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Agricultural Co-operatives Activities and Improved Performance of Women Co-operative Farmers in Nigeria

Festus Sunday Ezema; Nnaji Onyinye Ritamerit & Ifeoma Uzo

Department of Co-operative Economics and Management, Enugu State University of Science and Technology (ESUT), Enugu State, Nigeria

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***Corresponding Author:** Festus Sunday Ezema

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Abstract **Original Research Article**

The study centred on agricultural co-operative activities and improved productivity of women in Enugu State, Nigeria. The specific objectives were to ascertain the extent to which co-operative credit and farm inputs access influence agricultural productivity among women farmers and determine the extent to which co-operative training and capacity-building programs influence farm income level of women farmers. Descriptive survey research design was adopted, with 351 co-operative members sampled through a multistage sampling technique. A structure questionnaire, thoroughly validated with its reliability coefficient ($\infty > 0.820$) through Cronbach's Alpha, was the instrument used. Data via SPSS 27 were descriptively analyzed through a five point Likert Scale in frequency distributions, simple percentages, mean and standard deviation, while hypotheses were inferentially tested through linear regression analysis to determine their significance. Results showed that co-operative credit and farm inputs access and co-operative training and capacity-building programs had significant positive influence on agricultural productivity among women farmers t_2=16.435, $p < 0.05$] and farm income level of women farmers in Nigeria [t_2= 36.381, $p < 0.05$]. Based on the outcomes, the study recommended expanding co-operative credit initiatives through collaborations with microfinance bodies to increase women's access to affordable agricultural funds and establishing ongoing training and mentorship schemes specifically designed to build rural women's technical and financial management capacities.

Keywords: Agricultural Co-operative Activities, Co-operative Training, Capacity-Building Programs, Co-operative Credit, Farm Income Level, Agricultural Productivity.

INTRODUCTION

Agriculture continues to serve as the lifeblood of Nigeria's economy, providing sustenance, employment, and income for the majority of rural households. Within this sector, women remain indispensable contributors, accounting for more than half of the smallholder farming workforce and playing vital roles in both food production and family welfare (Adebayo & Lawal, 2023). Despite their immense involvement, many women farmers in Nigeria operate within structural limitations that restrict their economic advancement. Barriers such as inadequate access to affordable credit, poor availability of farm inputs, and insufficient

technical training persistently undermine their productivity and earnings (Okafor *et al.*, 2024).

In recent years, agricultural co-operatives have gained recognition as transformative institutions for strengthening rural livelihoods. These co-operatives function as collective platforms where farmers, particularly women, can pool resources, share experiences, and gain access to essential services like credit, training, and markets (Eze & Nwankwo, 2022). Among their numerous functions, one of the most impactful is the provision of co-operative credit and farm inputs. Through co-operative-based loan programs, members, especially women, can secure low-interest financing, acquire improved seed varieties, fertilizers, and simple mechanized tools that significantly enhance farm productivity (Ogunyemi & Adedeji, 2022). Empirical findings affirm that such access not only increases agricultural yield but also lowers production costs and builds confidence in farm-related decision-making (Mbah & Eze, 2023). These linkages highlight the crucial role of co-operative financial activities in driving agricultural productivity, a primary indicator of women farmers' performance and resilience.

Another key co-operative initiative involves training and capacity-building programs, aimed at improving members' technical know-how and management skills. Through workshops, field demonstrations, and extension services, women are equipped with modern techniques in soil management, record keeping, and agribusiness planning. These learning opportunities enhance efficiency, improve marketing outcomes, and create new streams of farm income (Okeke & Umeh, 2023). Beyond economic benefits, co-operative training cultivates leadership, boosts confidence, and fosters inclusion, helping women assert stronger voices within their communities (Onyema *et al.*, 2024).

However, many women farmers in Enugu State still face hurdles such as poor access to co-operative support, cultural biases, and low representation in leadership positions (Eze & Akachukwu, 2025). These persistent obstacles continue to weaken the full potential of co-operatives to elevate productivity and economic empowerment.

Therefore, this study becomes timely and essential. It seeks to examine empirically how agricultural co-operative activities shape the productivity and income of women co-operative farmers in Enugu State. The outcome will contribute to developing gender-sensitive co-operative models that promote inclusive growth, food security, and women's sustainable economic empowerment in Nigeria

Agricultural co-operatives are intended to promote inclusion, shared resources, and equitable access to credit, training, and essential farm inputs. When these institutions function effectively, they enable women farmers to boost productivity, improve earnings, and strengthen their engagement in agricultural markets. Ideally, co-operatives should offer women the same institutional support provided to men, thereby narrowing the persistent gender gap in agricultural output and profitability.

In practice, however, the situation in Enugu State remains less than ideal. Many women co-operative farmers face recurring barriers such as limited access to affordable loans, escalating input costs, and minimal exposure to technical or managerial training. Studies reveal that women often receive smaller credit packages and encounter cultural and institutional constraints that restrict their leadership roles within co-operatives (Uzochukwu *et al.*, 2023). Similarly, weak extension services and poor information dissemination have reduced the effectiveness of co-operative programs (Anene & Obinna, 2025).

If these issues persist, women will continue to experience low productivity and limited income opportunities, perpetuating rural poverty and gender disparities. This outcome threatens broader goals of food security and inclusive agricultural transformation in Nigeria. Consequently, this study seeks to empirically examine agricultural co-operative activities and improved productivity of women in Nigeria. It sought to also ascertain the extent to which co-operative credit and farm inputs access influence agricultural productivity among women farmers and determine the extent to which co-operative training and capacity-building programs influence farm income level of women farmers

REVIEW OF RELATED LITERATURE

Agricultural Co-operative Activities

Agricultural co-operative activities encompass the organized social and economic efforts of farmers aimed at improving production, marketing, and welfare through collaboration. Such initiatives include collective access to credit, farm inputs, and training programs that foster efficiency and sustainability. In Nigeria, these co-operatives function as vital instruments for resource pooling, mutual support, and the economic empowerment of rural populations, particularly women (Eze & Nwankwo, 2022). Through cooperation and shared decision-making, members reduce individual risk, innovate collectively, and enhance their livelihood outcomes (Akor & Nnamani, 2024). Consequently, agricultural co-operative activities remain essential mechanisms for driving inclusive and sustainable agricultural transformation.

Agricultural Productivity

Agricultural productivity refers to the degree of efficiency with which farmers convert inputs such as land, labor, seeds, fertilizers, and technology, into valuable agricultural outputs. It is a fundamental indicator of both economic performance and food security (Adebayo & Lawal, 2023). Among smallholder women farmers, productivity growth depends largely on access to co-operatives, improved farming skills, and reliable market linkages (Okafor *et al.*, 2024). When productivity rises, rural incomes increase, poverty declines, and food systems strengthen. Thus, agricultural productivity serves not only as a measure of farm performance but also as a critical driver of Nigeria's broader economic progress.

Co-operative Credit

Co-operative credit refers to the financial support extended to members of co-operatives, typically through low-interest loans or revolving funds designed to enhance agricultural operations. Such funding enables farmers to overcome financial limitations that restrict investment in improved technologies and quality inputs (Ogunyemi & Adedeji, 2022). For women, co-operative credit provides a pathway to financial autonomy, increased farm output, and greater household welfare (Mbah & Eze, 2023). These credit systems are built on mutual trust and shared accountability, which minimize loan default risks. In rural economies, co-operative credit stands as a cornerstone for empowering disadvantaged farmers and sustaining agricultural growth.

Farm Inputs Access

Access to farm inputs describes the ease with which farmers can obtain vital resources such as fertilizers, improved seed varieties, agrochemicals, and farming equipment. Timely and affordable access to these inputs determines productivity and profitability among smallholders (Ogunyemi & Adedeji, 2022). Agricultural co-operatives bridge input gaps by procuring and distributing materials collectively, often at subsidized or bulk rates (Okeke & Umeh, 2023). For women farmers, input accessibility narrows productivity disparities and enhances competitiveness in the agricultural marketplace. Thus, ensuring equitable input distribution remains a central pillar of co-operative efficiency and sustainable agricultural advancement.

Co-operative Training

Co-operative training comprises structured educational and technical programs designed to equip co-operative members with practical and managerial competencies. Training empowers farmers with essential skills in agronomic practices, financial management, marketing, and leadership (Okeke & Umeh, 2023). For women, such training fosters confidence, strengthens decision-making, and encourages active participation in co-operative governance (Onyema *et al.*, 2024). Additionally, co-operative training nurtures unity, accountability, and long-term organizational resilience. As an empowerment strategy, it accelerates innovation, drives rural transformation, and promotes gender equality within the agricultural co-operative

system.

Capacity-Building Programs

Capacity-building programs are strategic initiatives aimed at improving the technical knowledge, leadership, and entrepreneurial capabilities of farmers for sustainable growth. These programs enhance problem-solving and innovation among co-operative members (Anene & Obinna, 2025). For women, capacity-building fosters participation across agricultural value chains, expanding their economic independence and resilience (Omeje & Chukwu, 2024). Co-operatives often organize field demonstrations, peer mentoring, and workshops that strengthen members' practical expertise. Through such programs, farmers transition from subsistence production to market-oriented agribusiness, achieving improved productivity, profitability, and competitiveness.

Farm Income Level

Farm income level represents the total financial return that farmers generate from agricultural activities after accounting for production costs. It reflects the overall economic stability and welfare of farming households (Nwachukwu & Ezeani, 2024). For women co-operative farmers, income levels are influenced by access to affordable credit, adequate training, and favorable market opportunities (Okafor *et al.*, 2024). Higher farm income contributes to improved living standards, education, and community well-being. Therefore, income serves as a tangible measure of co-operative effectiveness and a strong indicator of women's empowerment in rural agricultural economies.

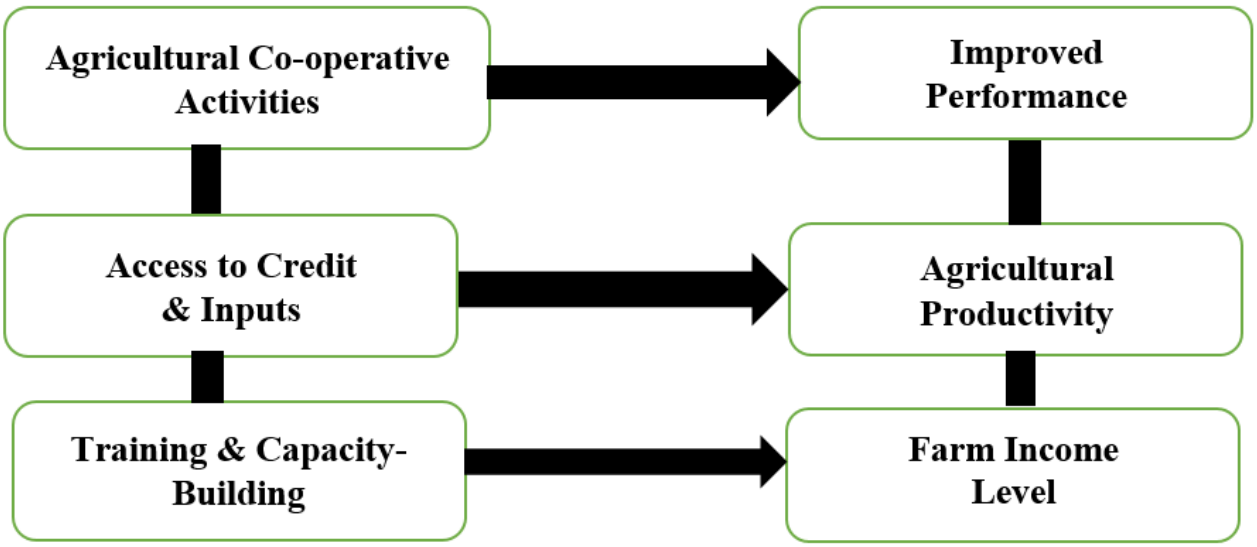

Fig 2.1 Conceptual Framework
Source: Researchers' Model, 2026.

The conceptual framework shows that agricultural co-operative activities enhance the performance of women co-operative farmers in Enugu State. Agricultural co-operative activities (independent variable) operate through access to credit, farm inputs, training, and capacity-building programs. These mechanisms empower women to improve production and economic standing. The dependent variable, improved performance, is measured by agricultural productivity and farm income. Access to credit and inputs boosts efficiency, while training

enhances technical and entrepreneurial skills, fostering empowerment, gender inclusion, and sustainable agricultural growth.

Theoretical Framework

The Social Capital Theory, introduced by Pierre Bourdieu in 1986, serves as a suitable theoretical anchor for the study titled "Agricultural Co-operative Activities and the Improved Performance of Women Co-operative Farmers in Enugu State, Nigeria." This theory suggests that an individual's connections, associations, and participation within social groups form a kind of resource base built on trust, mutual support, and shared values. These social bonds can be harnessed to achieve both social advancement and economic improvement. In the setting of agricultural co-operatives, such networks allow members, especially women farmers, to collectively gain access to credit facilities, farming inputs, training programs, and valuable agricultural information. This collective participation nurtures teamwork, empowerment, and sustainable growth. Nonetheless, some scholars have criticized the theory for not adequately addressing issues such as gender inequality and power imbalances that may hinder women from benefiting equally from social networks. Yet, proponents like Coleman (1990) and Putnam (1995) have affirmed its strength, highlighting its capacity to encourage cooperation, civic engagement, and community resilience. For this study, the theory is highly relevant as it illustrates how women co-operative farmers utilize group connections to access resources, develop essential skills, enhance productivity, and strengthen their financial independence. Ultimately, it demonstrates that strong social ties within co-operatives are vital for improving women's livelihoods and promoting inclusive rural development.

Empirical Review

Oluwafemi and Abubakar (2023) examined how co-operative-based financing and the availability of farm inputs influenced cassava cultivation among women in Oyo State, Nigeria. The research adopted a descriptive-correlational design and applied Ordinary Least Squares (OLS) regression for statistical analysis. Results indicated that participation in co-operative societies significantly improved women's access to funding and inputs, resulting in higher cassava yields and better household income.

Tesfay and Tadele (2023) examined how co-operative education programs promote women's empowerment and income generation in Ethiopia's Tigray region. Employing a cross-sectional research design, the authors used multivariate regression analysis to measure the effects of training participation. The analysis revealed that involvement in co-operative-led learning programs significantly improved women's financial independence, business decision-making skills, and household income levels.

Mwangi and Njiru (2023) analyzed the influence of capacity-building programs organized through agricultural co-operatives on women maize farmers' income levels in Kenya. Adopting a longitudinal survey framework and panel regression techniques, the researchers discovered that consistent exposure to co-operative-led training in agricultural extension, resource allocation, and input management resulted in substantial yield improvements and an average 21% increase in farm income across two cropping periods.

Mwangi *et al.* (2024) explored the connection between co-operative membership, access to farm credit, and productivity levels among women growing maize in Western Kenya. Utilizing a longitudinal design and panel data regression, the researchers tracked productivity changes across several farming seasons. The findings highlighted that women who obtained credit through co-operatives were more likely to afford hybrid seeds and fertilizers, leading to notable improvements in yields over time.

Opolot *et al.* (2024) explored the intersection between university-based entrepreneurship programs and co-operative training and how this integration impacts women farmers' agribusiness proficiency and farm earnings in Uganda. Using a survey-based design supported by path analysis, the study demonstrated that women who received training in business

planning, financial management, and marketing achieved a 22% increase in farm income and exhibited higher levels of financial literacy compared to non-participants.

Assefa *et al.* (2025) carried out a study in Northwestern Ethiopia to understand how women smallholder farmers benefit from access to co-operative credit and quality agricultural inputs. Using a cross-sectional survey approach and Structural Equation Modeling (SEM), the researchers evaluated the major factors influencing teff production. Their analysis showed that women with better access to input markets, fertilizers, and co-operative organizations achieved higher yields and participated more actively in market activities than those without such access.

Mwadzingeni *et al.* (2025) conducted a study in Zimbabwe to evaluate how continuous learning, co-operative training, and personalized coaching initiatives affect innovation and productivity within the farming sector. Adopting a quasi-experimental approach, the researchers employed a difference-in-differences estimation technique to assess program outcomes. Their results revealed that farmers who consistently participated in co-operative learning activities demonstrated a 23% increase in the adoption of new technologies and a 19% rise in household income, with the most significant gains observed among farms managed by women.

Rana *et al.* (2025) investigated the extent to which capacity-building interventions and co-operative-based development contribute to sustainable agricultural practices and women's economic well-being in Bangladesh. The research, which followed a descriptive survey design and applied Structural Equation Modeling (SEM), found that technical and leadership-oriented training enhanced resource management, operational efficiency, and average farm income by roughly 16% among participating women farmers.

MATERIALS AND METHODS

Research Design

The study adopted a descriptive survey research design method, and was carried out Nigeria, specifically in Enugu State, located in southeastern Nigeria, sits on the Udi-Nsukka Plateau with fertile, well-drained soil and a favorable climate for agriculture. Bordered by Abia, Ebonyi, Benue, Kogi, and Anambra states, it features rivers like the Ekulu that support farming. Agriculture is central to Enugu's economy, with key crops like yams, cassava, rice, corn, taro, and oil palm products. The state also has valuable mineral resources, including coal, iron ore, and limestone.

Population of the Study

The study population comprises all women registered under agricultural co-operatives across Enugu State. A total of 4,000 female members were identified from 50 officially recognized agricultural co-operative societies, as recorded by the Co-operative Division of the Ministry of Capital Development and Poverty Reduction, Enugu.

Determination of Sample Size

The study's sample size was derived using Cochran's (1963) statistical equation, which provided a systematic framework for achieving precision and estimating confidence levels, as presented below.

$$n = \frac{n_o}{1 + \frac{(n_o - 1)}{N}}$$

$$n_o = \frac{Z^2pq}{e^2}$$

Where:

n = Sample Size
n_o = Representative Sample for Proportion
N = Total Population = 4000
Z^2 = The abscissa of the normal curve = 1.96
p = Proportion of success in the population from pilot survey = 0.5
q = Proportion of failure in the population from pilot survey = 0.5
e = error limit = 0.05

$$n_o = \frac{(1.96)^2 (0.5 \times 0.5)}{(0.05)^2}$$

$$n = \frac{384.16}{1 + \frac{(384.16 - 1)}{4000}}$$

$$n = \frac{384.16}{1 + \frac{383.16}{4000}}$$

$$n = \frac{384.16}{1+0.09579}$$

$$n = \frac{384.16}{1.09579}$$

Therefore, n = 351

Sampling Technique

The study adopted a multistage sampling technique to ensure objectivity, representativeness, and efficiency in selecting respondents across Enugu State. To achieve balanced regional coverage, Enugu State was first stratified into its three senatorial districts, reflecting the state's official administrative divisions and population distribution. From each senatorial district, Two Local Government Area (LGA) were randomly selected at convenience, giving all LGAs an equal chance of inclusion and minimizing selection bias. Subsequently, one co-operative society was chosen from each selected LGA, using simple random sampling methods, with members sampled proportionately. These societies were purposefully drawn from areas known for active agricultural co-operative participation, ensuring that the data collected accurately reflected the realities of women co-operative farmers at the grassroots level. This multistage approach enhanced fairness, strengthened data validity, and provided a reliable basis for comparing co-operative activities and performance outcomes among different localities within the state. See table 1 below

Table 1 Sampling Procedure

Senatorial District	LGA	Co-operative Society	Sample
Enugu East	Isi Uzo	Echidi FMCS Ltd Eha-Amufu	47
	Nkanu West	Agbani Women FMCS Ltd	60
Enugu North	Nsukka	Echara FMCS Ltd Nsukka	44
	Udenu	Unique Orba FMCS Ltd	110
Enugu West	Aninri	Ugoeze FMCS Ltd Akpugoeze	40
	Awgu	Nwannedinamba FMCS Agbaogugu	50
Total			**351**

Source: Fieldwork, 2025.

Method of Data Collection and Analysis

Data were collected through a structured questionnaire. Descriptive statistics such as frequencies, percentages and mean were used to analyze variables with observable facts. The data collected were descriptively analyzed in frequency tables, simple percentages and mean based on a 5-point Likert scale through SPSS (27). The formulated hypotheses were tested using one sample t-test to determine their significance.

RESULTS AND DISCUSSION

Table 2 Questionnaire Response Rate

Features of Questionnaire	Number	Percentage (%)
Questionnaire administered	351	100
Questionnaire collected	340	96.87
Questionnaire withheld	11	3.13

Source: Fieldwork, 2025.

Table 2 indicates that 351 copies of the questionnaire were administered, 340 copies were retrieved, and 11 copies were not, giving a 98.87% response rate, as it is deemed sufficient and reliable for meaningful analysis.

Table 3 Extent to which co-operative credit and farm inputs access influence agricultural productivity among women farmers

Item	Variables	SA	A	UD)	D	SD	Mean
1	Co-operative credit has improved my overall farm productivity	138 (40.59%)	100 (29.41%)	10 (2.94%)	52 (15.29%)	40 (11.76%)	3.93
2	Access to loans increased my crop yield significantly	98 (28.82%)	129 (37.94%)	8 (2.35%)	48 (14.12%)	57 (16.76%)	3.74
3	Co-operative inputs helped me reduce total production costs	125 (36.76%)	100 (29.41%)	11 (3.24%)	44 (12.94%)	60 (17.65%)	3.78
4	I easily access fertilizers through my co-operative membership	103 (30.29%)	130 (38.24%)	6 (1.76%)	57 (16.76%)	44 (12.94%)	3.82
5	Timely credit access enhanced my farming efficiency greatly	94 (27.65%)	116 (34.12%)	9 (2.65%)	52 (15.29%)	69 (20.29%)	3.64
	AGGREGATE						3.78

Source: Fieldwork, 2025 via SPSS 27

The illustration in table 3 shows the responses of the respondents, with a mean value of 3.78, indicating that the respondents were in agreement with all the items.

Table 4 Extent to which co-operative training and capacity-building programs influence farm income level of women farmers

Item	Variables	SA	A	UD	D	SD	Mean
6	Co-operative training improved my overall farm income level	119 (35.00%)	94 (27.65%)	7 (2.06%)	57 (16.76%)	63 (18.53%)	3.75
7	Capacity-building programs increased my marketing and sales skills	97 (28.53%)	115 (33.82%)	12 (3.53%)	60 (17.65%)	56 (16.47%)	3.67
8	Training participation enhanced my farm management and profits	117 (34.41%)	89 (26.18%)	5 (1.47%)	56 (16.47%)	73 (21.47%)	3.70
9	Co-operative workshops boosted my financial decision-making ability	91 (26.76%)	119 (35.00%)	11 (3.24%)	60 (17.65%)	59 (17.35%)	3.64
10	Regular training attendance increased my household farming income	114 (33.53%)	95 (27.94%)	8 (2.35%)	61 (17.94%)	62 (18.24%)	3.72
	AGGREGATE						3.70

Source: Fieldwork, 2026 via SPSS 27

Table 4 shows respondents' responses, with a mean value of 3.70, indicating that the respondents were in agreement with all the items.

Test of Hypotheses

Hypothesis I: Co-operative credit and farm inputs access have no significant influence on agricultural productivity among women farmers

Table 5: t-test comparison of mean rating of responses

One-Sample Test						
	Test Value = 3.0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
RQ1	16.435	4	.000	.78200	.6499	.9141

Source: Researcher's Computation via SPSS, 27

Table 5 indicates that the probability value of 0.000 is lower than the 0.05 significance level, showing that the result is statistically significant. Consequently, the null hypothesis is rejected, confirming that co-operative credit and farm inputs access have significant influence on agricultural productivity among women farmers.

Hypothesis I: Co-operative training and capacity-building programs have no significant influence on farm income level of women farmers

Table 6: t-test comparison of mean rating of responses

One-Sample Test						
	Test Value = 3.0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
RQ2	36.381	4	.000	.69600	.6429	.7491

Source: Researcher's Computation via SPSS, 27

From Table 6, the computed probability value 0.000, falls below the 0.05 threshold, indicating statistical significance. Based on this outcome, the null hypothesis is rejected, implying that co-operative training and capacity-building programs have significant influence on farm income level of women farmers

Discussion of Findings

Findings showed that co-operative credit and farm inputs access had significant influence on agricultural productivity among women farmers in Nigeria [t_2=16.435, $p < 0.05$]. This outcome aligns with the findings of Oluwafemi and Abubakar (2023) and Assefa *et al.* (2025), who all reported that women's participation in co-operative-based lending and input schemes led to higher crop yields, stronger market presence, and improved household income. The consistency across these studies supports the view that when women have timely access to affordable financing and essential inputs such as fertilizers, seeds, and farm tools, their productivity increases significantly. Unlike the study by Tsegaye *et al.* (2022), which reported only an indirect effect through labor efficiency, this research established a more direct influence on

productivity. This difference may be linked to the co-operative structures in Enugu State, which appear to be better coordinated and more inclusive of women's participation. The enhanced productivity could also result from the collective model of co-operatives that simplifies access to resources, minimizes financial risks, and builds mutual trust among members. Overall, this study contributes fresh, localized insight by showing how well-managed co-operative credit and input systems can directly drive women's agricultural performance and economic empowerment in rural Southeast Nigeria.

The findings further revealed that co-operative training and capacity-building programs had significant influence on farm income level of women farmers in Nigeria [$t_2 = 36.381$, $p < 0.05$]. This agrees with the observations of Mwangi and Njiru (2023), and Opolot *et al.* (2024), who found that co-operative education and skill-building programs significantly improved women's financial management, agribusiness competence, and income stability. The parallel outcomes across these studies indicate that structured and continuous training enables women farmers to manage their farms more efficiently, adopt better marketing practices, and make informed financial decisions. In contrast to similar research in East African contexts that emphasized national co-operative systems, this study provides evidence rooted in community-level co-operatives within Enugu State. The stronger income gains observed here may stem from the interactive and localized design of training programs, which address the specific needs and challenges faced by rural women. By capturing this context, the study advances current understanding of how co-operative-based capacity development serves as a practical tool for enhancing women's financial independence and promoting sustainable rural livelihoods in Nigeria.

CONCLUSION AND RECOMMENDATIONS

Access to co-operative credit, farm inputs, and training significantly improves agricultural productivity and income levels of women co-operative farmers in Nigeria. These co-operative mechanisms strengthen women's empowerment, economic participation, and sustainable rural livelihoods through inclusive financial and capacity-building structures the study recommends expanding co-operative credit initiatives through collaborations with microfinance bodies to increase women's access to affordable agricultural funds and establishing ongoing training and mentorship schemes specifically designed to build rural women's technical and financial management capacities. This research adds a fresh perspective to existing studies by examining co-operative credit, access to inputs, and training as interconnected drivers of women's economic advancement. It provides new empirical insights from Enugu State, demonstrating how co-operative structures collectively uplift productivity, income, and empowerment, filling a notable gap in prior research.

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