

Influence of International Fund for Agricultural Development (IFAD) on Value Chain Activities of Members of Cooperative Societies in Awka North Local Government Area of Anambra State, Nigeria

Okafor, Ogochukwu Esther^{1*}, Michael Maureen Chinenye², Dr. Okafo Okoreaffia³,

⁴Nwafor Obiageli Grace

^{1 & 4} Department of Cooperative Economics & Management, Nnamdi Azikiwe University, Awka, Nigeria

^{2&3} Department of Cooperative Economics & Management Federal Polytechnic Nekede Owerri, Imo State, Nigeria

*Corresponding Author

DOI: <https://dx.doi.org/10.47772/IJRISS.2023.70807>

Received: 11 June 2023; Revised: 08 July 2023; Accepted: 13 July 2023; Published: 14 August 2023

ABSTRACT

This study investigated the influence of international fund for agricultural development (IFAD) on value chain of farmer's cooperative members in Awka North Local Government Area, Anambra State. The researcher set to determine the influence of IFAD on the production patterns of farm crops, on the processing techniques for farm crops and on the marketing systems for farm crops in the study area. To guide this study, three research questions and three research hypotheses were formulated in line with the objectives of the study. The study was anchored on Porter's Value Chain (1985). The study employed a descriptive survey design, the instrument for data collection was questionnaire constructed for the study and calibrated with the 5-point Likert ordinal measurement and rating scale. The population of the study was 268 selected multipurpose cooperatives members in Awka NORTH local Government Area of Anambra State. The sample size used was 160 cooperative members using Taro Yamane formula. Adopting a judgmental sampling technique, 160 questionnaires was distributed and 132 copies of questionnaire were completed and returned and used for this study which represent 82.5% response rate. Research hypotheses were tested using Z-Test. The finding revealed that there is a significant influence of IFAD on production pattern in the study area with a p-value 0.0177 ($p < 0.05$). With a p-value 0.0142 ($p < 0.05$) indicating a significant influence of IFAD on processing techniques in the study area and with a p-value 0.0162 ($p < 0.05$) indicating that there is a significant influence of IFAD on marketing systems in the study area. The study recommends that the IFAD should do more in giving financial assistance the women network to have more financial backing which will enable them produce more food and, to organize more workshops, lectures, seminars, conferences among others for farmers. Majority of the farmers are illiterate, adult education programmes should be mounted for them in their various communities and prize awarded for good work. These will help them to understand how to use new agricultural techniques and understand instruction on agricultural handouts and Aspects of agricultural production that are largely the responsibility of farmers must be given adequate attention. Such areas include, for example, food crop production, livestock production, processing, storage and marketing of agricultural produce, pest and disease control

Keywords: Value chain, Agricultural Cooperatives, IFAD, Cooperatives and Awka North

BACKGROUND OF THE STUDY

Despite the importance of the agricultural industry, due to its low productivity, it has performed quite poorly over the past few decades. But if the nation is to feed its people, end extreme poverty, and achieve a suitable rate of sustained economic growth, the agriculture sector's dismal performance must be rectified. In Nigeria, agriculture continues to be the mainstay of the rural economy since it employs 70% of the labor force. However, due to the fact that small-holder farmers frequently grow the majority of the land using subpar production practices, fewer than 50% of the nation's arable land is under cultivation. (Awotideet al., 2015). Because of this, there has been a sharp rise in life insecurity in Nigeria, which is partly attributable to the declining performance of the agricultural sector, which employs the vast majority of the poor. Additionally, poverty in Nigeria has expanded to include a larger range of issues, such as home, income, and food insecurity, as well as inadequate access to public services and infrastructure, an unhygienic environment, illiteracy and ignorance, a lack of protection for one's life and possessions, and bad governance. In light of this context, the purpose of this article is to examine how the performance of the agricultural sector is impacted by food export and import.

Over the years, a number of agricultural programs have been implemented to lessen the extreme poverty experienced by rural residents, mostly farmers, in sub-Saharan Africa (SSA). A few of these initiatives are the National Economic Empowerment and Development (NEED), Agricultural Development Programs (ADP), Food and Agricultural Organization (FAO), International Fund for Agricultural Development (IFAD), National Orientation Agency (NOA), National Accelerated Food Production Program (NAFPP), Green Revolution (GR), and Operation Feed the Nation.etc. (IFAD, 2010; Hashmi and Sial 2017). But according to the literature (Afolayan, 2017), it appears that these initiatives had little to no effect on the rural population. As a result, the percentage of people living in poverty in rural regions is rising (Diamond, 2009; Handley et al., 2009; Gate 2014). This study, however, restricts its focus to Agricultural Development Programmes (ADP), which aims to raise the income level of small-scale farmers and increase the value chain of economic welfare of rural cooperative farmers by making provisions for improved seeds, fertilizer, pesticides, credit facilities, and infrastructure facilities. (Akpobo, 2007; Ajayi and Ajala, 2017).

The term "value chain" describes the flow of actors and value-added stages from the point of production to the point at which a product is delivered to the market (Abah, 2019). Agriculture is the main source of income in rural areas. As a result, raising the productivity and efficiency of agricultural value chains can promote the expansion of rural economies as well as an increase in the incomes of rural residents. As a result, the value chain method is being used in development interventions in the agricultural sector (Laven et al., 2012). However, where manufacturing scale economies are crucial or there are stringent requirements for products and procedures, value chain participation can also pose a danger to smallholders and small companies. (Abah, 2019).

According to Tardi (2022), a value chain is a sequence of related actions that lead to the development of a finished good, from its conception through its delivery to a client. The supply chain outlines every stage of production, including the sourcing, manufacturing, and marketing phases, where value is added. Additionally, in order to maintain their competitive edge, businesses must constantly assess the value they generate in order to compete for unmatched pricing, excellent goods, and client loyalty. A value chain may assist a firm in identifying inefficient aspects of its operations and in implementing methods to streamline those operations for optimal effectiveness and profitability.

Value chain analysis (VCA) examines how resources are used effectively to build competitive advantage, reduced costs, and higher profit margins. The efficiency, price, and returns received by each participant at each level of the value chain are determined by the quantity and behavior of the participants (Global Value Chain Initiative (GVCI), 2007). Terdi (2022) said that value-chain analysis is carried out by assessing the specific steps involved in each stage of its operation. A value-chain analysis' goal is to boost production efficiency so that a business can provide the most value for the least amount of money.

According to the value chain model, private and public organizations (including development organizations) can identify points of intervention to boost efficiency and total value added, thereby enhancing the skills of the intended actors and their share of the total revenue generated. As a result, institutional changes are required to increase producers' responsiveness to end-user needs and their emphasis on milling, cleaning, sorting, and grading. (Roduner, 2007).

• Statement of the Problem

According to estimates from FAO and the International Fund for Agricultural Development (IFAD) published in 2013, Nigeria's average daily protein consumption is 64 grams per person and its daily calorie intake is 1730 kcal, both of which are well below the minimum 2500 – 3400 kcal recommended daily intake. This demonstrates that Nigeria's imbalanced diet, which causes a variety of deficiency symptoms, is a problem. Additionally, Metu, Okeyika, and Maduka (2016) stated that Nigeria ranks 91st out of 109 nations in the Global Food Security Index (GFSI) (2015) based on criteria of cost, availability, quality, and safety with a score of 37.1.

Furthermore, Metu, Okeyika, and Maduka (2016) noted that one of Nigeria's agricultural development policies aims is to guarantee that there is adequate food stockpile at the household, state, and federal government levels to fend off any danger to the level of food security. In order to feed her thronging population, the government had to spend money on imports because domestic agricultural output was unable to keep up with the rising demand for food. For instance, whereas food export accounts for just 5.3% of all goods exported, food imports surged from 19.9% in 2000 to 30.6% and 22.7% in 2011 and 2012, respectively (Metu, Okeyika & Maduka, 2016). Ojeka et al. (2016) noted that the issue on academics' minds is why agricultural productivity is so low despite the significant spending made possible by the many programs put into place in Nigeria. Additionally, poverty in Nigeria has expanded to encompass a larger range of issues, such as household, income, and food insecurity, as well as inadequate access to public services and infrastructure, an unhygienic environment, illiteracy and ignorance, a lack of protection for one's life and possessions, and bad governance. Given this context, the purpose of this article is to offer practical advice on how to use cooperatives to create an effective value chain that will benefit rural farmers economically.

Therefore, in the light of the various issues faced by the agricultural sector, this study seeks to examine the influence of International Fund Agricultural Development Programme (IFAD) on value chain on farmer's cooperative members has actually stepped in to mediate these issues in Awka North LGA, Anambra State.

• Objectives of the Study

The broad objective of this study is to assess the influence of International Fund Agricultural Development (IFAD) on value chain of farmer's cooperative members in Awka North LGA, Anambra State. The specific objectives of this study are;

1. Examine the influence of IFAD on the production patterns of farm crops in the study areas.
 2. Assess the influence of IFAD on the processing techniques for farm crops in the study areas.
- Examine the influence of IFAD on the marketing systems for farm crops in the study areas.

Research questions

- What is the influence of IFAD on the production patterns of crops in area?
- What is the influence of IFAD on the processing techniques for crops in area?
- What is the influence of IFAD on the marketing systems for crops in Awka area?

Research Hypothesis

Research Hypothesis

H₀₁: There is no significant influence of IFAD on production pattern.

H₁₁ : There is a significant influence of IFAD on production pattern.

H₀₂: There is no significant influence of IFAD on processing techniques.

H₁₂: There is a significant influence of IFAD on processing techniques.

H₀₃: There is no significant influence of IFAD on marketing systems.

H₁₃: There is a significant influence of IFAD on marketing systems

• **International Fund for Agricultural Development (IFAD)**

An international financial organization and specialized UN agency, the International Fund for Agricultural Development works to end hunger and poverty in rural areas of emerging nations. As one of the main consequences of the 1974 World Food Conference, it was formed as an international financial organization in 1977 by United Nations General Assembly Resolution 32/107 (15 December 1977). It is a part of the UN Development Group and has its headquarters in Rome, Italy. (European Commission, 2023).

In order to end poverty and hunger in developing nations, the United Nations has created the International Fund for Agricultural Development (IFAD). It works in isolated rural parts of the world to assist nations in achieving the Millennium Development Goals. IFAD creates and funds initiatives that enable rural poor people to end their own poverty through low-interest loans and grants. IFAD fights poverty not just as a lender but also as an advocate for the small farmers, herders, fishermen, landless labourers, craftsmen, and indigenous peoples that reside in rural regions and make up 75% of the world's 1.2 billion extremely poor people. To address the root causes of rural poverty, IFAD collaborates with many different partners, including governments, funders, non-governmental organizations, local communities, and many more. It serves as a catalyst, bringing together partners, resources, expertise, and policies that foster the development of rural poor people's capacity to boost agricultural output and look for alternative forms of income. Access to financial services, markets, technology, land, and other natural resources is improved for rural poor people through IFAD-supported programs and initiatives. (FIDAction, 2005).

The International Fund for Agricultural Development (IFAD) is a global organization whose mission is to enhance the lives and agricultural development of underdeveloped nations. The least developed nations and tiny island developing states are only two of the places where its initiatives and programs are implemented. By providing, among other things, access to weather information, disaster preparedness, social learning, and technology transfer that enables farmers to feed growing populations and increase the climate resilience of rural farming systems, the IFAD helps vulnerable groups, including smallholder farmers, pastoralists, foresters, fishers, and small-scale entrepreneurs in rural areas. (Green Climate Fund (GCF, 2016).

IFAD in Nigeria

Nigeria, with 182 million people and a 3% annual growth rate, is the most populous nation in Africa. 105 million Nigerians, or 59% of the population, are under the age of 35. Nigeria, which has 92.4 million hectares of land and has the largest economy in Africa, with 53% of its population living in rural regions. Nigeria's GDP increased by 3.8% annually on average from 2009 to 2014 as it moved into the medium income category. Growth then abruptly stalled due to dropping oil prices, security threats, and ambiguous

policies. The government now seeks to diversify growth and lessen reliance on oil. At 44.9%, poverty is particularly acute in rural regions. Young people don't have access to jobs, and intermittent civil instability makes poverty and hunger worse. Agriculture is a source of livelihood for poor rural women and men: 90% of Nigeria's food is grown on unirrigated plots across the country, by subsistence smallholder farmers who make up 70% of the rural population. Even though it contributed 21% of the GDP in 2015, agriculture is still undeveloped due to several barriers. Only 46% of land that is arable is under cultivation. 95% of agricultural land is untitled, making it difficult for farmers to get financing or make improvements. Poor rural roads make it more difficult to reach markets, inputs, equipment, and new technologies, which reduces farm profitability. The availability of potable water, healthcare, and schools in rural areas is poor.

Overcultivation, overgrazing, and deforestation are all contributing to increased erosion and land degradation, and in the north, droughts are now frequent (IFAD, 2023).

• Concept of Value Chain

According to Wiesner (2020) increase in initiatives aimed at implementing value chain methods has been seen over the past several decades. These strategies are able to combat poverty, boost incomes and productivity, ensure food security, engage marginalized groups, and have a smaller negative impact on the environment. The value chain method was first developed as a tool for businesses to produce more effective and competitive results along the enterprise influence, but non-governmental organizations and international development agencies have instrumentalized this technique to achieve development goals. Additionally, a value chain, according to Wisner (2020), "represents the full range of activities and services required to bring a product or service through the different phases of production and delivery, to the final consumer." By combining knowledge and resources, the phrase "value chain" also refers to the significance of adding value to products from one link to the next in the chain. The formal and informal structures that provide coordination and cooperation linkages between players and at various stages along the chain can be examined as a value chain from an organizational and institutional point of view.

The value chain interventions often also include an inclusive or pro-poor strategy because of its capacity to "link farms and businesses in remote regions to growing and emerging market opportunities." According to this strategy, "market liberalization and economic development represent necessary but insufficient conditions for poverty reduction and that poor people need support so that they can participate in this value chain and derive a benefit in a way that creates growing prosperity in their (poor) communities and promotes equitable economic growth."

Chai (n.d) noted that value chain is a notion that describes the whole chain of a business's operations in the development of a good or service, from receipt of first supplies to its delivery to market, and everything in between. Inbound operations, outbound logistics, marketing and sales, service, and operations make up the value chain framework's five core activities. The other four subsidiary activities are procurement and buying, human resource management, technology development, and firm infrastructure. Two fundamental ideas are involved in the study of value chains: value and chain. According to Hawkes and Ruel (2011), the term "value" is equivalent to "value added" in the Value Chain Analysis (VCA) since it describes the additional value of a product that is created after it has been processed. The differentiation of a product based on food safety and food functioning may also result in value addition for agricultural goods. The cost of the final product demonstrates the added value. Value addition at the level of agricultural produce production refers to improvements or additions to a product that increase the profits for the commodities seller, who is frequently the farmer. For instance, technical advances, labor-saving techniques, or any other innovation that enables the producer to supply more of a commodity are examples of "input value-added" advancements that lower production costs and so give farmers more money. The production of specialty crops, strategic commodity marketing, or premium product sales, on the other hand, are examples of "output

value-added” improvements made by the farmer. When you hear the word “chain,” you probably think of a supply chain, which describes the steps and participants in a product’s life cycle (from idea to disposal). (Hawkes & Ruel, 2011).

Agricultural Development Programs (ADPs) and Value Chain in Nigeria

A value chain strategy will be encouraged by ADP in its future initiatives, according to IFAD (2023). In order to affect and enhance the present policy and legal framework, this will need interacting with the government. ADP will also look at partnering with the GEMS 3 project, which is supported by the European Union and aims to improve the skills of public servants handling land transactions. The government plans to establish a unit with assistance from ADP to oversee the activities of the various development partners in Nigeria. Additionally, co-financing by the government and other partners will guarantee the models’ longevity even when ADP funding ends. Additionally, private sector organizations with CSR windows, such international oil corporations operating in the Niger Delta, might be a source of money to scale up accomplishments. Public-private partnerships are also being formed as part of the new value chain initiative backed by ADP, which might be helpful in scaling up businesses in Nigeria. In 2011, the administration adopted a multisectoral transformation plan in response to the issue of young unemployment.

The Federal Ministry of Agriculture’s Agricultural Transformation Agenda (ATA), a component of the National Transformation Agenda, aims to promote agriculture as a business and works along value chains to expand opportunities by increasing agricultural productivity, value addition, processing, and commercialization – thus creating jobs and wealth and guaranteeing food security, especially for youth and women. Similarly, ADP’s assistance to the Nigerian government’s initiative to reduce poverty in rural regions focuses primarily on people and targets a significant number of smallholder farmers. Smallholder farmers are the main players in ADP-supported programs and initiatives that work with communities. The Fund also supports commodity-based interventions that offer financial and technical support along a number of value chains, including those for vegetables, agroforestry products, roots and tubers, and animal products (IFAD, 2023).

IFAD (2012) The Value Chain growth Programme (VCDP) is firmly rooted in the Government’s goal for agricultural growth through adoption of a commodities value chain approach, as defined in the Agricultural Transformation Agenda (ATA), and is closely aligned with ongoing Government strategy and policy. It also aligns with the National Agricultural Investment Plan’s policies and other important sectoral plans that support rural development and food security. The initiative will concentrate on resolving challenges along the cassava and rice value chains based on government goals as well as market analyses and opportunities. ADP will focus on helping the government and its development partners construct a solid foundation and create an atmosphere that will be conducive to a much longer-term value chain development plan. Additionally, the agricultural and rural sectors’ efforts are directed by a number of strategic goals; one of these goals is to emphasize the value chain by boosting production and promoting agro-processing.

Theoretical Framework

This article is anchored on the value chain theory and modernization theory by Michael Porter (1985) and Walt Whitman Rostow (1960) respectively. A value chain is a linear map of the way in which value is added by means of a process from raw materials to finished delivered product (including service after delivery). Porter (1985) further explains that the value chain describes the activities within and around an organization which together create a product or service. He argued that it is the cost of these value activities and the value that they deliver that determines whether or not best value products or services are developed. Corporate Performance is therefore dependent on the linkages of the value chain activities and striving to contain costs within the value chain system better than the competitor. The value-chain concept has been extended beyond individual organizations. It can apply to whole supply chains and distribution networks.

The delivery of a mix of products and services to the end customer will mobilize different economic factors, each managing its own value chain. The industry wide synchronized interactions of those local value chains create an extended value chain, sometimes global in extent. Porter terms this larger interconnected system of value chains the “value system.”

A value system includes the value chains of a firm’s suppliers (and their suppliers all the way back), the firm itself, the firm distribution channels, and the firm’s buyers (and presumably extended to the buyers of their products, and so on). Porter identified five primary and four secondary activities each of which will potentially contribute to competitive advantage. According to Porter (1985), the primary activities are directly concerned with the creation or delivery of a product or service. They include; Inbound Logistics, Operations, Outbound Logistics, Marketing and sales activities and Service activities. On the other hand, secondary activities help to improve the effectiveness or efficiency of primary activities to which they are actually linked to. The four secondary activities include Procurement, Technology Development, Human Resource Management and the firm’s Infrastructure.

The focus of this study shall be on cooperative farmers where there is an increasing pressure from the central government to collect more revenue to meet its national budget. Further, there is an increasing demand from the farmers for provision of efficient services by the various agricultural development project. The relevance therefore of the application of Porter’s Value chain model in analyzing the influence of various agricultural development programs (ADP) on improve value chain of farm crops among cooperative farmers in Awka North LGA.

Porters’ value chain model has made two valuable contributions to understanding the value chain. Firstly, it places a major emphasis on the materials management, value adding mechanism raising the subject to a strategic level and secondly, he places the customer in an important position in the supply chain.

Application of the Value Chain and Modernization Theory to the Study

The individuals, groups, or structures that form the society in this regard comprises of Agricultural cooperative members. It, therefore, logically follows that rural development impinges on the activities of a network of interdependent parts. Invariably, this societal arrangement is crucial for growth and development in the rural areas of the State and Nigeria at large. It is pertinent therefore to know or determine how the flow of inputs and outputs within the society is managed as obtained through “help”.

Value chains have been seen as a conductor enhancing information flows between various actors in the chain, which has resulted to quite a number of governance debates. These governance issues have everything to do with the complexities of power relations within the chain, which determine how financial, material and human resources are allocated and flow within the chain (Laven 2011). Therefore, Schmitz (2001) has outlined four key parameters that define the production process of a product. These are: What is produced, how it is produced, when it is produced and how much is to be produced.

EMPIRICAL REVIEW

Omonijo et al(2014) in their study on Impacts of Agricultural Development Programme (ADP) on Rural Dwellers in Nigeria investigated if the program had increased food production, farmer income levels, the quality of seeds, and the availability of pesticides and fertilizer for farmers. A survey study was used in the research technique, and a questionnaire was used as the research instrument. Using descriptive statistics that included percentage frequency distribution, visual representation, graphical illustrations, and regression technique, a total of 773 surveys were examined. The study hypotheses were tested using multiple linear regression analysis and the empirical result reveals that Agricultural Development Programmes have significantly increased food production in the locality through increased provision of pesticides and improved seeds to farmers, establishment of new infrastructure and provision of fertilizers.

The analysis of the evidence from the result however reveals that accessibility of credit by farmers has no significant effect on increased Agricultural productivity. The study therefore recommends that government should increase its effort in the area of Agricultural credit financing.

Hernandez et al (2017), in their study examined the Challenges and Solutions for Enhancing Agriculture Value Chain Decision-Making. A Short Review, identified that increasingly challenging global and environmental requirements have resulted in agricultural systems coming under increasing pressure to enhance their resilience capabilities. This in special to respond to the abrupt changes in resource quality, quantity and availability, especially during unexpected environmental circumstances, such as uncertain weather, pests and diseases, volatile market conditions and commodity prices. Therefore, integrated solutions are necessary to support the knowledge-management, collaborative ICT solution, risk management and regulation management across agriculture stakeholders. Therefore, and based on the on-going work under the H2020 RUC-APS project research network, this book chapter is oriented to contribute to agriculture value chain decision-making field to cover the current need on gathering a common understanding and appreciation of new trends in agriculture value chain, in special the multi-disciplinary challenges. For this, a short a literature review is conducted to summarise the main findings on real application and current research trends. This within the objective to propose an integrated framework based on better use of communication ways, standardised structures, development of training and awareness, regulation-based initiatives and vertical Integration.

• Gap in the literature

The review concludes that the existing knowledge on the influence of IFAD on value chain are more of detailed information when referring to regions like the core North, North-central etc. On the other hand, activities of IFAD in the study areas does not offer detailed information to the grassroots level at which greater understanding is required to help increase the proficiency of International Fund for Agricultural Development Programme when referring to value chain of farmer's cooperative members. This gap needs to be filled to make progress in enhancing activities of IFAD and their influence to the grassroots level.

There is dire need to understand and appreciate influence of and their contribution to the various aspect of the economy and its appropriate integration in all the facets of the Cooperative society in Nigeria.

However, there are limited studies to the best of the researchers' knowledge on influence of International Fund for Agricultural Development value chain programme on farmer's cooperative members especially in the south-east region of Nigeria (Anambra Inclusive) as an independent region and Awka North LGA in particular. As such, this creates a vacuum that needs to be filled, hence this careful study and research in Awka North LGA and Anambra state. Emphatically, the result of this study will be able to fill the vacuum hence, making this a more appreciated field and a worthy venture for both rural and urban dwellers.

METHODOLOGY

The descriptive survey design was adopted for the study.

For this study, the primary source of data was employed through the use of questionnaire.

Area of the study is Awka North local Government Area of Anambra State. Awka North is one the twenty-one (21) local government area in the State. It is known as the food basket of Anambra State. The headquarter of Awka North is Achalla. It is situated few kilometers from the State capital Awka.

Purposive sampling technique was used to select the societies from which the samples were drawn. Therefore, six (6) active cooperative societies with total membership size of 268, were selected due to, the selected societies are operational and economically viable

To determine the sampling size for the purpose of questionnaire distribution the Taro Yamane formula was used. The formula stated thus;

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

Where,

n = sample size

N = population

e = margin of error (0.05)

1 = constant

Substituting in the formula above

$$= \frac{268}{1 + 268(0.05)^2}$$

$$= \frac{268}{1 + 268(0.0025)}$$

$$= \frac{268}{1 + 0.67}$$

$$= \frac{268}{1.67}$$

$$= 160.4$$

Therefore, the sample size is n=160.

Source of Data

The researcher explored two sources of data which are primary and secondary sources

Method of Data Analysis

Data were analysed using descriptive statistics tools, frequency distribution tables, percentages and mean scores to measure the socio-economic characteristics of the respondents. While the specific objectives analysed with the responses from Likert scale rating. The categories of the Likert scale were;

Strongly Agree (SA) =5, Agree (A) =4, Undecided (U) =3, Disagree (D) =2, Strongly Disagree (SD) =1

Mean for decision of acceptance

$$\frac{5 + 4 + 3 + 2 + 1}{5} = \frac{15}{5} = 3$$

Point between 3.0 and above is considered accepted while point below 3.0 is rejected. The Z-test statistics will be used in testing the hypothesis already formulated, to enable us know how open grazing have affected food production in the study area. This is because the Z-test evaluates whether a finding or association is statistically significant or not by testing the difference of different responses.

$$Z = \frac{pq}{\sqrt{Npq}}$$

Where: P =Proportion of positive responses (Strongly Agree and Agree)

Q = Proportion of negative responses (Undecided, Disagree and Strongly Disagree)

n = Sample size

A total of 160 copies of questionnaire were distributed to the members of the societies and 132 copies were returned showing a return rate of 91.67%. Thus, the returned copies of questionnaire were used for the analysis.

$$\frac{132}{160} \times 100 = 82.5\%$$

• **Analysis on Socio-Economic Characteristics of Members**

This analyses the cooperative society member’s personal information with regards to the gender, marital status, age, occupation, highest educational qualifications and years of cooperative experience in the cooperatives.

Table 3: Socio Economic Characteristics of Respondents

s/n	Socioeconomic Factors	Frequency n=132	Percentage (%)	Min.	Max.	Mean (x)
1.	Gender:					
	Male	79	59.85	–	–	–
	Female	53	40.15	–	–	–
2.	Marital Status:					
	Single	27	20.45	–	–	–
	Married	62	46.97	–	–	–
	Divorced	4	3.03	–	–	–
	Widow	27	20.45			
	Widower	12	9.09			
3.	Age (Years)	–	–	18-30	41-50	42.69
4.	Educational Qualification:					
	FSLC	12	9.09	–	–	–
	WAEC	42	31.82	–	–	–
	OND/NCE	39	29.55	–	–	–
	HND/B.Sc	25	18.94	–	–	–
	MBA/M.Sc and others	14	10.61	–	–	–
5.	Household Size (Children)					
	1 – 5	67	50.76			
	6 – 10	34	25.76			
	11 – 15	11	8.33			
	Above 15	20	15.15			

6.	Type of Food Production					
	Yam	16	12.12			
	Cassava	30	22.73			
	Maize	16	12.12			
	Cocoyam	20	15.15			
	Vegetables	15	11.36			
	Rice	35	26.52			
7.	Farm Size (Hectares)					
	0.1 – 1	20	15.15			
	1.1 – 2	56	42.42			
	2.1 – 3	42	31.82			
	Above 3	14	10.61			
8.	Farm Income Per Annum (N)					
	Less than 20,000	25	18.94			
	21,000 – 40,000	30	22.73			
	41,000 – 60,000	41	31.06			
	61,000 – 80,000	24	18.18			
	Above 80,000	12	9.09			
9.	6 Farming Experience (Years)	–	–	1-5	11-15	11.94

Source: Field Survey, May (2023)

S/N 1 reveals that 79 respondents (59.85%) are male and 53 (40.15%) are female. This indicates that the male sex is properly represented in farmer’s cooperative in the sample of the study area.

S/N 2 shows that 27 respondents (20.45%) are single-not married, 62 respondents (46.97%) are married, 4(3.03%) respondents are divorced, the number of respondents who are widows are 27(20.45%) while 12(9.09%) respondents are widowers. This implies that there are more married members in the societies as at the time of the study.

S/N 3 finds that the minimum age bracket in the cooperatives studied is 18-30, while the maximum age bracket is 41-50. A mean age of 42.69, clearly indicates that majority of members are middle aged.

S/N 4 reveals 12(9.09%) respondents had a first school leaving certificate (FSLC), 42(31.82%) respondents had their West African Examination Council Certificate (WAEC), 39(29.55%) respondents had their OND/NCE, 25(18.94%) respondents completed their HND/B.Sc. and 14(10.61%) respondents completed their MBA/M.sc level. Implying that a higher number, ended education at West African Senior Secondary Certificate level.

S/N 5 indicates that 67(50.76%) respondents have a household size of 1-5 children, 34(25.76%) have a household size of 6 – 10 children, 11(8.33%) have a household size of 11 – 15 children while 20(15.15%) has above 15 children.

S/N 6 shows that 16(12.12%) respondents are into Yam farming, 30(22.73%) cultivate Cassava, 16(12.12%) are into maize farming, 20(15.15) engages in farming Cocoyam, 15(11.36%) farms Vegetables while majority of the respondent are into Rice farming with 35(26.52%).

S/N 7 shows that 20(15.15%) respondents have a farm size of 0.1 – 1 hectare, 56(42.42%) have a farm size of 1.1 – 2 hectares, 52(31.82%) occupies a farm size of 2.1 – 3 while 14(10.61%) have a farm size of above 3 hectare.

S/N 8 shows that 25(18.94%) respondents Less than 20,000 per annum, 30(22.73%) earns a farm income of 21,000 – 40,000 per annum, 41(31.06%) earns 41,000 – 60,000 per annum, farmers that earns between 61,000 – 80,000 per annum are 24(18.18%) while 12(9.09%) earns above 80,000 per annum.

S/N 9 highlights the number of years in farming that members have. A lower number had only 1-5 years of farming experience while a higher number had between 11-15 years of farming experience. With 11.94 as the mean number of farming years, it can be adjudged that members are not newbies in farming.

Influence of ADP on the Production Patterns of Farm Crops

Table 4: Distribution Based on the Influence of ADP on the Production Patterns of Farm Crops

No.	ITEMS	SA (5)	A (4)	UD (3)	D (2)	SD (1)	Mean	Decision
i.	ADP has brought about growth in agricultural production.	46 (230)	32 (128)	21 (63)	23 (46)	10 (10)	3.61	Accepted
ii.	ADP has introduced improved mechanization for agricultural produce.	59 (295)	47 (188)	13 (39)	12 (24)	1 (1)	4.14	Accepted
iii.	ADP has helped in sustaining domestic food supply.	64 (320)	52 (208)	11 (33)	5 (10)	0 (0)	4.33	Accepted
iv.	Under ADP farmers have been provided with inputs (e.g., agrochemicals, fertilizer etc.).	42 (210)	25 (100)	23 (69)	21 (42)	21 (21)	3.35	Accepted
v.	ADP has made available subsidy programmes for farmers on agricultural input.	51 (255)	48 (192)	16 (48)	14 (28)	3 (3)	3.98	Accepted
	Grand Mean						3.88	

Source: Field Survey, May (2023)

Table (4) reveals the assessment of the outcome of ADP on production pattern with the adoption of a five-point Likert Scale. the items above reveal that the influence of ADP on the production patterns of farm crops in the study area is significantly high. The items are regarded as accepted with a grand mean score of 3.88.

Influence of ADP on the Processing Techniques for Farm Crops

Table 5: Distribution Based on the Influence of ADP on the Processing Techniques for Farm Crops

No.	Items	SA (5)	A (4)	UD (3)	D (2)	SD (1)	Mean	Decision
i.	ADP has provided facilities to improve processing techniques.	55 (275)	57 (228)	11 (33)	6 (12)	3 (3)	4.17	Accepted
ii.	Through the ADP processing techniques, food has been conserved while contributing to the development and growth of agricultural activities.	62 (310)	46 (184)	13 (39)	9 (18)	2 (2)	4.19	Accepted
iii.	ADP has carried out training on modern processing techniques.	68 (340)	51 (204)	8 (24)	1 (2)	4 (4)	4.35	Accepted

iv.	ADP has provided mechanization to reduce the level of drudgery/stress especially in local processing factories.	57 (285)	63 (252)	10 (30)	2 (4)	0 (0)	4.33	Accepted
v.	Food wastage and spoilage has been reduced through the processing techniques of the ADP.	37 (185)	59 (236)	9 (27)	18 (36)	9 (9)	3.73	Accepted
Grand Mean							4.15	

Source: Field Survey, May (2023)

Table 5 reveals the influence of ADP on processing techniques with the adoption of a five-point Likert Scale. The items above reveal that ADP have a significant influence on processing techniques in the study area. The item is regarded as accepted with a mean score of 4.17, 4.19, 4.35, 4.33 and 3.73 respectively.

- **Influence of ADP on the Marketing Systems for Farm Crops**

Table 6: Distribution Based on the Influence of ADP on the Marketing Systems for Farm Crops

No.	ITEMS	SA (5)	A (4)	UD (3)	D (2)	SD (1)	Mean	Decision
i.	ADP has help farmers in grading and standardization of farm product.	62 (310)	57 (228)	6 (18)	4 (8)	3 (3)	4.30	Accepted
ii.	ADP has provided education on both marketing and sales strategies for farmers.	47 (235)	35 (140)	9 (27)	24 (48)	17 (17)	3.54	Accepted
iii.	ADP has helped in creating demand for farmers product	61 (305)	58 (232)	11 (33)	2 (4)	0 (0)	4.35	Accepted
iv.	ADP has provided services at lower marketing cost for farmers.	49 (245)	43 (172)	6 (18)	21 (42)	13 (13)	3.71	Accepted
v.	ADP has increased the bargaining power of farmers thereby eliminating the middlemen.	60 (300)	41 (164)	8 (24)	16 (32)	7 (7)	3.99	Accepted
Grand Mean							3.98	

Source: Field Survey, May (2023)

Table 6 reveals the assessment of the influence of ADP on the marketing systems for farm crops in the study area with the adoption of a five-point Likert Scale with threshold of 3.0. The item with the highest mean score of 4.35 shows that ADP in the study area, has helped create demand for the farmers product. A grand mean score of 3.98 implies that ADP has influenced marketing systems in the study area.

- **Test of Hypothesis**

In this section, the research hypothesis earlier formulated was tested using two tailed z-test.

• **Test of Hypothesis One**

Questions i-v of Table 4(distribution based on the influence of ADP on the production patterns of farm crops) was used to test the hypothesis.

$$Z = \frac{PQ}{\sqrt{nPQ}}$$

Where:c

P = Proportion of positive responses (strongly Agree and Agree)

Q = Proportion of negative responses (Undecided, Disagree, and strongly disagree)

n = Sample size collected

Decision rule: Reject the H₀ (null hypothesis)if computed value is within -1.96 to 1.96 of table value significance.

H₀₁:There is no significant influence of ADP on production pattern.

H₁₁ : There is a significant influence of ADP on production pattern.

Table 7: Information obtained from table 4 to Test the hypothesis

Option	No of Respondents	Percentage (%)
Strongly Agree	262	39.70
Agree	204	30.91
Undecided	84	12.73
Disagree	75	11.36
Strongly disagree	35	5.30
Total	660	100

Source: Field Survey, May (2023)

$$P = \frac{262 + 204}{660} \times 100$$

$$P = 70.61\%$$

$$Q = \frac{84 + 75 + 35}{660} \times 100$$

$$Q = 29.39\%$$

Therefore;

$$Z = \frac{0.7061 \times 0.2939}{\sqrt{660 \times 0.7061 \times 0.2939}}$$

$$Z = \frac{0.2075}{\sqrt{116.9650}}$$

$$Z = \frac{0.2075}{11.7032}$$

$$Z = 0.0177$$

Statistical Decision: The result from the statistical calculation shows a z-value of which falls within -1.96 to 1.96 of table value significance at 5%. Hence, we reject the null hypothesis and accept an alternate hypothesis which states that “There is a significant influence of ADP on production pattern in the study area”.

• **Test of Hypothesis Two**

Questions i-v of Table 5 (distribution based on the influence of ADP on the processing techniques for farm crops) was used to test the hypothesis.

$$Z = \frac{PQ}{\sqrt{nPQ}}$$

Where:

P = Proportion of positive responses (strongly Agree and Agree)

Q = Proportion of negative responses (Undecided, Disagree, and strongly disagree)

n = Sample size

Decision rule: Reject the H_0 (null hypothesis) if computed value is within -1.96 to 1.96 of table value significance.

H_{02} : There is no significant influence of ADP on processing techniques.

H_{12} : There is a significant influence of ADP on processing techniques.

Table 7: Information obtained from table 5 to Test the hypothesis

Option	No of Respondents	Percentage (%)
Strongly Agree	279	42.27
Agree	276	41.82
Undecided	51	7.73
Disagree	36	5.46
Strongly disagree	18	2.72
Total	792	100

Source: Field Survey, May (2023)

$$P = \frac{279 + 276}{660} \times 100$$

$$P = 84.09\%$$

$$Q = \frac{51 + 36 + 18}{660} \times 100$$

$$Q = 15.91\%$$

$$n = 660$$

Therefore;

$$Z = \frac{0.8409 \times 0.1591}{\sqrt{660 \times 0.8409 \times 0.1591}}$$

$$Z = \frac{0.1338}{\sqrt{88.2996}}$$

$$Z = \frac{0.1338}{9.3968}$$

$$Z = 0.0142$$

Statistical Decision: The result from the statistical calculation shows a z-value of which falls within -1.96 to 1.96 of table value significance at 5%. Hence, we reject the null hypothesis and accept an alternate hypothesis which states that “There is a significant influence of ADP on processing techniques in the study area”.

- **Test of Hypothesis Three**

Questions i-v of Table 6 (distribution based on the influence of ADP on the marketing systems for farm crops) was used to test the hypothesis.

$$Z = \frac{PQ}{\sqrt{nPQ}}$$

Where:

P = Proportion of positive responses (strongly Agree and Agree)

Q = Proportion of negative responses (Undecided, Disagree, and strongly disagree)

n = Sample size

Decision rule: Reject the H_0 (null hypothesis) if computed value is within -1.96 to 1.96 of table value significance.

H_{03} : There is no significant influence of ADP on marketing systems.

H_{13} : There is a significant influence of ADP on marketing systems.

Table 7: Information obtained from table 6 to Test the hypothesis

Option	No of Respondents	Percentage (%)
Strongly Agree	279	42.27
Agree	234	35.46
Undecided	40	6.06
Disagree	67	10.15
Strongly disagree	40	6.06
Total	660	100

Source: Field Survey, May (2023)

$$P = \frac{279 + 234}{660} \times 100$$

$$P = 77.73\%$$

$$Q = \frac{40 + 67 + 40}{660} \times 100$$

$$Q = 22.27\%$$

$$n = 660$$

Therefore;

$$Z = \frac{0.7773 \times 0.2227}{\sqrt{660 \times 0.7773 \times 0.2227}}$$

$$Z = \frac{0.1731}{\sqrt{114.2491}}$$

$$Z = \frac{0.1731}{10.6887}$$

$$Z = 0.0162$$

Statistical Decision: The result from the statistical calculation shows a z-value of which falls within -1.96 to 1.96 of table value significance at 5%. Hence, we reject the null hypothesis and accept an alternate hypothesis which states that “There is a significant influence of ADP on marketing systems in the study area”.

CONCLUSION

Agricultural production is not only fundamental to improving nutrition, but is also the main source of income for many. The ADP as an institution of change in agricultural sector has gone a long way to ensure that farmers are offered and are assisted with the best practices. In Awka South Local Government Area, Abia State however, based on evidence shown from the findings of the study ADP are functional in their efforts to influence adequate production pattern, through working effectively to improve processing systems and adequate marketing and sales techniques.

RECOMMENDATIONS

Having discussed the findings and drawn some conclusions therein, the following recommendations were made;

1. The study recommends that the IFAD should do more in giving financial assistance the women network to have more financial backing which will enable them produce more food and, to organize more workshops, lectures, seminars, conferences among others for farmers.
2. Majority of the farmers are illiterate, adult education programmes should be mounted for them in their various communities and prize awarded for good work. These will help them to understand how to use new agricultural techniques and understand instruction on agricultural handouts
3. Aspects of agricultural production that are largely the responsibility of farmers must be given adequate attention. Such areas include, for example, food crop production, livestock production, processing, storage and marketing of agricultural produce, pest and disease control

REFERENCES

10. Abah, D.A. (2019). Analysis of Ginger Value Chain in Kaduna State, Nigeria. *Nigerian Journal of Economic and Social Studies*, 61(3)
11. Afolayan, A. (2017). Impact of Are-Irrigation Project on Agricultural Production and Livelihoods of People in Rimi Local Government Area, Katsina State. Unpublished M.Sc. Thesis submitted to the Department of Agricultural Economics and Rural Sociology. Ahmadu Bello University, Zaria. Pp 95-98.
12. Ajayi J and Ajala, L (2017). Bridging the Communication Gap between scientists and farmers in Katsina State, Nigeria: A review of the Activities of the Information and Communication Support for Agricultural Growth in Nigeria. (ICS-Nigeria) Project in Katsina State. Printed by International Institute for Tropical Agriculture, Ibadan, Nigeria, pp. 5-14.
13. Akpobio, M. A. (2007). Adoption of Improved Maize Production Practices among Small Scale Farmers in the Agricultural Region Era: the case of Western Province of Kenya. *Journal of International Agricultural and Extension Education*. 17(1):21-30.
14. Awotide, B. A., Abdoulaye, T., Alene, A. and Manyong, V.M. (2015). Impact of Access to Credit on Agricultural Productivity: Evidence from Smallholder Cassava Farmers in Nigeria. A Contributed paper Prepared for Oral Presentation at the International Conference of Agricultural Economists (ICAE) Milan, Italy
15. Chai, W. (n.d.). Value Chain. Retrieved from: <https://www.techtarget.com/searchcio/definition/value-chain> (11th February, 2023)
16. Diamond, O (2009). Evaluation of United Nations Development Programs (UNDP) Micro Credit Schemes on Food Security Status of Farm Households in Kaduna State. Unpublished PhD thesis, Department of Agric Economics and Rural Sociology, Ahmadu Bello University, Zaria. Pp45
17. European Commission (13th February, 2023). IFAD – International Fund for Agricultural Development. Retrieved From: https://knowledge4policy.ec.europa.eu/organisation/ifad-international-fund-agricultural-development_en
18. Gate, G.B. (2014). Adoption and Diffusion of Innovations. In Adedoyi S.F. (ed), *Agricultural Extension in Nigeria*, Published by Agricultural and Rural Development Training Institute (ARMTI), Ilorin, Kwara State, Nigeria, pp. 29-37.
19. Global Value Chain Initiative (GVCI) (2007): Institute of Development Studies ids.ac.uk/globalvaluechains/index.html
20. Global Food Security Index, 2015. Retrieved from [foof security index.eiu.com](http://foofsecurityindex.eiu.com) Accessed 27/12/22]
21. Green Climate Fund (14th October, 2016). International Fund for Agricultural Development. Retrieved from: <https://www.greenclimate.fund/ae/ifad>
22. Handley J., Adebayo, M. and Okuneye, P.A. (2009). Economics of Agricultural Extension. In: Ed. Prof. S. Fola Adedoyin: *Agricultural Extension in Nigeria*. A Publication of Agricultural Extension Society of Nigeria (AESON), pp. 88.
23. Hashmi G and Sial K (2017); An Economic Survey of Kaduna State Agriculture. Report to the Ministry of Economic Development: pp. 348.
24. Hawkes, S. and Ruel, P. (2011). Review of Irrigation Planning and Implementation Process. Report to African Development Bank. International Management Institute, Pretoria, South Africa
25. Hernandez, J. E., Kacprzyk, J., Panetto, H., Fernandez, A., Liu, S., Angel Ortiz, A. and De-Angelis, M. (2017). Challenges and Solutions for Enhancing Agriculture Value Chain Decision-Making. A Short Review. International Federation for Information Processing (IFIP) Published by Springer International Publishing AG 2017. All Rights Reserved L.M. Camarinha-Matos et al. (Eds.): PRO-VE 2017, IFIP AICT 506, pp. 761–774, 2017. DOI: 10.1007/978-3-319-65151-4_68
26. International Fund For Agricultural Development (IFAD)action(2005). About IFAD. Retrieved From: <https://www.ifad.org/newsletter/pa/e/aboutifad.htm>
27. International Fund for Agricultural Development (IFAD, 2010). Federal Republic of Nigeria; Country Strategy Opportunity Programme, Report Review of Executive Board, Ninety-ninth Session, Rome, 21st-22nd, April, 2010. Pp. 1-75

28. International Fund for Agricultural Development (IFAD, 2012). President's report: Proposed loan and grant to the Federal Republic of Nigeria for the Value Chain Development Programme. Executive Board — 105th Session, Rome, 3-4 April 2012
29. International Fund for Agricultural Development (IFAD, 2023). Nigeria: The Context. Retrieved from: <https://www.ifad.org/en/web/operations/w/country/nigeria>
30. Laven, L., Pyburn, R., & Snelder, R. (2012). Introduction: In *Challenging Chains to Change: Gender Equity in Agricultural Value Chain Development*. Royal Tropical Institute, Amsterdam: KIT Publishers
31. Metu, A. G., Okeyika, K. O. and Maduka, O. D. (2016). Achieving Sustainable Food Security in Nigeria: Challenges and Way Forward. 3rd International Conference on African Development Issues (CU-ICADI 2016). pp 182 – 187, Copyright © 2016 by Covenant University Press
32. Ojeka, G.O., Effiong, C.E. and Eko, E.O. (2016). Constraint to Agricultural Development in Nigeria. *International Journal of Development and Economic Sustainability* 4(2), pp.1-15.
33. Omonijo, D. O., Toluwase, S. O. W., Oludayo, O. A. and Uche, O. O. C. (2014). Impacts of Agricultural Development Programme (ADP) on Rural Dwellers in Nigeria: A Study of Isan-Ekiti. *International Research Journal of Finance and Economics*, issue 128. 41 – 55.
34. Porter B.O. (1985). *Practical Agricultural Communication*, Ibadan, Daily Graphic Publications. Pp 104-106.
35. Roduner, D. (2007). Donor Interventions in Value Chain Development (working papers): Community of Practice on Value Chains in Rural Development Financed by SDC, Berne, July 2007. Swiss Agency for Development and Cooperation SDC
36. Rostow, W. W. (1960). *The Economics of Take-Off into Sustained Growth* International Economic Association
37. Schmitz G (2001). Rural Poverty Assessment and Control in Africa. An Invited Specialization course paper presented at the United Nations IDEP. Dakar, Senegal, 19th-22nd, June, 2001.
38. Tardi, C. (September 25, 2022). Value Chain: Definition, Model, Analysis, and Example. Investopedia. Retrieve from: <https://www.investopedia.com/terms/v/valuechain.asp> (20th December, 2022).
39. Wiesner, A. J. W. (2020). Agricultural value chains and its contribution to Sustainable Development Goals: The case of High Value Chains on Hills and Mountain Areas (HVAP) in Nepal. Master in Development Practice, IFAD Internship Program, South Asia –Nepal.