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Cross-Sector Collaboration as A Human Resource Development Strategy in Agronomic Engagement: Evidence from One Man-One Hectare Programme In Ebonyi State

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Abstract

The "One Man-One Hectare" programme in Ebonyi State leverages cross-sector collaboration as a strategic approach to human resource development (HRD) in agriculture, aiming to enhance farmers' capacities and skills for sustainable agronomic engagement. This study therefore assesses how partnerships among NGOs, academic institutions, and government agencies contribute to human resource development through targeted training initiatives. Data were collected via questionnaires from 395 participating farmers and key-informant interviews with four stakeholders from NGOs, academia, and the Ministry of Agriculture. Thematic analysis was employed for qualitative insights, while chi-square tests evaluated hypotheses related to capacity building outcomes. Findings reveal that the collaborative training efforts significantly improved farmers' knowledge, skills, and adoption of modern agricultural techniques, leading to increased productivity. However, challenges such as limited follow-up support and practical application obstacles suggest areas for strengthening HRD strategies within cross-sector frameworks. The study underscores the critical role of multi-stakeholder partnerships in fostering human resource development in agronomic engagement, recommending enhanced coordination, tailored capacity-building programmes, and sustained support mechanisms to ensure long-term impact and scalability of such initiatives.

Keywords: Cross-Sector Collaboration, Agronomic Capacity Building, NGO-Academic Training, One Man-One Hectare, Modern Farming Adoption.
JEL Codes: Q13, Q24, R14, I31

1. INTRODUCTION

Over the past decade, agricultural development has increasingly relied on effective cross-sector collaboration to address complex challenges faced by smallholder farmers (Maryono, et al., 2024). The integration of non-governmental organizations (NGOs), academic institutions, and government agencies has been shown to enhance capacity building, promote the dissemination of modern farming techniques, and improve productivity outcomes (Olusegun et al 2024). In Ebonyi State, Nigeria, the One Man-One Hectare (OMO) programme exemplifies such a collaborative approach, aiming to empower farmers through targeted training and technical support (Osuji et al., 2022). Despite the recognized potential, there remains limited empirical evidence on the actual impact of these partnerships on agronomic practices and productivity at the grassroots level (Egenti & Dinbabo, 2022). This study seeks to fill this gap by evaluating the effectiveness of NGO-academic training initiatives within the OMO programme, with a focus on understanding how cross-sector collaboration influences farmers' adoption of modern techniques and overall farm productivity.

The era of absolute public service provisioning and government service delivery is gradually waning. Globally, governments have at some point engaged in partial or even full ownership and management of certain critical sectors such as education, energy, education, water, agriculture, etc. with the sole objective of effective and efficient service delivery to the citizens. It became apparent that public sector by itself alone, according to Macnamara et al. (2017), could not successfully provide adequate and high-quality services to all citizens and serve remote geographic areas. Countries around the world started making attempts to remedy the lapses of public sector inefficiency through the reformation of public administration which is the central machinery for achieving the state mandates. Sowaribi, (2005) stated that right from the l970s, the various reforms ushered in radical transformations in various areas of social service delivery, the accountability of government expenditures, and structure of government. According to McCourt (2013), many developing countries have adopted analogous strategies and reforms as modelled by more advanced countries through broader governance agendas supported by civil societies as participants. This new administrative model also known as the New Public Management, rather than focus on just provision of service, campaigns for empowering; decentralization, public participation, innovation, even the adoption of Cross-Sector Collaboration.

Cross-sector collaborations according to Bryson et al (2015) are partnerships where organizations from different sectors work together to achieve mutually beneficial outcomes. These collaborations leverage combined resources to reach more people and amplify impact and results. For Selsky and Parker (2005), cross-sector collaborations involve organizations

from different sectors such as business, government, and civil society working together to address social issues and create sustainable solutions. The authors further stressed that "Cross-sector partnerships involve organizations from different sectors such as business, government, and civil society working together to address social issues and create sustainable solutions. Cross-Sector Collaboration, which is one of the key elements of New Public Management, enables the private partner to pursue their economic goals such as profit and exploration of new markets; and the public partner (Government) who ends up achieving its development policy goals such as poverty reduction, food security and knowledge transfer as the case may be (Elbers, 2004). The key justification for the formation of the Cross-Sector Collaboration are on the basis that both private and public actors enjoy the fruits of the collaboration by sharing risk, resource combination, and capacity complementary. Compared with subsidies which are predominantly adopted by many developing countries, Trotsenko, and Slukin, (2020) stated that Cross-Sector Collaboration help to avert hindrances to development and enhance a more collaborative development.

Ikeanyibe et al. (2017) outlined several key highlights that characterize effective cross-sector collaboration. They emphasized that a collaborative governance forum is typically initiated by public agencies or institutions, serving as a platform for joint efforts. Participants in these forums are not limited to government representatives; non-governmental actors are actively involved, bringing diverse perspectives and expertise to the table. Importantly, these participants do not merely provide input or consultation but are directly engaged in the decision-making processes, fostering a sense of ownership and shared responsibility. The governance forums are usually formally organized and convene collectively, ensuring structured interactions and accountability. Decisions within these forums are ideally reached through consensus, promoting inclusivity and mutual agreement among stakeholders. The overarching focus of such collaboration is centered on public policy or public management, aiming to improve governance outcomes through coordinated efforts across sectors. Since Nigeria's independence in 1960, every administration has made efforts to achieve food security through different programmes and strategies with minimal results. Nigeria had created a National Special Programme for Food Security (NSPFS), outlining the constraints to food security and adopted a value chain approach to address these constraints. The vision of NSPFS, according to Ihekoronye (2013), is to attain food security sense and eliminate hunger and rural poverty; guaranteeing sustainable access, availability and affordability of good quality food to all Nigerians and to be a significant net provider of food to the global community. The programme had originally evolved as an aftermath of the 1996 World Food Summit and a request for assistance by the Federal Government of Nigeria under the NSPFS was extended to the 36 states of the country.

More recently, changes in average temperatures, rainfall, climate extremes, and the growing infestation of pests and related diseases precipitated by climate change pose a challenge to the country's agriculture system (Olayide, 2016). This is coupled with a

dependence on rain-fed agriculture, which has made the sector vulnerable to seasonal conditions. For Amodou et al (2012), illiteracy is also one of the several factors preventing the progress and development of agriculture in Nigeria. Researches have shown that most farmers in Nigeria have not acquired adequate formal education. All these contribute to low agricultural productivity and post-harvest losses and waste in Nigeria.

To remedy the above challenges, Adesina, (2012) pointed out that President Jonathan's administration initiated the Agricultural Transformation Agenda in 2011, which was overseen by the Federal Ministry of Agriculture and Rural Development. The primary goal of the agenda was to position agriculture as a profitable business, integrate the agricultural value chain, and establish agriculture as a primary driver of Nigeria's economic growth. To achieve this agenda, the government implemented several measures: New fiscal incentives to encourage domestic import substitution, zero percent (0%) duty on agricultural machinery and equipment imports Pioneer, Tax holiday for agricultural investments, duty waivers and other industry-related incentives. The Central Bank of Nigeria began the anchor programme to encourage the cultivation of certain crops, especially rice. The Federal Government of Nigeria has also closed its land borders in order to curtail rice imports and encourage local production.

In Ebonyi State, the agricultural sector has had its fair share of challenges that have hindered agronomic advancement potential, as a vast number of the human resource who engage in agriculture lack the technical-know-how. The observable challenges include: lack of processing, preservation and storage materials, and also lack of awareness of existing or new production technologies which has also been identified as key challenge existing in the agribusiness environment today. This is why a lot of agro businesses are not progressing because improved or modern technologies are required in boosting the productivity of any given agro economic venture. This challenge, according to Nkwede, (2014), exists mainly because of the lack of proper and periodic education by extension agents to farmers and farming communities.

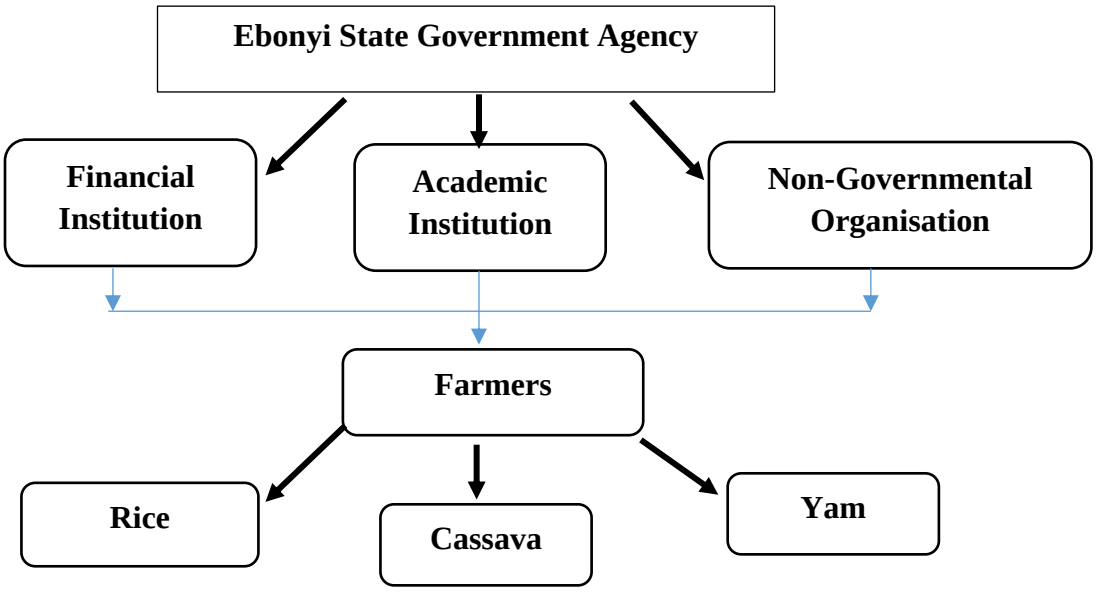
Ebonyi State Agriculture Development Programme (EBADEP) had come into existence following the creation of Ebonyi State in 1996 (Ndukwe & Nwuzor, 2016). This is in response to the federal government’s request for assistance under the National Special Programme for Food Security (NSPFS), which was extended to the 36 states of the country-including Ebonyi State. EBADEP is charged with the mandate of ensuring improved and sustained agricultural productivity and food security in the state through adaptive research and extension support as well as provision of modern inputs to farmers (NSPFS EBADEP, 2005). Three National Special Programme for Food Security (NSPFS) sites were situated in each of the three zones of the state, namely, Ebia Unuhu in Abakaliki local government area (north zone), Ogboji in Ezza North local government area (central zone) and Akaeze in Ivo Local government area (South Zone) respectively were selected. Field activities in the three sites commenced in April 2002 (Ndukwe & Nwuzor, 2016). Unfortunately, most of the processing equipment located in each of the three sites in the state was either malfunctioning or spoilt

beyond repair (Ndukwe & Nwuzor, 2016). EBADEP, according to Ndukwe & Nwuzor (2016), did not live up to expectation. Some other intervention programmes in the state were said to have ended up with the administration that introduced them.

Thus, in August, 2016, a strategic agricultural initiative, the "One Man- One Hectare" programme, was flagged off by the David Umahi administration. The launch was loaded with the potential to address challenges such as low agronomic productivity, food insecurity, as well as improve livelihood. The programme was to bring about employment and economic empowerment by encouraging every capable individual in the state to cultivate at least one hectare of farmland. Through collaboration across various sectors, the programme aimed to enhance agronomic practices, improve yields, and develop the skills and capacities of local farmers. Each participating farmer who could farm at least a hectare of land was to be provided access to improved seeds and fertilizers, training in modern farming techniques, and financial literacy and support, as well as business management training. This way, the programme was meant to transform the prevalent subsistence farming into commercially viable enterprises. (Ebonyi State Government, 2019).

The "One Man- One Hectare" programme was to adopt a comprehensive approach that involved a cross-sector collaboration among government agencies, rural farmers, private agribusiness entities, financial institutions, non-governmental organizations (NGOs) and academic institutions. Ebonyi state Ministry of Agriculture and Natural Resources was responsible for the programme design, policy coordination and implementation; rural farmers were to cultivate at least a hectare of land and implement the farming techniques provided under the programme as well as well as provide baseline data and indicators for monitoring and evaluation; private agric businesses, for provision of agricultural inputs and market access; Non-governmental organization (Neighbourhood Environment Watch Foundation) and academic institution (Ebonyi State University) were to provide education for the sustainability of the expected positive outcome; private agribusiness entities were to provide agricultural inputs like fertilizers and pesticides to participating farmers; with the financial institution (Ecobank) offering credit facilities, disbursing of government grants as well as offering of soft loans and other financial services to farmers. Figure 1shows the flow chat of cross-sector collaboration in One Man- One Hectare Programme

Figure 1: Flow Chat of Cross-Sector Collaboration in One Man- One Hectare Programme



Source: Authors' Conceptualization

Thus, the researchers set out to examine the effectiveness of Cross-Sector Collaboration in the achievement of agronomic advancement in Ebonyi State from the year of inception of the One Man- One Hectare programme (2016-2023).

Agricultural development is crucial for sustainable economic growth, especially in regions heavily reliant on farming. Cross-sector collaboration among public, private, and civil society organizations plays a vital role in addressing complex agricultural challenges by pooling resources, expertise, and technology to improve human capacity and farming practices. In Ebonyi State, the "One Man-One Hectare" program was launched to promote large-scale crop cultivation, food security, and farmer empowerment through stakeholder involvement. Unlike top-down approaches, this program aimed to leverage collaborative efforts. However, limited empirical evidence exists on its actual impact on farming practices, yields, or farmers' skills, raising questions about its grassroots effectiveness. This is the main objective of this empirical study and the hypothesis is to test whether collaborative trainings provided by the participating NGO and academic institution increased the adoption of modern farming techniques among farmers in Ebonyi state from 2016-2023.

2. METHODOLOGY

Theoretical Framework

This study is anchored on the Theory of Collaborative Advantage (TCA). The Theory of Collaborative Advantage (TCA) was developed by Chris Huxham and Siv Vangen and is

primarily detailed in their 2005 book titled "Managing to Collaborate: The Theory and Practice of Collaborative Advantage (Huxham & Vangen, 2013) The Theory of Collaborative Advantage provides a framework for understanding how and why organizations collaborate, the challenges they face, and how they can maximize the benefits of working together. It is particularly relevant in fields such as public administration, non-profit management, and inter-organizational relations where collaboration is often essential for achieving shared goals **(**Bovens & Zouridis, 2008**).** The theory focuses on the benefits and challenges of collaboration among multiple stakeholders to achieve a common goal. It is particularly relevant for complex projects requiring joint efforts, such as the collaborative financing of gully erosion control projects in Nigeria.

In the context of the "One Man- One Hectare" programme in Ebonyi State, the Theory of Collaborative Advantage is applied to achieve sustainable agronomic advancement through effective cross-sector collaboration in the provision of training component on the programme. The programme brings together government agencies, the representatives of the collaborating NGO and academic institution for this purpose. Each collaborator contributes unique resources and expertise to support the programme's training goal. Government agencies provided policy support, regulatory frameworks, and infrastructure development. NGO (Neighbourhood Environment Watch Foundation) engaged with local communities, offering grassroots support and ensuring that the needs of farmers are addressed. Academic institution (Ebonyi State Uuniversity) brought research capabilities, technical training, and innovative agricultural practices. By pooling these diverse resources and expertise, the programme aims to overcome challenges in the agricultural sector. The shared goals of improving agricultural productivity, enhancing farmers' skills, and promoting sustainable practices align all collaborators toward a common objective. Mutual benefits are realized as each partner achieves their mission while contributing to the broader success of the programme. Trust and open communication are established through regular meetings, collaborative planning, and transparent decision-making processes. The collaboration fosters innovation by encouraging the exchange of ideas and best practices from different sectors. This leads to the development of new farming techniques, financial models, and training programmes that are tailored to the specific needs of Ebonyi State's farmers. The long-term commitment of all partners ensures that the programme remains sustainable and continues to deliver positive outcomes over time.

Research Design

The researcher anchored this study on descriptive survey design. This design enabled the researcher to blend quantitative and qualitative data to obtain relevant and accurate information for the study. It also allowed the researcher to engage the respondents who were central to the study to extract relevant firsthand information for the study.

Population of the Study, Sample Size, and Sampling Technique

The population of this study is the entire participant farmers in the One Man- One Hectare programme estimated at 31,600. While he sample size of this study is 395. The

researcher used Taro Yamane's (1967) proportional sampling technique to draw the sample size.

The calculation was done as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Where;
N= Finite Population
n= Sample size
e= Allowable error

$$n = \frac{31{,}600}{1 + 31{,}600(0.05)^2}$$

$$n = \frac{31{,}600}{1 + 31{,}600(0.0025)}$$

$$n = \frac{31{,}600}{1 + 79}$$

$$n = \frac{31{,}600}{80}$$

$$n = 395$$

n = 395

Sample Size and Groups' Proportions

Group	**Total Population**	**Proportion in %**
Participating farmers	395	99.0%
NGO Representative	1	0.25%
Academic Institution Representative	1	0.25%
Financial Institution Representative	1	0.25%
Government Agency Representative	1	0.25%
Total	**399**	100%

We adopted a stratified random sampling procedure that enabled us to stratify the study area into 3 senatorial districts, and stakeholder groups- farmers, one of NGO representatives, academic institution representatives, commercial bank representatives, and government agency officials.

More so, the researcher also adopted a purposive sampling technique to purposively select 133 respondents, not just those who cultivated at least one hectare of rice or any other

crop who benefited from the One Man- One Hectare programme in each of the stratum, but who are also capable of providing us with valuable and relevant data for the study. Purposive sampling was particularly useful for our study because it allowed for the intentional selection of respondents who can provide detailed and specific information about the various aspects of the programme. This technique ensured that the sample included representatives from different stakeholder groups, such as farmers, NGO representatives, academic institution representatives, commercial bank representatives, and government agency officials.

We finally adopted the snowball sampling technique as it was particularly useful for reaching participants who were part of interconnected networks. Snowball sampling technique leverages the relationships among individuals to identify and *recruit* additional participants, which is usually beneficial in cases where it might be challenging to identify all potential respondents initially. This technique is especially helpful when studying specific groups or communities where members are likely to know themselves. To apply snowball sampling in our study, we started by identifying a few key informants (seed participants) who had extensive knowledge and involvement in the "One Man- One Hectare" programme. These initial participants would then refer us to other respondents within their network who fit the study criteria.

In this study, we used the combined sampling techniques as follows:

- **Stratified Random Sampling**: For initial stratification by district and stakeholder group.
- **Purposive Sampling**: To select key informants within each group.
- **Snowball Sampling**: To expand the sample based on referrals within each district.

Combining stratified random sampling, purposive sampling, and snowball sampling, our study ensured both geographic and stakeholder representation, providing a comprehensive and balanced sample for your study. By considering senatorial districts first, we were able to ensure that all areas of Ebonyi State were adequately represented in our research. This methodological diversity also helped ensure the robustness and depth of our research findings on the "One Man- One Hectare" programme. The questionnaire instrument and interview were administered to these selected respondents.

Methods of Data Collection

The researcher employed both primary and secondary instruments for data collection. On the part of primary instruments, questionnaire, interviews, and personal observation- which are elements of a descriptive survey- availed the researcher an opportunity to visit the locations where farmers participated in the One Man- One Hectare programme to gather firsthand information. The questionnaire instrument was crafted to assess the effects of the trainings provided by the One Man- One Hectare programme; participants' satisfaction, and encountered challenges. On the other hand, the interview guide provided deeper insights into the personal experiences and specific challenges faced by collaborating partners. Ethical considerations such as informed consent and data anonymity were strictly followed throughout the process.

More so, the researcher explored secondary sources to extract relevant materials from books, journals, official/government documents, etc. to assess more information on Cross-Sector Collaboration as applied in One Man- One Hectare programme in Ebonyi State.

Sources of Data Collection

The researcher sourced relevant data for the study from two distinct sources: Primary and secondary sources. Primary sources included responses that were generated from the respondents through questionnaire and key-informant interviews; while secondary sources included relevant information from already published materials and official documents.

Method of Data Presentation and Analysis

First, data collected with questionnaire instrument were presented in a five (5) point Likert scale system, and further adopted the thematic method/tool of analysis which is used to present data (usually interviews) in themes. In order words, the data generated for the study through interview instrument were presented in themes for comprehensive and effective hypothesis by hypothesis discussion. The researcher made use of Chi-square (x2) which is an inferential statistic to test hypothesis at a 5% or 0.05 level of significance. More so, the descriptive analytical method was used as a method of data analysis which enabled the researcher to utilize current and historical data to identify and describe trends in the generated data for the study upon which hypotheses were either accepted or rejected. The findings enabled the researcher to establish if Cross-Sector Collaboration was suitable in the execution of the One Man- One Hectare programme in Ebonyi State, as well as ascertain if the effects of the programme on agronomic advancement and human capital development. It also enabled the researcher to generalize from the sampled opinions.

3. RESULT PRESENTATION AND DISCUSSION

Table 1: Age of Respondents

S/N	Items	Frequency (f)	Percentage (%)
1	Under 18 years	7	1.77%
2	18-35 years	96	24.30%
3.	36-59 years	229	57.97%
4	60 years and above	63	15.95%
	Total	**395**	100%

Excerpt from field survey (2024)

From the table above, 7 (1.77%) respondents were below 18 years. 96 (24.30%) respondents were in the bracket of 18-35 years of age. 229 (57.97%) respondents were between the ages of 36 and 59; while 63 (15.95%) respondents were 60 years or above. This analysis provides a clear distribution of age groups among the respondents surveyed.

Table 2: Sex of Respondents

S/N	Items	Frequency (f)	Percentage (%)
1	Males	328	**83.04%**
2	Females	67	**16.96%**
	Total	**395**	100%

Excerpt from field survey (2024)

The table above simply shows that the number of our male respondents is 328 representing 83.04%; and the number of females 67, representing 16.96%. This data shows that vast majority of the respondents surveyed were male.

Table 3: Education Qualifications of Respondents

S/N	Items	Frequency (f)	Percentage (%)
1	No formal Education	16	4.05%
2	Primary Education	53	13.42%
3.	Secondary Education	194	49.11%
4	Tertiary Education	132	33.42%
	Total	**395**	100%

Excerpt from field survey (2024)

From the table above, 16 (4.05%) respondents did not have any formal education. 53 (13.42%) respondents have only primary education. 194 (49.11%) respondents have secondary education; and then, 132 (33.42%) respondents are having tertiary education. The data above provides a clear overview of the education levels among the respondents surveyed.

Table 4: Marital Status of Respondents

S/N	Items	Frequency (f)	Percentage (%)
1	Single	74	18.73%
2	Married	296	74.94%
3.	Widowed	21	5.32%
4	Divorced	4	1.01%
	Total	**395**	100%

Excerpt from field survey (2024)

From the table above, 74 which represent 18.73% of the respondents were single, 296 (74.96%) respondents were married; 21 (5.32%) respondents were widowed; and 4 (1.01%) respondents were divorced. This data provides a comprehensive overview of the marital status distribution among the respondents surveyed.

Table 5: Number of Years of Farming

S/N	Items	Frequency (f)	Percentage (%)
1	Less than 1 year	136	34.43
2	1-5 years	65	16.46
3.	6-10 years	88	22.28
4	11-20 years	67	16.96
5	20 years and above	39	9.87
	Total	**395**	**100%**

Fieldwork, 2024

From the table above, 136 representing 34.43% of the respondents had farmed for less than a year as at the time the programme commenced; 65 respondents (16.46%) had farmed for between 1 to 5 years; 88 (22.28%) respondents had farmed for 6 to 8 years; 67 (16.96%) respondents had farmed for 11-20 years, and finally, 39 (9.87) respondents had farmed for 20 years and above. This comprehensive breakdown provides a clearer picture of the diverse farming experience levels among the participants surveyed.

Table 6: Main Crops Cultivated

S/N	Items	Frequency (f)	Percentage (%)
1	Rice	185	**46.84%**
2	Yam	64	**16.20%**
3.	Cassava	128	**32.41%**
4	Maize	12	**3.04%**
5	Okra	6	**1.52%**
	Total	**395**	100%

Excerpt from field survey (2024)

From the table above, 185 which represents 46.84% of the respondents cultivated rice as their main crop; 64 (16.20%) respondents were yam farmers; 128 (32.41%) respondents were cassava farmers; 12 (3.04%) respondents were maize farmers, and then, 6 (1.52%) respondents stated that they were okra farmers. The data above provides a clear view of the main crops cultivated by the respondents surveyed.

Table 7: Farm Size

S/N	Items	Frequency (f)	Percentage (%)
1	Less Than 1 Hectare	0	**0.00%**
2	1-5 Hectares	291	**73.67%**
3.	6-10 Hectares	88	**22.28%**
4	Over 10 Hectares	16	**4.05%**
	Total	**395**	100%

Excerpt from field survey (2024)

From the table above, no participating farmer (respondents) had farmed less than a hectare of land. 291 (73.67%) respondents farmed between 1 to 5 hectares. 88 (22.28%) respondents farmed between 6-10 hectares. 16 (4.05%) respondents had over 10 hectares of farm. This data provides a clear distribution of farm sizes among the respondents surveyed.

Table 8: Participation in the One Man- One Hectare Programme.

S/N	Items	Frequency (f)	Percentage (%)
1	Participated	395	100%
2	Did not Participate	0	0.00%
	Total	**395**	100%

Excerpt from field survey (2024)

All the 395 respondents had participated in the One Man- One Hectare programme. Of course, participation in the One Man- One Hectare programme was the strict basis for the inclusion in our sample size.

Hypothesis: ***Collaborative trainings provided by the participating NGO and academic institution increased the adoption of modern farming techniques among farmers in Ebonyi state from 2016-2023.***

This hypothesis was aimed at establishing how Trainings provided by NGOs and academic institutions increased the adoption of modern farming techniques among participant farmers in Ebonyi state from 2016-2023. This was done by ascertaining the level of agreement to the questions that helped us ascertain if the trainings provided by the NGOs and academic institutions increased the adoption of modern farming techniques among farmers in the One Man- One Hectare arrangement in the state.

Table 9: Effectiveness of Trainings by NGOs and Academic Institutions and Adoption of Modern Farming Techniques

S/N	Items	SD	D	N	A	SA	ẋ	Decision
1	I attended training sessions organized by NGOs/academic institutions.	0	0	1	36	358	4.90	SA
2	The topics covered during these training sessions were relevant to my farming practices.	25	27	14	18	311	4.52	SA

3	The trainers were accessible for questions and additional support.	13	14	0	52	316	4.71	SA
4	The level of interaction during the training sessions was high.	3	7	2	79	304	4.71	SA
5	I received follow-up support after the training sessions.	130	199	16	43	7	2.04	D
6	I applied the techniques learned in these trainings to my farming activities.	36	115	1	113	130	3.13	A
7	I noticed a positive change in my farming practices since attending the trainings.	11	115	23	118	128	3.57	A
8	The training influenced my crop yield and overall farm productivity positively.	74	52	7	186	76	3.28	A
9	I faced challenges in adopting these new techniques.	2	4	1	257	131	4.32	SA
10	I would suggest improvements for future training sessions.	3	7	1	216	168	4.36	SA
11	Overall, the trainings effectively improved my farming techniques.	72	155	7	107	54	2.64	D
Grand mean							4.	SA

		0 1	

Excerpt from field survey (2024)

In the table above, under the Attendance and Relevance: A striking 358 respondents strongly agreed that they attended training sessions, with only one response being neutral. This high participation rate indicates a strong engagement and interest in these training programme. Additionally, 311 participants strongly agreed that the topics covered were relevant to their farming practices, underscoring the trainings' pertinence. On Trainers' Accessibility: A notable number (316 strongly agreeing) found trainers accessible for questions and additional support, showing the trainers' availability and willingness to assist participants. On Interaction Levels: High levels of interaction were reported in the training sessions with 304 participants strongly agreeing about the high interaction, suggesting an engaging and participative environment. On Follow-Up Support: Mixed responses (199 disagreeing) were observed for follow-up support post-training, pointing towards a need for improved follow-up mechanisms to ensure continuous support.

On Application of Techniques: There was a balanced perspective regarding the application of techniques learned, with 113 agreeing and an almost equal number (115) disagreeing, suggesting variability in the applicability or practicality of the techniques taught. On Positive Changes in Farming Practices: Positive changes in farming practices were noticed by a considerable number of participants (128 strongly agreeing), indicating the trainings' impact on enhancing farming practices. On Impact on Crop Yield and Productivity: The impact on crop yield and overall farm productivity was mixed, with 186 participants agreeing while 52 participants disagreed, showing varied results among participants.

Challenges in Adoption: A significant number (131 strongly agreeing) faced challenges in adopting new techniques, highlighting the barriers to implementation despite the training. Suggestions for Improvement: most respondents (216 agreeing) were of the opinion that future training be improved, signaling room for enhancement in training delivery or content. Overall Effectiveness: The overall effectiveness of the trainings saw varied responses with 107 agreeing while 155 disagreed, presenting a split view on the perceived success of the training programme.

Testing the Hypothesis

H_1: Trainings provided by NGOs and academic institution increased the adoption of modern farming techniques among farmers in Ebonyi state from 2016-2023.

Effectiveness of Trainings by NGOs and Academic Institutions and Adoption of Modern Farming Techniques

Items	χ^2	Df	$p-val$
The topics covered during these training sessions were relevant to my farming practices.	319.763[a]	8	.000
The trainers were accessible for questions and additional support.	317.723[a]	6	.000
The level of interaction during the training sessions was high.	312.997[a]	8	.000
I received follow-up support after the training sessions.	83.218[a]	8	.000
I applied the techniques learned in these trainings to my farming activities.	383.334[a]	8	.000
I noticed a positive change in my farming practices since attending the trainings.	177.953[a]	8	.000
The training influenced my crop yield and overall farm productivity positively.	177.088[a]	8	.000
I faced challenges in adopting these new techniques.	267.035[a]	8	.000
I would suggest improvements for future training sessions.	243.179[a]	8	.000
Overall, the trainings effectively improved my farming techniques.	183.141[a]	8	.000

From the above table, the highest observation that caught the farmers' attention was the farmers' agreement with the applicability of the training contents in farming activities. The findings indicated that with a Chi-square of 319.763 and a .000 p-value, the training contents and applicability had a great correlation with each other. This signifies that the training programmes had been planned and adjusted properly specifically to fit the needs of the farmers of Ebonyi State. The availability of the trainers also helped a lot in reinforcing the training process. Out of 316 farmers who agreed highly and with a Chi-square of 317.723 (p = .000), it

is evident that the required knowledge of the trainers and the availability of the trainers in answering the farmers' queries and providing further advice helped a lot.

Engagement levels throughout the training sessions also posted surprisingly good rates of participation. The Chi-square of 312.997 with a significance of .000 attests the interactive design of the programmes with the majority of farmers confirming that the sessions had been participative and interactive. The follow-through with the support posted differently with mixed results. The Chi-square testing result of $\chi^2 = 83.218$ and the significance of .000 attests lower consistency of uniformity of follow-through with the training with the provision that although there had been follow-through with the required support with the majority of farmers, it may not be the same with the remaining farmers.

The study also contrasted the application of skills that had been acquired during farming activities and established a good match between training attendance and application. The Chi-square of 383.334 (.000) established a majority of the respondents that they had applied the techniques that they had acquired during training sessions. Again, with the question of whether they had been helped with good improvement in farming activities, a majority of the study sample had a yes answer ($\chi^2 = 177.953$, .000), confirming the premise that the training had a practical application of farming techniques.

However, the effect of the techniques varied with yield and productivity. The Chi-square of 177.088 (.000) indicates that the majority of the farmers had improvement in productivity while a subset of farmers had not had dramatic improvement. The variation might be explained in the variation of the size of the farm, availability of the required factors of production, or the techniques applied. The issue of constraint in the application of modern techniques also came out with a Chi-square of 267.035 (.000). Most of the farmers had barriers against the application of modern techniques that might be monetary issues, the non-availability of the required machinery, or unwillingness based on conventional techniques of farming.

Despite these shortcomings, the majority of the farmers also concurred that future training sessions need to be better ($\chi^2 = 243.179$, $p = .000$). This indicates that while the programme had been helpful, the presentation of the programme contents, follow-throughs, and application of the programme based on the needs of the respective farming populations had room for improvement. The overall effectiveness of the training programme had a Chi-square of 183.141 ($p = .000$). The results indicated that while the training had helped a lot of farmers, the perceptions had a mixed reaction and thus the programme had a good but not fully transformative effect. Thus, we accept the alternate hypothesis which says that trainings provided by NGOs and academic institutions increased the adoption of modern farming techniques among farmers in Ebonyi state from 2016-2023.

Finding

The trainings in modern farming techniques provided by the NGOs and academic institutions to the participating farmers significantly improved their crop yields and overall productivity.

DISCUSSION OF FINDING

The objective of this hypothesis was to ascertain how trainings provided by NGOs and academic institutions influenced the adoption of modern farming techniques among farmers in Ebonyi State from 2016-2023. According to the data collected, there was a significant level of engagement of farmers, indicated by the overwhelming number of participants who attended these training sessions. Specifically, 358 respondents strongly agreed that they had attended the training sessions, which underscores a high level of interest and engagement. Furthermore, 311 respondents strongly agreed that the topics covered were relevant to their farming practices, reflecting the effectiveness of the training programme.

Empirical studies corroborate these findings, emphasizing the importance of relevant content in training programmes. For instance, Msuya et al. (2017) noted that the relevance of training content significantly enhances the adoption of new agricultural techniques among farmers. The accessibility of trainers, which 316 respondents strongly agreed was sufficient, also played a critical role in the trainings' effectiveness. According to Akudugu et al. (2012), the accessibility of trainers for additional support significantly impacts the adoption rates of new farming practices.

Interaction during training sessions was reported to be high, with 304 respondents strongly agreeing. High interaction levels foster an engaging and participatory learning environment, essential for the assimilation of new knowledge and practices. Studies by Davis et al. (2012) suggest that interactive training methods are more effective in promoting the adoption of new techniques among farmers. However, the follow-up support post-training revealed mixed responses, with 199 respondents disagreeing with the adequacy of follow-up mechanisms. This indicates a gap in continuous support for farmers, which is crucial for the sustained application of learned techniques. Similarly, the application of these techniques showed varied responses, with 113 agreeing and 115 disagreeing. This suggests that while some farmers found the techniques practical and applicable, others faced challenges. According to Rogers (2003), the practicality and compatibility of new techniques with existing practices are critical factors influencing their adoption.

The reported positive changes in farming practices, with 128 respondents strongly agreeing, indicate the training's impact on enhancing farming techniques. The impact on crop yield and overall productivity, however, was mixed, with 186 participants agreeing and 52 disagreeing. These findings highlight the need for continuous evaluation and adaptation of training content to maximize its effectiveness. Challenges in adopting new techniques were reported by a significant number of respondents, with 131 strongly agreeing. This highlights

the barriers that farmers face despite receiving training. For Feder et al. (1985), factors such as resource limitations, risk aversion, and lack of follow-up support are common barriers to the adoption of new agricultural practices.

Most respondents suggested improvements for future training sessions, indicating room for enhancement in training delivery and content. This split view suggests that while the trainings had a positive impact on some farmers, others did not perceive them as effective. These findings underscore the need for tailored training programmes that consider the unique circumstances and challenges of each farming community. Dr. Emmanuel Omoke, from the Department of Agricultural Economics and Extension at Ebonyi State University, Abakaliki, stated that,

> "Yes, we represented the academic institution and played a pivotal role in the (One Man- One Hectare) programme by providing research-based insights and expertise to enhance participants' agronomic practices. Extensive trainings on soil quality, crop selection, and sustainable farming techniques were conducted for the farmers to maximize yields. The training aspects of the programme went relatively well, as the farmers showed full grasp of the agronomic knowledge and skills that we designed and taught".

This aligns with findings by Murendo et al. (2016), who emphasized the importance of incorporating farmer feedback to improve subsequent future training programmes. Dr. Omoke stressed that the farmers asked pertinent questions and got cleared where they had misconceptions and practiced in less innovative ways.

According to Mabel Obini, the Neighbourhood Environment Watch Foundation representative who had participated in the training delivery, "Our NGO alongside academics from Ebonyi State University focused on providing technical assistance and support to participants in areas such as organic farming, water conservation, and pest management." This re-emphasized the success of the training delivery by those who got the role in the One Man-One Hectare programme.

4. CONCLUSION AND POLICY RECOMMENDATIONS

Conclusion

This study on cross-sector collaboration in agronomic advancement: evidence from NGO-academic training in Ebonyi state's one man-one-hectare programme provides a comprehensive evaluation of the impact of training programme, grant disbursement efficiency, and cross-sector collaboration on the adoption of modern farming techniques. In conclusion, the trainings provided by NGOs and academic institutions increased the engagement of farmers, with high participation rates and relevant content. These trainings have had a positive influence on the adoption of modern farming techniques among farmers in Ebonyi State. However, there are areas that require attention and improvement. Addressing the identified gaps, such as follow-up support and the practicality of techniques can enhance the overall

effectiveness of training programmes. By incorporating farmer feedback and continuously adapting the training content, these programmes can achieve greater success and sustainability in enhancing farming practices.

Recommendations

1. Enhance Follow-Up Support: Establish robust follow-up mechanisms to provide continuous support to farmers after training sessions. This can include regular check-ins, additional training, and practical field demonstrations.
2. Tailor Training Programmes: Adapt training programmes to the specific contexts and needs of different farming communities. Techniques should be tailored to local conditions, and practical examples should be directly applicable to the farmers' practices.
3. Foster Peer Learning and Farmer Networks: Promote the development of farmer groups and peer-to-peer learning platforms, enabling farmers to share experiences, best practices, and solutions. This can enhance knowledge transfer, build community support, and encourage wider adoption of modern farming techniques.

Limitations of the Study

Conducting this research was not without its challenges. The researcher encountered several obstacles during fieldwork, which, when surmounted, lent credibility and validity to the finding and result.

1. **Access to Participants**: One significant challenge was gaining access to a diverse and representative sample of participants. Given the rural nature of many farming communities, logistical issues such as difficult terrain and inadequate transportation options posed barriers. To address this, the researcher coordinated with local agricultural extension officers and community leaders who facilitated introductions to participants, and also helping with information on the days some of the villages in various target locations had town hall meetings. Utilizing local networks proved essential for reaching a wide range of participants and ensuring the sample was representative.
2. **Language and Communication Barriers**: Communication barriers arose due to the diverse linguistic backgrounds of participants. Many farmers spoke local dialects, which differed from the primary language of instruction. To overcome this, the researcher employed the help of local interpreters who were fluent in both the local dialects and the primary language. This ensured that especially the survey questions were accurately translated and understood, thus maintaining the integrity of the data collected.
3. **Literacy Levels**: Varying literacy levels among participants presented another challenge. Some farmers were not comfortable with written surveys or complex questionnaires. In response, the researcher adapted the data collection methods, reading out and interpreting the questions and ticking the relevant boxes. This approach ensured that all participants, regardless of literacy levels, could provide meaningful responses.

4. **Building Trust and Rapport**: Establishing trust with participants was crucial, especially when discussing financial matters and personal experiences. Some farmers were initially hesitant to share information due to fears of reprisal or skepticism about the research's purpose. The researcher spent considerable time building rapport, explaining the study's objectives, and ensuring confidentiality where necessary. This approach helped foster an environment of trust and openness, encouraging participants to share candidly.

By overcoming these challenges, the researcher was able to gather comprehensive and reliable data, ensuring the validity and robustness of the study's findings. These efforts underscore the importance of adaptability, cultural sensitivity, and ethical rigor in conducting field research in diverse and often challenging environments. The insights gained from this study provide valuable contributions to understanding cross-sector collaboration and agronomic advancement, and they offer practical recommendations for enhancing the effectiveness of agricultural programmes in Ebonyi State and beyond.

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