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Access to Agricultural Extension Services and Their Influence on Crop Production among Rural Women Cooperative Farmers in South-East Nigeria

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ABSTRACT

Agricultural extension service and its influence on crop production among rural women cooperative farmers in South-East, Nigeria is the focus of the study. Nigerian agricultural system has not been living up to expectation, despite the wide range of programmes, policies and approaches that have been formulated for enhancement and sustenance of agricultural growth. Importantly, women farmers are central to the success and hence their access to extension services has become key to boosting crop production. Towards addressing these issues the objectives of the study are to assess the level of use of agricultural extension services from point of access to technology, advisory services and facilitation by the rural women cooperative farmers and importantly, to determine if their access to these agricultural extension services have a significant effect on their crop production. Finally, the third objective identified factors that constrain the effective use of agricultural extension services by the rural women farmers. Taro Yamane (1967) formula and multistage sampling procedure were used in determining the sample size of 379 respondents after data sorting and ensuring representative distribution of samples to five states of Abia, Anambra, Ebonyi, Enugu and Imo in South-East, Nigeria. The study used descriptive and inferential statistics to analyse the data. The rural women cooperative farmers had grand mean for access to agricultural extension services: technology services ($\bar{x}$= 3.71); advisory services ($\bar{x}$ = 3.39); and, facilitation services ($\bar{x}$= 3.94). Thus, indicating that the women farmers had access to the three agricultural extension services components. The rural women grand mean for crop output ($\bar{x}$=4.07), showed a positive production effect. Also, a t-ratio of 148.602 indicated that the use of agricultural extension service had a significant effect on crop output performance of the rural women cooperative farmers. However, the optimal realization of their extension access were hindered by some challenges such as poor infrastructure, low educational background, lack of credit, corruption and land acquisition.

Keywords: Agricultural Extension services; Crop production, Rural women farmers.

1. INTRODUCTION

Background of the Study

Agriculture remains the nation's main economic bedrock employing 70 – 80 percent of the total population, mostly on a subsistence level (Asiabaka& Owens, 2002). According to Agbamu (2005), sequel to the food situation in many developing societies, which is predominantly agricultural, finding means of raising productivity among the rural poor in these countries have become most urgent questions confronting the International development community today. Agricultural development implies a shift from traditional methods of production to include new\improved technological components such as new varieties, cultural practices, commercial fertilizers and pesticides as well as new crops and new farming systems (Agbamu 2005).Consequently, a wide range of policies and approaches have been formulated in most of African countries (Nigeria inclusive) to reverse the worsening food and agricultural trends towards sustained agricultural growth. This has necessitated putting in place a combination of factors comprising the right technology, effective extension services, access to physical inputs, adequate market support services and some infrastructures to improve agricultural productivity and raise the standard of living of rural dwellers (Aphamu & Obikhian, 2008).

The agricultural extension service operates from the back drop belief that increased agricultural productivity depends primarily upon the acceptance of improved cultural and technological changes at the rural farm level and that peasant farmers can achieve higher farm yield only if they adopt recommended scientific farming techniques in place of their traditional practices (Aphum & Obikhian, 2008). Moreover, Aphum and Obikhian have posited that successful adoption of improved farming techniques is predicated upon rural farmers acquiring the knowledge and have a better understanding of these technologies, a process most effectively accomplished by the Agricultural Development Programme (ADP) extension strategy to enhance productivity in order to raise the living standard of rural dwellers (Omoyemi & Yisa 2005).

Cooperatives are one of the most effective vehicles for efficient mobilization of production resources and accelerated rural development. The importance arises from the fact that the small-scale individual capacity of the peasants production, cannot cope with technological and capital

demands of modernized agriculture, Omotesho (2008). Cooperative organizations play very important role in the socio-economic life of the nation. Cooperatives can be identified as an autonomous, association of persons united voluntarily to meet their common, economic, social and cultural needs and aspirations through jointly owned and democratically controlled enterprise. In Nigeria, majority of the agricultural cooperatives at different levels are multipurpose in their function. Not only do they operate banking business, but they also deal with other support series such as input supply, marketing and purchasing which is critical to agricultural development(Abdulquadri & Mohammed 2012).Cooperative Societies in Nigeria like their counterparts all over the world are formed to meet people's mutual needs. Through cooperatives, farmers could pool their limited resources together to improve agricultural output and this will enhance socio-economic activities in the rural areas (Ebonyi & Jimoh, 2002).

Women Agricultural Cooperative Societies have created many outlets in the rural and semi urban areas of the South East, creating value chain and enhancing productive capacity and competitive ability among farmers' standards of farm produce.The governments are yet to improve the system of agriculture to a significant level. Majority of the benefits accrued from the government policies and programmes have been denied of the commercial farmers, who have adequate and enough resources for mechanical farming. It is therefore paramount that government should give assistance to this farmer's cooperative societies for improved agricultural system, making available the extension agents to them, for imparting new technique and idea, to enhance their production. The better the quality of value added to farm produce, the more farmers will be eager to make sales through their agricultural cooperative societies. This is because, it is possible to maintain services such as storage, extend credit, processing and transportation which a single farmer cannot make or achieve outside being in a group or cooperative (Bob Igwe, 2006)

In general, women agricultural cooperative and all other cooperatives help members to attain well-being satisfaction which they cannot achieve if they are to venture into agriculture singly or individually. Women farmers in Africa are productive force in subsistence agriculture participation, active in the primary production of food crops, animal production, and transportation

of food crops from the farm to the house, processing, storage and marketing (Banji & Okunade, 2005).

However, (NARP, 2000) most documents concerned with the productivities of small-scale farmers in Nigeria assumed that the small-scale farmers who produce most of the food crops are men. This assumption is false, because women have been found to be involved in all farm activities in addition to helping their husbands transport, process, store and marketing of farm produce.

Onwuka,Otaokpukpu and Okonkwo (2017)had it that, in many developing countries, there is a growing need for rapid rural development in which agricultural development is realized to be an essential component. In Nigeria, about 60% of the population is involved in agricultural occupation of these percentages; it is believed that the rural farmers form the majority of the population. The increasing demand for agricultural products by an enlarged populace has put farmers in a position where they need the knowledge of the scientific breakthrough and effective extension services to meet-up. Consequently, the need was felt to modernize the agricultural sector with a view to accelerating the country's economic growth as well as improving the wellbeing of Nigerians. This explains the proliferation of strategies to accelerate food production in the country. But some of these efforts often prove to be ineffective.

Again, Onugu and Abdulahi (2012) opined that there is a growing advocacy for achieving sustainable food security in Nigeria and a lot of effort has been made and directed at finding appropriate structure for organizing millions of small-scale farmers towards achieving food security. Women agricultural cooperatives in fact, agricultural cooperative in general has been noted as the approved vehicle for harnessing and pooling the resources of millions of small-scale farmers producers together to enjoy the benefit of large scale production. Although the activities of the extension agents which is anchored by the Agricultural Development Programme (ADP) of states in Nigeria is a community based participatory approach using contact farmers in the target area, but that has not been able to reverse the upward trend in the price of food stuffs in the markets.

Agricultural extension service facilitates the transfer of knowledge and good practices to farmers. The traditional agricultural extension is mainly done by an extension officer visiting a farmer or farmer field schools, Sanga, Kalungwizi, and Msuya (2013).The Federal Government introduced the Agricultural Development Programme (ADP) among others. The ADP is primarily an extension organ put in place by the Federal government to advance food and fibre production in Nigeria. The programme was launched in 1975 with the aim of accelerating food production and increasing farmers' income through an integrated farm inputs supply and overall development of agriculture. The state government, federal government and the World Bank tripartite fund the programme in order to address the problem of agricultural production and the role extension services play in the overall agricultural development. This makes the ADPs the main agent of extension delivery in the new system. For the laudable objectives of agricultural extension to be achieved, extension agents have to play a vital role as they are responsible for transferring useful information necessary for "change" to the farmers.The extension agents are expected to play a significant role in the extension system,they will be responsible in the dissemination of agricultural technologies to the farmers, link research and farmers,(Oladimeji 2004).This study therefore sought to determine the impact of extension services and of women influence on crop production of rural women cooperative farmers in South- East, Nigeria.

Statement of the Problem

Nigerian agricultural system has not been living up to expectation, despite the wide range of programme, policies and approaches that have been formulated for enhancement and sustenance of agricultural growth. In Africa, Nigeria inclusive, women control most of subsistence agriculture, have high rates of economic activities in agricultural labour, are involved in informal and limited wage employment activities while at the same time take responsibility for child bearing, rearing and domestic needs (Friedrich,2010).

Over the years, our rural farmers depend on indigenous or local knowledge for improved farming system. Such knowledge refers to skill and experience gained through oral tradition and practice over many generations (Oyewo, Adepogu, Oyewo and Adigun (2017). Obidike (2011) observed

that acquisition of such primitive skill by rural farmers as we have in South east have not helped to improve agricultural yield. He further opined that all that is witnessed in our rural agricultural system range from poor farm yield, emergence of new crops, disease resistant weeds and pests that attack farm crops, old farm implements, poor quality fertilizer etc. Agricultural information are always meant to get to rural farmers through extension workers, community's libraries, radio and television, film shows, state and local government agricultural agencies such as the (ADP) but all these are either not in place or effective (Ogbonna, & Okoroafor 2004).

Even though the agricultural sector is increasingly becoming more technologically sophisticated, commercially oriented and globally integrated, women have little or almost no access to agricultural information provided by agricultural extension officers (Julie, 2014). Most of the Agricultural Extension Services (AESs) and programmes that provide training and assistance to small scale farmers tend to target men because they are the household heads while women are being discriminated upon. In the process, women who constitute more than 70% of the farmers are overlooked. Structural and procedural changes have been implemented in agricultural extension service delivery and cooperatives have been positioned as channel for reaching vulnerable groups such as women.

This current study was necessitated because the previous studies open a gap in the literature as they fail to establish conclusive linkage between extension services and influence on crop production of rural women cooperatives farmers.Moreover, literature paid much attention to awareness of agricultural extension services without emphasizing on the need to understand the extent of actual use. Knowing that not all farmers that know or tried an innovation adopted it, there is the need to understand the extent of use of these innovations delivered by extension agents in Southeast Nigeria. Making informed decision about improving extension service delivery hinge on understanding factors that influence uptake. Literature identified education level and farming experience as significant determinant of adoption. However, whether socio-economic variables such as income, cooperative membership, household size, availability of subsidy and size of farm influence uptake needs to be determined.

Indeed, the purpose of accessing and delivery of extension services is to increase yield. Expectations of adopters influence the speed of adoption and availability of success stories could have positive spur on adoption behavior. As a result, there is the need to verify if uptake of these extension services have increased yield of cooperative women farmers (Output and income). This will affirm the importance or otherwise of the worth of extension services from demand perspective.

Literature identified illiteracy i.e. low educational background, high cost and inadequate awareness, trust as well as corruption as barriers hindering full use of extension services. Cooperative societies in recent times have emerged as a veritable channel of delivery extension services because of the belief that cooperative can mitigate the effect of these barriers. However, whether cooperatives have reduced challenges hindering uptake is still inconclusive. There is the need to know if cooperative members still face the same challenges ordinary farmers face in use of extension services.

Therefore, this study is apt as it will examine the relationship between use of agricultural extension services and influence on crop production in the context of farmers who are members of women agricultural cooperatives.

Specific Objectives

(i) evaluate the level of use of agricultural extension services (Technology, advisory and Facilitation) by the members of rural women cooperative farmers in SouthEast,Nigeria.

(ii) determine the effect of agricultural extension services (Technology, Advisory and Facilitation) on crop production (Output and income) indices of members of the rural women cooperatives farmers.

(iii) examine the factors that affect the use of agricultural extension services by the rural women farmers of cooperative society in South East, Nigeria.

HYPOTHESIS

1.H_0: The level of use of agricultural extension services (technology, advisory and facilitation) by members of the women agricultural cooperatives is not significant.

H_1: The level of use of agricultural extension services (technology, advisory and facilitation) by members of women agricultural cooperatives is significant.

2.H_0: The level of use of agricultural extension services does not have significant effect on output performance indices of the members of women agricultural cooperatives.

H_1: The level of use of agricultural extension services has significant effect on output performance indices of members of the women agricultural cooperatives.

2. Agricultural Extension Services

Agricultural extension has been defined in different forms and ways by different authorities and experts, all endearing on the improvement of the standard of living of the people. Fisher (2002) defined extension as a system of education extending beyond the classroom to individuals on farms and is available to every member of the family. Agriculture for Impact (2018) defined Agricultural extension as the application of scientific research and knowledge through farmers to agricultural practice. Simply put, it is the delivery of information inputs to farmers. He went further to opine that the role of extension services is invaluable in teaching farmers how to improve their productivity. Extension is also critical to move research from the lab to the field and to ensure a return on investment in research by translating new knowledge into innovative practices. Montpellier (2016) opined that the UN High-Level Panel of Experts on Food Security and Nutrition (HLPE) argue that "extension systems need full attention and investments from governments and the donor community." Agricultural extension started as just extension with the aim of disseminating information to people who were met privileged to taste the four walls of the classroom. Extension was first used in connection with education over 150 years ago to describe the method of spreading knowledge. Okechukwu (2009) opined that Agricultural extension can be defined as an advice and assistance given to the farmers and his families through educational procedures on new farming methods and techniques in order to improve their production efficiency and income, bettering their level wing and uplifting the education and social standard of the farmers.

Essentially, agricultural extension provides farmers the scientific knowledge so that they could solve their problems (Okechuku2009).It is also the primary means of change, the reason for change, the value of change, the results you can achieve, the process by which it is arrived at and also the uncertainties inherent in this change. It helps the farmers to learn about what alternatives

that exists in farming so that they can choose the best alternative for themselves. Agricultural extension agents help the farmers to discuss and air the conditions under which they do their farming process; to obtain a clearer inside to their problems and encourage farmers decide how to overcome their problems either individually or collectively in order to achieve improved yield and living standard.

Again, agricultural extension is an approach that aims to provide uninformed farmers and their household with relevant information about new farming practices and techniques that can boost agricultural production and improve living standards (Sheriff, 2018). He went further to say that agricultural extension going by formal standards; it adopts education techniques in rendering assistance to farmers. Educational assistance or advice so rehired enables farmers to develop socially and understand how they can make agriculture a lasting source of substantial income. Agricultural extension in its global conception was indicated with the intent of passing information to farmers who were not literate or who did not have any access to formal education.
He went further to say that about two hundred (200) years ago the word extension was first used in referring to a formal means of disseminating useful information and transferring knowledge. Sheriff (2018) continued to say that today agricultural extension goes a great length to involve the transfer of scientific knowledge; farmers require understanding the use of modern technology. Undoubtedly farming is associated with problems and for local famer's comprehensive information on the use of modern technology. In this regard agricultural extension has gained grounds everywhere in the world as a helpful approach to solving farming problems.

In addition to its basic purpose agricultural extension integrates innovation with agriculture in a way intended to promote agriculture and make it a lasting solution to crises such as food shortage and low level of agricultural production. Moreover, agricultural extension brings about the awareness of farmers, a variety of farming alternatives from which they can select their preferences. Frankly, the agricultural extension comes with a number of advantages, most of which are targeted at farmers. It is said that some of its advantages are but not limited to: giving distinct insight into how farming problems may be solved; helping farmers connect with one another to

discuss the conditions surrounding their activities, raising farmers' standard of living through collective reasoning and disseminating information farmers need to diversify from crude farming to modernized farming.

Classification of Agricultural Extention Services

Extension Services are Classified into three types,accordingto Agriculture for Impact(2018), They are:

i) Technology transfer ii)
Advisory and iii)
Facilitation

Technology transfer- according to Agriculture for Impact (2018) is the traditional model of the transfer of advice, knowledge and information in a linear manner;

Advisory – the use by farmers of a cadre of experts as a source of advice in relation to specific problems faced by them.

Facilitation – the aim of this model is to help farmers to define their own problems and develop their own solutions (Agriculture for Impact, 2018).

Theoretical Review

Adoption Theory Model

The adoption model theory is a theory that models how users come to accept and use an innovative idea. The theory was propounded by Davis, Bagozzi, & Warshaw, (1989).The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it.

This study is also concerned more on the adoption of innovative agro technology and innovative agro information. Adoption Theory has more innovation characteristics, including time as an essential element of the theory and aims at predicting the attitude of potential users towards a new technology by focusing on individual perceptions in evaluating costs and benefits.

Tenets of Adoption Theory

i. The Adoption theory is an information system theory that models how users come to accept and use a new information and technology

ii. The theory is generally regarded as a learning process taken place overtime in which the beneficiary first becomes aware of the existence of the innovation and gradually makes up his or her mind whether to adopt the recommended practice or not.

iii. The theory helps to understand how adopters come to adopt or reject the new innovation in their agricultural activities.

iv. Potential adopters who frequent metropolitan areas are more likely to adopt an innovation.

v. Finally, potential adopters who have the power or agency to create change, particularly in organizations, are more likely to adopt an innovation than someone with less power over his choices.

Relevance of Adoption Theory to the study based on the theory Premise

i. The Adoption theory is an information system theory that models how cooperative members accept to make use of a new information and technology, as well as apply such information, idea and technology to their farming activities for better and improved performance.

ii. The theory is generally regarded as a learning process taking place overtime in which the cooperative members first becomes aware of the existence of the innovation and gradually makes up their mind to adopt the recommended practice by their extension agents.

The theory helps to understand how cooperative members (adopters) come to adopt or reject the new innovation in their agricultural business activities

3. METHODOLOGY

Survey research design was adopted because, there is the need to examine cross section of people one for generating the needed data.

The area of the study is Southeast Nigeria. It consists of five states namely Anambra, Imo, Enugu, Abia and Ebonyi. This area was formerly referred to as Biafra during the civil war has 101 local government areas that are split into 346 communities.

Okechukwu (2014) had it that Southeast of Nigeria was carved out of East Central State which was one of the twelve states created in Nigeria at the emergence of the Nigerian civil war in 1967.

It is bounded in the east by Akwa Ibom and Cross River States, in the north by Benue and Kogi States, in the west by Edo and Delta States and in the south by Rivers and Bayelsa States. The area is inhabited by the Igbo race and the language is Igbo though English is widely spoken and used as official language in governance. They are predominantly Christians. The Igbos are very daring, competitive, hard-working and enterprising. They can be found doing business virtually in all parts of the world. The Igbos are renowned in literature for commerce, adventure and dexterity. The population of the area according to 2006 census is 28,415,006. Literacy level of inhabitants stood at 38% while 51% of the population are female. The region is arguable the most vibrant geographical zone in Nigeria and it has the least poverty rate in the country. The region is blessed with natural minerals such as crude oil, coal, limestone, aluminion etc. The arable land made it a beacon of agriculture and unique in production of palm oil, cassava, yam, coco yam, cashew nuts, vegetables and different kinds of fruits. Apart from numerous rivers which make fishing interesting for inhabitants, the Onitsha, Enugu, Aba and Nnewi trade clusters made the region a beehive of commercial activities. Interesting cities in the region include Awka, Enugu, Owerri, Umuahia and Abakaliki. Sixty percent of the inhabitants live in rural areas and over 70% of rural dwellers depend on farm for their survival. Majority of these rural dwellers are women, who formed themselves into cooperatives in order to access market opportunities. There are many women cooperatives in the area and they assist their members to access credit, inputs, processing of farm produce and marketing. Agricultural Development Programme offices are also located in various parts of the region, rendering extension services to individuals and corporate farmers.

Population of the Study

This implies the maximum group of element to which the findings of this study will apply or generalized. This study covers the women agricultural co-operative societies in the Southeast geo-political zone of Nigeria made up of five states viz: Abia, Anambra, Ebonyi, Enugu and Imo States. According to Cooperative departments from the five state capital, there were 28,410 agricultural registered cooperatives in the area of study out of which 6455 were women cooperatives. These women agricultural cooperatives had a total membership strength of 133,841. Therefore the 6455 women agricultural cooperatives with their membership strength which was 133,841 constituted the population of this study.

The number of women farmer's cooperatives in the five (5) states of South-East Zone was six thousand four hundred and fifty-five (6455) with the total membership strength of one hundred and thirty three thousand, eight hundred and forty-one (133,841). To get the sample size, the researcher used a Taro Yamane formula of

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

Where n = sample size N = population of the study e = error of margin taking at 5% level.

$$n = \frac{133,841}{1+133,841\ (5\%)\ 2}$$

$$= \frac{133,841}{1+133,841\ (0.5)2}$$

$$= \frac{133,841}{1+133,841\ (0.0025)}$$

$$= \frac{133,841}{1+334.6025}$$

$$= \frac{133,841}{335.6025}$$

$$n = 398.8081138$$

= approximately 399 respondents

The sampling strategy that was used in this study was multistage and proportional sampling technique. Multistage sampling refers to a sampling method where the sampling is carried out in

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stages using smaller sampling units at each stage. Proportional sampling technique is a method where the samples are a proportional distribution across all units.

Stage one: Two local governments in each of these five states that were agrarian were selected. This is because the study is about agriculture and better result will be achieved if efforts are focused on agrarian communities where agricultural production takes place.

Stage two: Women cooperatives in these agrarian local governments were randomly selected. Efforts were made to include only women cooperatives that have had at least five years contacts with agricultural extension workers.

Stage Three: Members of women agricultural cooperatives who have had at least five years contacts with extension officers were selected. This is shown in table 3.1.

Table 3.1: Distribution of women agricultural cooperative members selected from each state in South-East.

State	No. of Cooperatives	No. of members	No. of members selected
Anambra			
Ayamelum	9	145	44
Awka North	10	172	52
Imo			
Orlu West	8	138	39
Owerri West	9	153	47
Enugu			
Aninri	10	197	51
Udenu	8	129	36
Ebonyi			
Ivo	7	111	29
Izzi	8	125	33

Abia			
Bende	6	84	27
IsialaNgwa	7	112	41
Total	**82**	**1366**	**399**

Sources of Data

Data were collected from basically primary sources. However relevant secondary information were elicited from texts, journals, learned articles and websites of reputable institutions. The copies of questionnaire were administered, 379 copies were returned whereas the 20 others were not diligently filled up.

4. DATA PRESENTATION AND ANALYSIS

4.1 Evaluation of the Level of Use of Agricultural Extension Services (Technological) by the Members of Women Agricultural Cooperative in the South Eastern Zone of Nigeria.

Table 4.1: Agricultural Technological Extension Service received by the Women Members of Agricultural Cooperative

Serial No	Variables	Mean	Standard Dev.	Decision
	Technology Service			
1	Soya Milk making	3.82	1.20	Agreed
2	Zobo Processing	3.58	1.12	Agreed
3	Vegetable Storage	3.48	1.24	Agreed
4	Fruit Processing	3.22	1.03	Agreed
5	Soap and pomade Making	3.28	1.06	Agreed
6	All year round farming (Fadama/Irrigation)	3.53	1.22	Agreed
7	Cassava/Maize/Vegetable Intercropping	4.25	0.86	Agreed
8	Cocoyam Production	4.04	0.94	Agreed

9	Rice Production	4.10	3.77	Agreed
10	Seed Treatment using seed dressing chemicals and insecticides	3.60	1.23	Agreed
11	Use of Herbicide for clearing grasses	3.35	1.18	Agreed
12	Broiler Production	3.84	1.07	Agreed
13	Layer Production	3.78	1.16	Agreed
14	Local Chick Production	3.79	1.21	Agreed
15	Goat Keeping	3.78	1.19	Agreed
16	Processing other Agricultural products; (Okpa, etc.)	4.04	1.04	Agreed
17	Fish Processing	3.57	1.08	Agreed
	Grand Decision	**3.71**	**1.03**	**Agreed**

Source: Computed from Field Survey Data, December 2024.

The mean threshold of the technological extension services rendered to the women members of an agricultural cooperative in South Eastern Nigeria were obtained with the aid of the 5 – point Likert scale, the mean thresholds were later interpreted as greater than or equal to 3.0 as Agreed and less than 3.0 as Disagree. Based on the seventeen (17) items of table 4.2 that identified technological extension services received by women members of the agricultural cooperatives, 17 of them had a mean threshold of 3.0 and above. Thus; the women agreed to have received the following technological extension services in the study area; Soya Milk making, Zobo Processing, Cassava/Maize/Vegetable Intercropping, Cocoyam Production, Rice Production, and Processing other Agricultural products (Okpa, etc.) among others as listed in table 4.2 above. The grand mean threshold was found to be **3.71** and a standard deviation of **1.03**. This means that the farmers strongly agreed to the use of the technical services rendered by the extension agents in southeastern state. These are in agreement with Odurukwe*et al,* 2006 on impacts of the women in agriculture (WIA) in Imo State.

4.2 Evaluation of the Level of Use of Agricultural Extension Services (Advisory) by the Members of Women Agricultural Cooperative in the South Eastern Zone of Nigeria.

Table 4.2: Advisory Extension Service received by Women Members of Agricultural Cooperative

Serial No	Variable	Mean	Std. Dev.	Decision
	Advisory Services			
1	Individual Method	3.55	1.28	Agreed
2	Farm and Home Visit	3.69	0.90	Agreed
3	Exhibition	3.13	1.04	Agreed
4	Demonstration Method	3.60	1.02	Agreed
5	Tour and Field Trip	3.22	1.23	Agreed
6	Extension School and farmers training Centre (Farmer Field School)	3.44	1.09	Agreed
7	Result Demonstration	3.43	1.05	Agreed
8	Posters	3.20	1.12	Agreed
9	Project Visuals	3.26	1.21	Agreed
10	Telephone Call	3.15	1.29	Agreed
11	Office Calls	2.89	1.16	Disagreed
12	Personal Letter	2.93	1.19	Disagreed
13	General Meeting	4.13	1.01	Agreed
14	Informal Contact	3.50	1.19	Agreed
15	Friends	3.85	1.07	Agreed
16	Radio	3.34	1.09	Agreed
17	Television	3.10	1.09	Agreed

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18	Agricultural Extension Agents	3.78	0.90	Agreed			
19	Non-Governmental Organization				3.17	1.14	Agreed
	Grand Decision				**3.39**	**0.33**	**Agreed**

Source: Computed from Field Survey Data, December 2024.

The mean threshold of the advisory extension services rendered to the women members of an agricultural cooperative in South Eastern Nigeria were obtained with the aid of the 5 – point

Likert scale, the mean thresholds were later interpreted as greater than or equal to 3.0 as Agreed and less than 3.0 as Disagree. Based on the nineteen (19) items of table 4.3 that identified advisory extension services received by women members of the agricultural cooperatives, 17 were of the mean threshold of 3.0 and above, while 2 had mean threshold less than 3.0. Thus; the women agreed to have received the following advisory extension services in the study area; Farm and Home Visit, Demonstration Method, Extension School and farmers training Centre (Farmer Field School), General Meeting, and Informal Contact, among others as listed in table 4.3 above. The grand mean threshold was found to be **3.39** and a standard deviation of **0.33**. This means that the farmers strongly agreed to the use of the advisory services rendered by the extension agents in southeastern state.

4.3 Evaluation of the Level of Use of Agricultural Extension Services (Facilitation) by the Members of Women Agricultural Cooperative in the South Eastern Zone of Nigeria.

Table 4.3: Facilitation Extension Service received by Women Members of Agricultural Cooperative

S/No	Variable	Mean	Std. Dev.	Decision
	Facilitation Services			
1	We define our problem	4.18	0.96	Agreed
2	We develop solution through group meeting	4.28	0.85	Agreed
3	Understanding issues by all	3.85	1.04	Agreed
4	We draw ideas	4.06	0.91	Agreed
5	We discourage individual dominance	4.03	1.11	Agreed

6	Group objectives are clearly stated	4.24	0.94	Agreed
7	Desired outputs are stipulated	3.72	1.18	Agreed
8	Even outputs are captured and presented in an easily understandable form	3.64	1.30	Agreed
9	We develop ground rules for behaviours	4.04	1.18	Agreed
10	We develop discussion questions to help meet objectives.	4.19	0.88	Agreed
11	We produce the type of output desired	3.80	1.02	Agreed
12	We distinguish essential and non-essential contributions	3.86	0.92	Agreed
13	We use meeting objectives to keep people focused	4.17	1.00	Agreed
14	We use interactive skills	3.97	1.20	Agreed
15	We use collective information	3.84	1.06	Agreed
16	We assess the group understanding throughout the meeting	3.92	1.27	Agreed
17	We use group output to support points	3.63	1.31	Agreed
18	We capture major output and action plan	3.53	1.17	Agreed
	Grand Decision	**3.94**	**0.80**	**Agreed**

Source: Computed from Field Survey Data, December 2024.

The mean threshold of the facilitation extension services rendered to the women members of an agricultural cooperative in South Eastern Nigeria were obtained with the aid of the 5 – point Likert scale, the mean thresholds were later interpreted as greater than or equal to 3.0 as Agreed and less than 3.0 as Disagree. Based on the eighteen (18) items of table 4.4 that identified facilitation extension services received by women members of the agricultural cooperatives, 18 of them had a mean threshold of 3.0 and above. Thus; the women agreed to have received the following facilitation extension services in the study area; we define our problem, we develop solution through group meeting, Group objectives are clearly stated, we develop ground rules for behaviours, we develop discussion questions to help meet objectives, and we use meeting objectives to keep people focused, among others as listed in table 4.4 above. The grand mean threshold was found to be **3.94** and a standard deviation of **0.80**. This means that the farmers strongly agreed to the use of the facilitation services rendered by the extension agents in the south eastern state.

4.4 Determination of the Effect of Agricultural Extension Services on performance (Output indices) of Women Agricultural Cooperative Members in the South Eastern Zone of Nigeria.

Table 4.4: Effect of Agricultural Extension Services on Women Output indices

Serial Indices	Variables	Mea n	Standar d Dev.	Decisio n	Output
1	Vegetable storage has increased all year round availability of the produce		4.03	1.15	Agreed
2	Dry season vegetable gardening has equally increased output	3.97	1.11	Agreed	
3	Cassava/maize/vegetable intercropping has increased yield	4.25	0.82	Agreed	
4	New technique on crop multiplication production has increased output		4.07	0.94	Agreed
5	New technique on production increased the hectare of land cultivated		3.93	1.10	Agreed
6	Seed treatment using dressing chemicals and insecticides has reduced waste and increased output		4.08	1.04	Agreed
7	Use of improved seeds and fertilizer application increased yield		4.25	0.88	Agreed
8	High opportunity for processing increased market output	3.99	0.89	Agreed	
9	Knowledge transfer and facilitation enable stronger farm risk management and increased yield	4.03	0.92	Agreed	
	Grand Decision		**4.07**	**0.71**	**Agreed**

Source: Computed from Field Survey Data, December 2024.

The mean threshold of the output indices of women members of an agricultural cooperative in South Eastern Nigeria was obtained with the aid of the 5 – point Likert scale, the mean thresholds were later interpreted as greater than or equal to 3.0 as Agreed and less than 3.0 as Disagree. Based on the nine (9) items of table 4.5 that identified the effect of agricultural extension services on the output of women farmers, 9 of them had a mean threshold of 3.0 and above. Thus; the women agreed that agricultural extension services received by the women had the following effect on their output indices; Vegetable storage has increased all year round availability of the produce, Cassava/maize/vegetable intercropping has increased yield, Seed treatment using dressing

chemicals and insecticides has reduced waste and increased output, and Use of improved seeds and fertilizer application increased yield, among others as listed in table 4.5 above. The grand mean threshold was found to be **4.07** and a standard deviation of **0.71**. This means that the farmers strongly agreed that extension services had an effect on their output indices in southeastern state. This improved output performance among women revealed a mismatch with Odebode (2008), who argued that there was a drop in productivity among women in his study on gender issues in agricultural extension and rural development in Nigeria.

4.5 Examination of the Challenges Women Agricultural Cooperative Society members faces in the use of Agricultural Extension Services in South East Nigeria.

Table 4.5: Challenges of Women Agricultural Cooperative Society Members face in the use of Agricultural Extension Services in the study area.

Serial No	Variables	Mean	Standard Dev.	Decision
1	Land ownership pattern due to land fragmentation	4.38	0.72	Agreed
2	Lack of access to credit	3.99	1.02	Agreed
3	Lack or low level of education	3.84	0.95	Agreed
4	Challenges in accessing support services	3.98	0.90	Agreed
5	Insufficient fund	4.30	0.91	Agreed
6	Poor infrastructure for attracting business	4.21	0.77	Agreed
7	Limited involvement of women farmers in extension process	3.52	0.93	Agreed
8	Lack of appropriate strategies for effective research and extension methods	4.07	0.78	Agreed adequate
9	Limited coverage of extension services across rural region	4.08	0.85	Agreed
10	Challenges in adapting technology packages to community specific contexts	3.80	1.00	Agreed
11	Corruption amongst extension workers	4.43	0.88	Agreed
12	Farmers unwillingness to pay for the services	3.23	1.27	Agreed

13	Institution framework	3.25	1.21	Agreed
14	Lack of professionalism and competence of the extension system	3.23	1.26	Agreed
15	Environmental imperatives	3.61	1.03	Agreed
16	Lack of local women organization	3.58	1.22	Agreed
17	Violence against women	3.42	1.31	Agreed
18	Less control over resources	3.67	1.15	Agreed
19	Social structure	3.59	1.10	Agreed
20	Limited access to market information	3.91	0.72	Agreed
21	Mobility and lack of self confidence	3.68	1.11	Agreed
	Grand Decision	**3.80**	**0.93**	**Agreed**

Source: Computed from Field Survey Data, December 2024.

The mean threshold of the challenges of agricultural extension services in the study area among the women members of agricultural cooperative society in South Eastern Nigeria were obtained with the aid of the 5 – point Likert scale, the mean thresholds were later interpreted as greater than or equal to 3.0 as Agreed and less than 3.0 as Disagree. Based on the twenty-one (21) items of table 4.7 that identified the challenges of agricultural extension services among women in the area, all the 21 of them had a mean threshold of 3.0 and above. Thus; the women agreed that agricultural extension services are facing the following challenges; Land ownership pattern, Insufficient fund, Poor infrastructure for attracting business, Limited involvement of women farmers in extension process, Lack of appropriate strategies for effective research and adequate extension methods, Limited coverage of extension services across rural region, Corruption, among others as listed in the table 4.7 above. The grand mean threshold was found to be **3.80** and a standard deviation of **0.93**. This means that the farmers strongly admitted that extension services are facing serious challenges in the study area. This grey area should probably call for policy issues in the zone. These were in agreement with Ogundiran (2013), on the study to determine agricultural extension services among rural women using Odeda local government area of Ogun State.

1, Hypothesis One (Ho_1): the level of use of Agricultural Extension Service (Technology, Advisory, and Facilitation) by Members of the Women Agricultural Cooperatives is not significant.

Table 4.6: Test of Ho_1: Level of use of Agricultural Extension Service (Technology, Advisory, and Facilitation) by Members of the Women Agricultural Cooperatives not significant. One Sample t-test, test value = 0

Variable	t-ratio	Degree of freedom	Sig (2 tailed)	Mean difference
Extension service	148.602**	376	0.000	3.67910
Std. Deviation	0.48199			
N	379			

Source: Computed from Field Survey Data, December 2024.

The one sample t-test result of table 4.6 had at-ratio value of 148.602**, this was highly significant at a probability level of 0.000 value. Thus, the null hypothesis two (Ho_2) was rejected and the alternative hypothesis (Ha_2) was accepted. This implies that the level of use of the extension services by women cooperative members in the study area was significan

2. Hypothesis Two (Ho_2): the level of use of Agricultural Extension Service (Technology, Advisory, and Facilitation) does not have a significant effect on the output performance indices of Members of the Women Agricultural Cooperatives in the study area.

Table 4.7: Test of Ho_2: the level of use of Agricultural Extension Service (Technology, Advisory, and Facilitation) does not have a significant effect on the women's ouput performance in the study area. ANOVA on Income and Extension use.

Number of Observation	=	379	**R-squared**	=	0.3658
Root MSE	=	0.551876	**Adj R-squared**	=	0.3608

Source	Partial SS	DF	MS	F	Prob>F
Model	65.883568	3	21.961189	72.11	0.000
Extension use	65.883568	3	21.961189	72.11	0.000
Residual	114.21287	375	0.30456766		
Total	**180.09644**	**378**	**0.47644561**		

Source: Computed from Field Survey Data, December 2024.

The one-way Analysis of variance (ANOVA) was carried out to ascertain the significant effect of the use of the 3 agricultural (Technology, Advisory, and Facilitation) extension services on the output performance indices by women members of cooperative society in South Eastern Nigeria. The researcher made use of the mean threshold of the output performance indices as a dependent variable, while the mean threshold of the 3 (Technology, Advisory ,and Facilitation) extension services were summed and categorized into; to very greatly utilized = 5, greatly utilized = 4, somewhat utilized = 3, seldomly utilized = 2, and not at all = 1. The analysis used equal sample size (379) of both dependent and independent variables. The result produced by Stata 14.0 software includes; F – statistics value of 72.11** and r^2 (Coefficient of multiple determinant)0.3658. This signifies that 36.58% variation in the output performance indices was explained by the action of the agricultural extension use by women members of a cooperative in the study area, while the remaining 63.42% was as a result of the error beyond the control of the farmers. The F-stat. was significant at probability level of 0.000 which means the study on significant effect of extension use on output performance indices is normally distributed and the **null hypothesis rejected**.

5. CONCLUSION

Agricultural Extension Services (Technology, Advisory, and Facilitation) and influence on crop production of rural women cooperatives farmers in South East, Nigeria cannot be overemphasized as the results are evident to draw conclusion from despite posing grey areas from the challenges the women face in the use of those technological, advisory and facilitation services, these grey

areas, therefore, will call for policy concern. The use of agricultural extension service significantly influences improvement in the output indices of the women. It is recommended that agricultural extension should be tailored to be community –specific in addressing adoption challenges.Women need training that can exploit all available sources of credit, they should granted more access to credit in the society as records have shown that they have more repayment history. Government and other implementing agencies should ensure that professionalism and competence are displayed by her extension agents in delivering packages to the women, this boost the confidence of the women in adopting the practice

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