a major occupation in the zone, with rice, yam, cassava, maize, and cocoyam as dominant food crops, and cocoa, palm oil, rubber, and cotton as cash crops (Okoye et al., 2010; Osuji et al., 2012). The region was selected because it is a major beneficiary of government agricultural financing schemes and is a key rice-producing hub supported by programmes such as CADP (NBS, 2019).

A multi-stage sampling design, combining purposive, random, and proportionate techniques was adopted to select rice farmers for the study. In the first stage, three States with the highest rice output and the largest concentration of beneficiaries of agricultural financing schemes were purposively chosen: Anambra, Ebonyi, and Enugu (NBS, 2019). In the second stage, one Local Government Area (LGA) was purposively selected from each agricultural zone in the three States, giving a total of nine LGAs. These LGAs were chosen based on their strong involvement in rice production. The third stage involved the purposive selection of six rice-producing communities from each of the nine LGAs, resulting in 54 communities across the States. In the fourth stage, sampling frames of registered rice farmers were used to stratify farmers into beneficiaries and non-beneficiaries of agricultural financing schemes. These sampling frames were compiled with the assistance of ADP officials, resident extension agents, and RIFAN leaders. The Taro Yamane (1967) formula, also applied in Nwaiwu (2014), was then used to determine the appropriate sample sizes at a 5% precision level:

$$n = \frac{N}{1 + N(e^2)} \quad \text{--- Equation (1)}$$

Using this formula produced sample sizes of 264 beneficiaries and 279 non-beneficiaries.

From the stratified lists, a proportionate random sampling technique was applied to account for the unequal population sizes across States. This yielded 95 beneficiaries from Ebonyi, 91 from Enugu, and 78 from Anambra. For non-beneficiaries, 101 were selected from Ebonyi, 93 from Enugu, and 85 from Anambra. Altogether, this resulted in a total sample size of 543 respondents.

The non-beneficiaries were included solely to provide comparison among the rice farmers in the study area.

Model Specification

The Net Return (NR) which serves as an index of performance is specified as follows:

$$NR_{ij} = TR_{ij} - TC_{ij} \quad \text{--- Equation. (1)}$$

$$TC_{ij} = TFC_{ij} + TVC_{ij} \quad \text{--- Equation. (2)}$$

Where:

i = for beneficiaries

j = for non- beneficiaries

TR = Total Revenue (₦)

TVC = Total Variable Cost (₦)

NR= Net Return (per tonne) as a measure of performance (₦).

TFC = Total Fixed cost (₦)

TC = Total Cost (₦)

Z Statistics

$$Z_{cal} = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \quad \text{--- Equation (4)}$$

Where:

\bar{x}_1 = mean NR for beneficiaries

\bar{x}_2 = mean NR for non-beneficiaries

S_1^2 = variance of net revenue from beneficiaries

S_2^2 = variance of net revenue from non-beneficiaries

n_1 = sample size of beneficiaries

n_2 = sample size for non-beneficiaries

Sustainability Model

Sustainability model, which was used by Nwaiwu *et al* (2013), and is stated as follows:

$$S_I = \frac{N_N}{T_D} \times \frac{100}{1} \quad \text{--- Equation (4)}$$

Where,

S_I = Sustainability index or sustainable system (%)

N_N = Number/amount of financial interventions repaid by beneficiaries per annum (₦)

T_D = Total number/amount of disbursements to rice farmers per annum (₦)

The sustainability index will show if the financial intervention is unsustainable, sustainable or highly sustainable as thus

If $S_I \leq 40\%$ unsustainable financial intervention

If $S_I > 40\% \leq 50\%$ sustainable financial intervention

If $S_I > 50\%$ a highly sustainable financial intervention

RESULTS AND DISCUSSION

4.6 Performance of the rice farmer beneficiaries through their net returns in comparison with non-beneficiaries

The performance of rice farmer beneficiaries under the financial intervention scheme was assessed based on their net returns and return on investment (ROI). The results in Table 1 showed a strong positive impact of participation in the financial intervention schemes.

Table 1: Performance comparison of the rice farmer beneficiaries and none non-beneficiaries

Item Description	Non-Beneficiaries				Beneficiaries			
	Qty.	Unit price (₱)	Amount (₱)	%	Qty.	Unit price (₱)	Amount (₱)	%
Revenue:								
Sales of Rice paddy per 100 kg/bag	67.30	42679.12	2,872,304.84		83.00	99712.60	8,276,145.67	
Variable cost (VC):								
Rice seedling (kg)	217.08	1455.60	315,979.98		2205.18	986.43	2,175,257.77	
Fertilizer used (50kg/bag)	6.53	42715.05	278,929.30		29	32347.99	938,091.78	
Agrochemical used (Litre)	96.72	9273.18	896,872.30		40.40	7064.68	285,435.93	
Labour cost (N)			192,198.92				110,215.08	
Harvesting cost (N)			98,469.53				68,726.08	
Transportation cost (N)			60,575.04				24,468.78	
Other cost (N)			70,189.96				28,424.91	

Total Variable cost (TVC)			1,913,215.04	94.5%			3,630,620.34	96.6%
Fixed cost (FC):								
dep. on Wheelbarrow	1	2224.37	2,320.04		2	1571.25	2,505.67	
Dep. on Hoe	5	1974.58	9,872.91		8	1340.87	10,726.94	
Dep. on Merchet	2	1591.08	3,267.71		3	966.03	2,941.99	
Dep. on shovel/spade	1	1276.82	1,542.25		2	343.12	692.75	
Dep. on farm house	1	1722.22	1,722.22		1	2500.83	2,500.83	
Dep. on Bicycle/motor cycle	1	32447.67	21,980.68		1	22492.14	33,567.82	
Dep. on other asset			3,059.14			16309.40	16,309.40	
Rent on land			67,317.20				58,383.28	
Total Fixed cost (TFC):			111,082.16	5.5%			127,628.68	3.4%
Total cost (TC)			2,024,297.19				3,758,249.02	
Net return			848,007.64				,517,896.65	
Return on investment (ROI)			0.42				1.20	

Sig. Diff (Z-value)	-257.03***
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Source: Computed from Field Survey Data, 2025

The results showed that beneficiaries earned ₦8,276,145.67 from 83.00 bags of 100kg paddy at an average unit price of ₦99,712.60, compared to ₦2,872,304.84 from 67.30 bags at ₦42,679.12 per bag for non-beneficiaries. This reflects both a scale advantage and a price premium of about ₦57,033 per bag, resulting in nearly three times higher revenue for beneficiaries. The combination of larger marketed surplus and higher prices suggests that the schemes improved market linkage, quality grading, and bargaining power.

Total Variable Cost (TVC) for beneficiaries was ₦3,630,620.34 (96.6% of Total Cost) versus ₦1,913,215.04 (94.5%) for non-beneficiaries, while Total Fixed Cost (TFC) was ₦127,628.68 (3.4%) versus ₦111,082.16 (5.5%), yielding Total Costs of ₦3,758,249.02 and ₦2,024,297.19, respectively. Line-item analysis shows beneficiaries spent more on fertilizer at lower unit costs (₦938,091.78; 29 bags @ ₦32,347.99 compared to ₦278,929.30; 6.53 bags @ ₦42,715.05), but less on agrochemicals and labour/logistics (agrochemicals: ₦285,435.93 compared to ₦896,872.30; labour: ₦110,215.08 vs ₦192,198.92; harvesting: ₦68,726.08 vs ₦98,469.53; transport: ₦24,468.78 compared to ₦60,575.04; other costs: ₦28,424.91 compared to ₦70,189.96). This indicates that beneficiaries operate at a larger scale with tighter unit economics, reflecting better input procurement, agronomic practices, and operational efficiency.

Beneficiaries recorded a Net Return of ₦4,517,896.65 compared to ₦848,007.64 for non-beneficiaries, and a ROI of 1.20 compared to 0.42. The difference is statistically significant ($Z = -257.03^{***}$, $p < 0.01$). Economically, the schemes are translating into sustainably higher profits by facilitating access to key inputs at better prices, enhancing market access for premium pricing, and reducing per-unit production and logistics costs. These results support the need to sustain and scale up the intervention model.

Sustainability Analysis of the various Federal Government Financing Intervention Schemes for the Rice Farmer

The sustainability of financial intervention schemes was evaluated using a Sustainability Index (SI), calculated as the ratio of the amount repaid by farmers to the amount received. Table 2 highlights that most schemes recorded unsustainably low repayment levels, indicating that farmers are not repaying funds at expected rates. Notably, large-scale interventions such as IFAD-VCDP (3.3%), ATASP-1 (25.9%), Anchor Borrowers (36.5%), and FADAMA (38.2%) fall below the 50% repayment threshold, suggesting weak financial sustainability.

Conversely, SMEDAN, NIRSAL, and Youth Empowerment stand out with a repayment rate of 60.5%, surpassing the 50% threshold and thus classified as highly sustainable. This superior performance may be attributed to stricter loan terms, better repayment enforcement, or the targeting of more commercially-oriented beneficiaries.

The IFAD-VCDP program is particularly problematic: despite a substantial disbursement of ₦6.3 million, repayment amounted to only ₦209,000 (3.3%). This likely reflects structural issues, such as a focus on grants or subsidies rather than recoverable loans, coupled with weak monitoring and enforcement mechanisms. Such extremely low repayment rates can foster a dependency mentality, where beneficiaries treat support as grants, increasing the risk of moral hazard and undermining program sustainability. The results align with Makinde *et al.* (2024), who reported that the interest drawback program and the Anchors Borrowers Programme contributed to the output of the agricultural sector via its awareness, the Agricultural Credit Guarantee Scheme funds have not impacted agricultural output. The low repayment performance of most interventions threatens the economic efficiency and continuity of these programs. Without consistent repayment, implementing agencies cannot maintain revolving funds, limiting the ability to scale, repeat, or expand interventions. This fiscal unsustainability could ultimately force reductions or withdrawal of support.

Nevertheless, the strong performance of SMEDAN, NIRSAL, and Youth Empowerment demonstrates that financial discipline is achievable with proper program design, beneficiary orientation, and follow-up mechanisms. These programs can serve as models for restructuring other interventions to enhance sustainability.

Finally, while a few schemes demonstrate sustainable repayment practices, the majority of federal government financing interventions for rice farmers in Southeast Nigeria are currently not sustainable.

Table 2: Distribution According to the Sustainability of the various Federal Government Financing Intervention Schemes to the rice Farmer

Programs	Amount given (₦)	Repaid	Sustainability index (SI)	Remarks
IFAD Value Chain Development Programme (VCDP)	6,337,000	209,000	3.3%	Highly unsustainable
Agricultural Transformation Agenda Support Programme Phase one (ATASP-1)	1,350,000	350,000	25.9%	Unsustainable
Anchor Borrowers	425,000	155,000	36.5%	Unsustainable
FADAMA	1,310,000	500,000	38.2%	Unsustainable
SMEDAN, NIRSAL, and Youth Empowerment	1,490,000	901,000	60.5%	Highly sustainable
Federal/State Ministry of Agriculture	300,000	100,000	33.3%	Unsustainable

Source: Computed from Field Survey Data, 2025. If $SI \leq 40\%$ unsustainable financial intervention, If $SI > 40\% \leq 50\%$ sustainable financial intervention, and If $SI > 50\%$ highly sustainable financial intervention.

CONCLUSION

The study concluded that government agricultural financing schemes have a strong, positive impact on the financial performance of rice farmers in South-East Nigeria, enabling them to achieve significantly higher net returns and profitability than their non-beneficiary counterparts.

The study also concluded a mixed sustainability pattern. Some of the schemes, such as Anchor Borrowers' Programme, FADAMA, and IFAD-VCDP, were not sustained as they fell below the 50% sustainability threshold, while SMEDAN, NIRSAL, and Youth Empowerment were sustainable. Those not sustainable need to be redesigned, monitored, and enforced mechanisms for intended purposes.

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