Analysis of Profitability in Maize Production in Obubra Local Government Area of Cross River State, Nigeria

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Abstract: **A Study on analysis of profitability in maize production in Obubra local Government Area of Cross River State, Nigeria, was carried out. Specifically, the study was set to achieve the following objectives; determine agricultural technologies used and the profitability of maize production in the area. Data required for the study were generated through the use of pre-tested structured questionnaires. The data were analyzed using descriptive statistics and net farm income model. Result indicated that the use of technology for maize production was poor and has significant influence on profit of maize production. For the profitability analysis, the total revenue realized from maize production per hectare was ₦192,800, with a total variable cost of # 61,500/ha and a total fixed cost of ₦29,000. The maize producers made a net income of ₦ 102,300/ha indicating that the farmers made profit from their investment. The return per naira of 2.13 indicated that every naira invested yielded ₦2.13 to the farmers. The gross ratio 0.47 indicated overall financial success of maize production in the area, as the ratio is less than one. The operating ratio was also found to be 0.32 which showed the solvency of the maize farm. Based on the findings of the study, the following recommendations were advanced: functional extension services is advocated to help teach maize farmers the use of production technologies and government and NGO's should provide incentives to these farmers to assist in large scale production that can afford reasonable profit.**

Keywords: **profitability, farmers, farm income, agricultural technology, maize.**

1.   INTRODUCTION

Mbanasor (2002) asserted that farmers in Nigeria are resource-constrained, a key question arises: are the resources and inputs used in production of maize returning the optimum levels of profit? Assessing the profitability of any enterprise is the appropriate way to identify if resources are being put to their best use (Aliou and Ben, 2012). Maize production is an enterprise which occupies a significant position in food security and poverty alleviation. In spite of laudable programmes by successive government in the past in the maize enterprise, significant volume of maize is still being imported annually and the crop productivity and profitability have continued to remain low (Ettah and Angba, 2016). This is in spite of the fact that Nigeria no doubt, has a landmass of 924,768 square kilometres and about 98 million hectares of land, with 74 million hectares of arable land (NPC, 2011). It is further revealed that of this arable land, only about 30 million hectares are under cultivation. It then means that the arable land would need to be increased and managed so as to raise profitability and productivity in agriculture and hence maize production (FAO, 2014). The small-scale farmers to which maize producers belong constitute about 85% of the farmers in Nigeria, occupy the vertex in the hierarchy of players in food production and produced about 90% of food consumed in the country (IITA, 2015).

Maize (*Zea mays L.*) is the third most important cereal after wheat and rice. The crop is commonly cultivated in the tropics and warm sub-tropics for food, livestock and industrial uses (FAO, 2014). In Nigeria, maize is an important food, fodder and industrial crop grown both commercially and at subsistence level. Maize is used for the production of

indigenous and commercial food products that are relished for their unique and distinctive flavours. It is eaten fresh or milled into flour and serves as a valuable ingredient for baby food, cookies, biscuits, ice cream, pancake mixes, livestock feed and a variety of traditional beverages (IITA, 2015).

Efforts aimed at obtaining high yield and profitability of maize would necessitate the augmentation of the nutrient status of the soil to meet the crop's requirements.

Despite the economic importance of maize, large scale production and profitability are still low in Obubra, Cross River State, Nigeria. According to Oniah, kuye and Ettah (2016) the yield is low and there is poor information on the profitability status of the crop especially among the subsistence farmers of Obubra local government area of Cross River State, Nigeria. Information is presently lacking on the profitability of maize in Obubra local government area of Cross River State, Nigeria. Maize has attracted the attention of government, policy makers and researchers because of the growing importance of the crop in the diets of many Nigerians. Despite the development of high yielding varieties and improved practices, producers of this crop are yet to attain reasonable profit levels. The low profit realized by small-scale farmers is an indication that production of the crop is not at optimal levels (Mbanasor, 2002). Adegboye (2004) noted that farmers must be assisted to increase production through knowledge of more profit efficient ways of cultivation.

Prior to 1970s maize was the number one cash crop for Obubra farmers Oniah, *et. al*. (2016). However, due to the intensification of other crops like yam, cassava, rice, groundnuts and soybean, coupled with lack of good market for maize, its production and hence profit efficiency encountered relative neglect. There is need to develop a sound knowledge of the current profit situation as regards maize smallholder farmers who form the bulk of maize producers in Obubra Local Government Area of Cross River State of Nigeria.

Chukwuone, Agwu and Ozor (2006) recommended the use of Net Farm Income (NFI) and Gross Margin (GM) in ascertaining the profitability of farmers. NFI, according to them is derived after obtaining the Gross Margin (GM). The latter is amount of money realized after deducting variable expenses or costs from total sales or income. While NFI is obtained by adjusting net cash farm income for total depreciation, net inventory changes and value of products consumed at home. According to Olukosi & Isitor (2008) NFI is the only true measure of profit for an accounting period since it includes the above adjustment which could be quite large. NFI is the profit from the year's operation and represents the return to the farm owner for personal and family labour, management and equity capital used in the maize farm.

This study is therefore designed to realize the following objectives: determine agricultural technologies used in maize production in the area, determine the profitability of maize production in the area and make policy recommendations based on the study result.

2. METHODOLOGY

2.1 Study Area:

This study was carried out in Obubra Local Government area of Cross River State, Nigeria. According to CRADP (2015), Obubra lies on latitude 6^0 05' N and 8^0 20' E and is bounded to the east by Ikom, the north by Yala and the south by Yakurr local government areas of Cross River State, while in the west by Ikwo local government area of Ebonyi state. The study area has a land mass of about 108,627 square kilometers and lies along the humid coastal region of Cross River State (Ilorje, 1991).The topography is fairly flat with a good drainage system and a predominantly sandy loamy soil.

The climate is tropical humid with dry and wet seasons and has a range temperature of 15^oc to 32^oc and an annual rainfall range of 1300mm (Ilorje, 1991). The vegetation type found in the area is the rainforest, which promotes the growth of crops like maize. The type of soil found in the area includes: deep laterite fertile and dark clayey basalt.

2.2 Sampling Technique:

The population for this study comprised maize farmers from Obubra local Government area of Cross River State. A three stage (selection of wards, maize farming communities and maize farmers) random sampling technique was used to select 120 respondents for the study.

2.3 Data Collection:

Data for this study were obtained from primary source and collected using a set of structured questionnaire. The questionnaire were administered to respondents eliciting information on their socio-economic characteristics, types of agricultural technologies, cost of maize production, sale of maize, revenue of maize and constraints to maize production.

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2.4 Validation of Instrument:

To ascertain the validity of the instruments, the initial drafts were given three experts in the department of agricultural economics and extension, Faculty of Agriculture & Forestry,

Cross River University of Technology, Obubra, Cross River State, Nigeria. The experts reviewed and criticized the various items on the instruments, in terms of relevance, clarity, appropriateness of language and response patterns as they related to the study. Their criticisms, suggestions and modifications were incorporated into the relevant items to make the instruments worthy for this study.

2.5 Data Analysis:

The data collected for the study were analyzed using both descriptive and inferential statistics. Descriptive statistics which included frequency mean and percentages were used to achieve objective (i) and Net farm income model was employed to realize objective (ii)

Model Specification:

Net Farm Income Model.

Objective (iii) was realized using Net Farm Income Model (NFI). It is specified as:

NFI = GR - (TFC + TVC) Where: NFI = net farm income (₦/ha) TFC = total fixed cost (₦/ha)

TVC = total variable cost (₦/ha). Gross ratios which measures the overall financial performance of maize production was computed as:

GR = TC/TR Where: GR = gross ratio TC = total cost (₦/ha) TR = total revenue (₦/ha)

Operating ratios measures the solvency of maize production, it was computed as: OR = TVC/TR

OR = Operating ratios, TVC = total variable cost (₦/ha), TR = total Revenue cost (₦/ha), Return to naira invested was computed as: RNI = TFI/TC; Where: RNI = Return to naira invested, TFI = total farm income and TC = total cost of production.

3.   RESULTS AND DISCUSSION

3.1 Type of Technologies Used in Maize Production in the Study Area:

The frequency distribution of respondents according to type of technologies the study area is shown in table 1

Table 1: Distribution of respondents according to type of technologies available in the study area (n=120)

Technology type	Frequency	Percentage (%)
Improved maize seed	48	40
Modern implement	10	8.3
Pesticides	20	16.7
Fertilizer	30	25
Extension services	10	8.3
Farming system research	0	0
Herbicides	20	16.7
Total	**138***	**115***

* Multiple responses were obtained

Source: field survey, 2016.

The use of relevant agricultural technologies in maize production would enhance the profit status of the enterprise Aliou and Ben (2012), Chukwuone, Agwu and Ozor (2006). From table 1, 40% of the respondents indicated the use of improved maize seeds in the study area, 8.3% indicated the use of modern implement, another 16.7%, 25% and 8.3% indicated the use of pesticides, fertilizers and extension services respectively. However, none indicated the use of farming system research and only 16.7% indicated the use of herbicides in the study area. This trend is quite poor. The benchmark is for at

least 70% and more usage of improved technologies for meaningful agriculture (Chukwuone, Agwu and Ozor, 2006). The low percentage usage of improved technologies could be seen as one of the reasons for the low profit margin of maize in the study area.

3.2 Net Farm Income in maize production:

The revenue and cost structure of maize production, net farm income, return per naira invested, gross ratio and operating ratio are presented in table 2 below.

Table 2: Revenue and cost structure of maize production, net farm income, return per naira invested, gross ratio and operating ratio (per hectare).

Item	Amount (₦)	%of TC
Total revenue	**192800**	
Variable cost		
Maize seed	4500	4.97
Fertilizer	21000	23.21
Pesticide	4000	4.42
Labour	32,000	35.36
Total variable cost	**61,500**	**67.96**
Fixed cost		
Rent	12000	13.26
Depreciation allowance	17,000	18.79
Total fixed cost	**29,000**	**32.04**
Total cost	**90500**	**100.00**
NFI	102,300	
RNI	2.13	
GR	0.47	
OR	0.32	

Source: field survey, 2016.

From table 2, the total revenue realized from maize production per hectare was ₦192,800, with a total variable cost of ₦61,500/ha and a total fixed cost of ₦29,000. The maize producers made a net income of ₦102,300/ha indicating that the farmers made profit from their investment. Other financial ratio such as the return per naira of 2.13 indicated that every naira invested yielded ₦2.13 to the farmers; this is similar to the findings of (Abu, Ater & Abah, 2012). The gross ratio 0.47 measures the overall financial success of maize production in the area. A less than one ratio is preferable for any farm and the lower the ratio, the higher the profit (Olukosi & Isitor, 2008). The operating ratio was also found to be 0.32 which is the measure of the solvency of the maize farm.

4.   CONCLUSION AND POLICY RECOMMENDATION

A Study on analysis of profitability in maize production in Obubra local Government Area of Cross River State, Nigeria, was carried out. Specifically, the study was set to achieve the following objectives; determine agricultural technologies used and the profitability of maize production in the area; Data required for the study were generated through the use of pre-tested structured questionnaires. The data were analyze using descriptive statistics and net farm income model. Result indicated that the use of technology for maize production was poor and has significant influence on profit of maize production. For the profitability analysis, the total revenue realized from maize production per hectare was ₦192,800, with a total variable cost of ₦61,500/ha and a total fixed cost of ₦29,000. The maize producers made a net income of ₦ 102,300/ha indicating that the farmers made profit from their investment. The return per naira of 2.13 indicates that every naira invested yielded ₦2.13 to the farmers. The gross ratio 0.47 indicated overall financial success of maize production in the area, as the ratio is less than one. The operating ratio was also found to be 0.32 which showed the solvency of the maize farm.

Based on the findings of the study, the following recommendations were advanced:

functional extension services is advocated to help teach maize farmers the use of production technologies and government and NGO's should provide incentives to these farmers to assist in large scale production that can afford reasonable profit.

REFERENCES

[1] Abu, G.A., Ater, P.I. &Abah, D. (2012). Profit efficiency among sesame farmers in Nasarawa State, Nigeria. *Journal of Social Sciences*, 4(4), 261-268.

[2] Adegboye, R.O. (2004) "Land, agriculture and food security in Nigeria, 3rd Faculty Lecture, Faculty of Agriculture, University of llorin, 25thFebuary, 2004.11pp.

[3] Aliou, D. and Ben, G.(2012). Understanding the impact of agricultural technology adoption: K-factors, pitfalls and spillovers. A Report Compiled by Federal Ministry of Agriculture and Natural Resources, Nigeria.

[4] Chukwuone, N., A., Agwu, A. E., and Ozor,, N.(2006). Constraints and Strategies Towards Effective Cost-sharing of Agricultural Technology Delivery in Nigeria: Perception of Farmers and Agricultural Extension Personnel. Journal of International Agricultural and Extension Education. 13(1). . 29-40.

[5] Cross River Agricultural Development Project, C R A D P (2015) Agricultural and Natural Resources Bulletin, Calabar. Vol 5 No.7 Pp 32-40.

[6] Eboh, E. C. (1998). Social and Economic Research; principles and Methods. Academic Publication and Development Resources Ltd, Lagos.

[7] Ettah, O. I. (2010). Evaluation of credit acquisition and repayment and effect on agricultural production in Cross River State, Nigeria. *Unpublished M. Sc Thesis,* Department of Agricultural Economics. university of Nigeria.

[8] Ettah, O. I. and Angba, A. O. (2016). Analysis of cost and returns among cassava farmers in Cross River State, Nigeria. International Journal Of Science And Research (IJSR). November, 2016. vol 5, issue 11.

[9] Federal Ministry of Agriculture and Rural Development (FMARD) (2012).*Crop, Area and Yield Survey.*

[10] Food and Agricultural Organization (F.A.O.) (2014) 1994 Quarterly Report. 12(6); 13.

[11] International Institute of Tropical Agriculture (IITA) (2015): Community improvement towards sustainable Agriculture in Sub-saharan Africa. Plant and health management Division.Annual report IITA Benin Station Cotonou, Republic of Benin, pp. 38-40.

[12] Ilorje, A.E**.** (1991). *New Regional Geography for Graduate Students* University Press. Ibadan.

[13] Mbanasor, J. A. (2002) Resource use pattern among poultry enterprises in Abia State, Nigeria. Nigerian *Journal of Animal Production,* 29(1), 64-70.

[14] National Population Commission, N P C (2011) **,** Population bulletin, federal Ministry of Information, Abuja.2 (7): 11-20

[15] Olukosi, J.O & Isitor S.U. (1990): *Introduction to agricultural marketing and price*; *principles and applications.* Living book series, G.U publications Abuja, Nigeria. 116p.

[16] Olagoke, A. M. (1990) "Efficiency of Resource Use in Small – Scale Farming in Nigeria" Issues in African Rural Development. *African Rural Science Journal.* 2 (10):318-324 (1990).

[17] Oniah, M. O., Kuye, O. O. and Ettah, O. I. (2016). Climate change variation on yam production in Obubra, Local Government Area, Cross River State, Nigeria. Proceedings of the Nigeria Agricultural Association Conference (NAAE) Owerri 2016. 17th – 20th October, 2016.