Agriculture as A Business: An Analysis of Arable Crop Farming Practices in Edo State, Nigeria

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Abstract: **The study analyzed the practices of selected arable crop farmers in Edo State, Nigeria. Specifically, it determined their participation in arable crops cultivation practices and identified the types of records kept with a view to determining their business orientation. A two stage sampling procedure, comprising of purposive and snowball was used to select 196 respondents with access to a minimum of 2 hectares of farmland but only 179 respondents were used for the analysis. Data were collected through the use of interviews and analyzed with logistic regression model. Results showed that farmers were averagely aged with a mean of 37.2 years. The average farming experience was 15.8 years. Farmers engaged in arable crop production practices such as land preparations, planting, weeding, and fertilizer application among others. However, only the cost of hired labour records was kept while cost of other input resources was not accurately documented. Farm size (wald = 3.81), access to labour (wald = 2.52) and access to credit (wald = 5.19) determined their level of participation in arable crop production. The study concludes that farmers practice agriculture as an art and not as a business. This is because business involves adequate records keeping in order to ascertaining profitability.**

Keyword: **agriculture, business, arable crops, practices**

I. INTRODUCTION

Farming activities in developing countries are usually characterized by high level of risks and the skills, technologies, and financial know-how to produce marketable arable products in large quantity and to supply the identified market with the right quality, and quantity are always a challenge to an average farmer (Reardon, Barrett, Berdegué, Swinnen, 2009). In spite of this, a large body of empirical research argues that smallholders are still keys to the global food security and provide nutritional needs of people globally (Paloma, Louhichi and Riesgo, 2020). This set of farmers represents the majority of the workforce in large portions of the developing economies (FAO, 2015).

However, Makuvaro *et al*. (2017) have argued that arable farmers in African countries are generally challenged by two factors, namely; macro-level constraints such as land degradation, usually stimulated by heavy dependence on natural resources by the majority of the population as well as micro-level problems in form of limited access to credit facilities and access to the right source of information, unavailability or poor access to input resources among others. Ordinarily, the cost of every input resource associated with the cost of producing any farm produce must be ascertained and documented in order to determine the level of profitability if farming activity must be seen and practiced as a business venture.

Good enough, this line of thinking has been accentuated by Djokoto (2014) which argues that arable crops, just like other goods that are produced and traded as economic products. The findings further argue that they are usually exchanged for money to fulfill productive obligations as well as profit. Therefore, their production should involve a process for which their selling prices must be determined with a laid down structure considering all the cost of input resources as well as a marked up profit. Forker (1982) pined that price determination of a farm product is a practice which involves the continual search for the appropriate price of a product in view of the current known or expected future economic conditions (demand/supply), occasioned by the profit orientation of the farmers. While reviewing the Samuelson's theory of perfection competition, Djokoto (2014) argues that the price of any product in the perfectly competitive environment is usually determined when cost of production of a particular product is equal to all marginal costs.

The Nigeria's agricultural sector has high potential for growth and this has been pursued over the years without much significant impacts. This is evident in the level of hunger and food insecurity which has attracted many local and international aids, yet most farmers see themselves as contributors to the fight against food insecurity. However, this can only happen if farmers view agriculture as a business. This will make agriculture to take its rightful position in the nation's development as farmers would be able to determine their profit margin.In addition, this would encourage more people to take up farming as a profession as Djokoto (2014) reported that for profit to be made, there must be large number of buyers and sellers and that there must be free flow of information, resource mobilization, evolution of effective price set and efficient resource allocation in the environment. Thus, there is need to know what strategies do they use to determine their profit.

Statement of problem

There is no doubt that there is a paradigm shift in the ways agriculture is being practiced all over the world. This involves the use of modern technologies and adoption of best practices that promote efficient use of resources, thus practitioners experience high return on investment in farming operations. Many studies have been conducted across the globe on the profitability of agricultural enterprises. For instance, in the northern part of Nigeria, Awotide, Ikudaisi, Ajala and Kaltungo (2015) submitted that arable crops such as maize, and copwpea production were profitable despite the fact that farmers under-utilized all available resources with the exception of land. Also, Ashagidigbi, Yusuf and Agboola (2019) established that positive relationships existed between inputs used and productivity in arable crops production in Nigeria. In Indonesia, Lindawati, Kusnadi, Kuntjoro, and Swastika (2018) emphasized the impacts of synergism of inputs and outputs in determining profitability in rice production and concluded that every unit of the input and output must be considered for effective determination of profit. Interestingly, this is applicable to the farmers who see farming as a business and not as an art. For profit determination, there must be adequate records keeping. The inputs and outputs records must be kept in order to ascertain the profitability of a venture.

Inputs required in farming include but not limited to land, labour, seeds/seedlings, agrochemicals, credits, and other machineries. All these must be adequately cost for accurate profit margin to be determined. Though, the issues of profitability of agricultural enterprises have been long over flogged but the inclusion of inputs like family labour and others is unknown in literature. This serves as the basis for evaluating the practices of arable crop farmers in determining their business orientation with respect to viewing agriculture as a business. This is because for agriculture to be viewed as a business, details of inputs and outputs must be accurately recorded and used for the profitability analysis.

II. METHODOLOGY

The study area description

Edo state is located within the South-South geo-political zone of Nigeria and lies roughly between longitudes 06º 4' and 06º 43' east and Latitudes 05º 44' and 07º 34' north of the equator. It has boundaries with Kogi State in the North, Delta in the South, Ondo State in the West and Kogi and Anambra States in the East. It occupies a total land area of 17,802km^2 with a population of 3,218,332 (National Population Commission, 2006). The State is made up of four (4) major ethnic groups namely; The Binis, Esan, Owan and Etsako. Edo State is an agrarian state with oil palm, cassava, rubber, rice, maize, cocoa, plantain, pineapple, as major crops cultivated. The vegetation of the State is characterized by swamps along the coast to evergreen forest and savannah in the North. It experiences a tropical climate with the major seasons being wet and dry. Annual rainfall ranges from 2300-2700mm concentrated in two peaks, July and September usually separated by a dry break in august. The agricultural system is predominantly small farm holdings. The people are predominantly farmers, growing various food crops in virtually all the areas of the local government. Finished products like palm oil, palm wine, baskets, brooms and chairs are sold in the various markets.

The administrative capital is Benin City and it is comprised of eighteen (18) Local Government Area. The Local Government Areas is delineated by the State Agricultural Development Programme (ADP) into three agro ecological zones. They are Edo Central, Edo North and Edo South. The Edo central has five (5) LGAs as follows: Esan Central, Esan West, Esan North-East, Esan South-East and Igueben Local Government Areas (LGAs). The Edo North Comprises six (6) LGAs, namely: Owan West, Akoko-Edo, Etsako West, Etsako East, Owan East and Etsako Central LGAs. The Edo South consists of seven (7) LGAs namely, Oredo, Ovia south West, Ovia North East, Ikpoba-Okha, Egor, Uhunmwode and Orhionwon LGAs.

Sampling Procedure and Data Collection method

A two stage sampling procedure was used for sample selection. The first stage involved the selection of one LGA in each of the ADP agricultural zones in the State based on the intensity of arable crop production. Therefore, Igueben, Owan east and Uhunmwode LGAs for Edo central, north and south, respectively were selected. At the second and final stage, snowball sampling technique was used to selected arable crop farmers who cultivate a minimum of 2 hectares of farmland. Hence, 72, 58 and 66 farmers were respectively selected in Iguebenm, Owan east and Uhunmwode LGAs. This makes a total of 196 farmers sampled for this study. However, about 179 copies of research instrument used were found analyzable. This forms a response rate of 91.3%. Validated structured interview schedule was used for data collection. Data collected were analysed with the use of logistic regression and described with frequency and percentages.

III. RESULTS AND DISCUSSION

Demographic Profile

Results in Table 1 shows that the mean age of the sampled respondents was approximately 37 years and this implies that arable crop farmers sampled for this study were still in their prime ages. The implication of this finding is that agriculture might be practiced with the intention of making profit. Another implication of the finding is that the farmers might have the opportunity to utilize modern (innovations) farming practices (technologies) that will enhance productivity with a view to earning more income. This is because some of the attributes of young people are innovative proneness, greater risk aversion, and readiness for change (Adegboye, Oyesola, and Eniolorunda, 2010). Another author (Ijioma and Ibezim, 2010) also reported that younger people are known for their agility, energetic, and are determined and adventurous in

experimenting different approaches and techniques in getting things done. This implies that farmers in the study area are still within the age bracket to drive agriculture in the direction of business by adopting practices that suggest their business inclination.

On sex, it was revealed that most (58.7%) of the respondents were male. Though, females are also involved in the cultivation of arable crops with a percentage of 41.3% obtained. This suggests that both male and female are involved in the production of arable crops common in the study area. Studies such as Food and Agriculture Organization (FAO, 2011), Aqeela, Muhammad and Asif (2005) and Mohammed and Abdulquadri (2012) earlier documented that gender division existed in farming where men involved in the tedious or energy savvy activities such as land preparation while women were responsible for activities like planting, weeding, processing and marketing in Nigeria. However, studies by Fakoya, Apantaku and Adereti (2006) and Onya, Ugochukwu and Ejiba (2018) in Nigeria and Sikod (2007) in Cameroon have established that involvement in arable crops production between male and female could be weighed at the same level as women now own farmland and involve in the cultivation of food crops from land preparation to marketing.

The average years of experience in arable crop production among the respondents was approximately 12 years. About 31.3% of the respondents had no formal education while the remaining had 69% had formal education that ranged from primary to tertiary. The high percent without education may still practice agriculture as an art where adequate records are not kept. However, the influence of the large number with formal education may be significant on the entire respondents if they use modern approaches to farming. The finding of Onya et al (2018) and Ololade and olangunju, (2013) revealed that education and farm size among other determinants determined the farmers' yields and income. These variables must have influenced their decisions to adopt best farming practices and approaches that could enhance productivity and ensure that they determined their profit accurately. On average, the household size was 8 persons per house and both family and hired labour were used. The use of family labour may be influenced by the large household size recorded by the farmers.

Table 1: Socio-economic characteristics of respondents

Variable	Frequency	Percentage	Mean
Age (Year)			37.2
Sex Male Female	105 74	58.7 41.3	
Experience (years)			12.6
Education Status Non-formal Primary Secondary Tertiary	56 49 65 9	31.3 27.4 36.3 5.0	

Household size			8.4
Source of labour Family Hired	88 91	49.2 50.8	
Farm size (hectare)			2.6

Source: Field survey, 2021.

Farming practices used by farmers

The results in Table 2 show that the conspicuous farming practices commonly practiced by the respondents in arable crop production are land preparation (82.1%), stumping (62.0%), planting (90.5%), weeding (73.7%) and harvesting (57.0%). Though, numerous practices such as harrowing, ploughing, ridging, mulching and thinning among others are required for arable crop production. However, a small number of farmers was involved in most of these practices. This may be due to their poor knowledge of such practices. This is slightly different from the findings of Adedokun, Ogunyemi and Lawal (2018) that reported that arable crop farmers practiced composting, mulching, crop rotations, inter-cropping, agro-forestry, biological pest control measures, green manures, erosion prevention and water harvesting in Lagos State but the findings of Osabuomen and Okoedo-Okojie (2011) had similar findings with this study by reporting bush clearing/burning, harvesting, weeding, pest invasion, mulching and fertilizer application as practices that were practiced among farmers in Edo State. Generally, these are routine practices for the cultivation of arable crops in Africa among peasant farmers that are constrained with the use of modern technologies due mostly to cost and land tenure system.

Table 2: Participation in farming practices

Practices	Freq.	Percentage
Land preparation	147	82.1
Stumping	111	62.0
Harrowing	59	33.0
Ploughing	71	39.7
Ridging	85	47.5
Planting	162	90.5
Weeding	132	73.7
Thinning	39	21.8
Mulching	61	34.1
Fertilizer	33	18.4
Spraying	79	44.1
Harvesting	102	57.0
Marketing at farm gate	41	22.9

Source: Field survey, 2021.

Types of records kept

Based on the results in Table 3, it was observed that just above half (50.8%) of the respondents kept records of cost of seeds and agrochemicals used while 56.4% only kept records

of labour used under the variable assets. Moreover, records of self and family labour were not kept. Less than half of the respondents kept records of other important assets on on the farm operations. In the same vein,

Under the fixed assets, records of the size of land (76.5%), and cost of rent (60.9%) were conspicuously kept while other the amount sold (100.0%) was kept under the revenue with only 20.7% and 8.4% kept records of the cost of produce consumed and given out as gift. One of the first steps in being a successful farm manager is keeping well-maintained, accurate records and establishing a sound record-keeping system (Simpa, 2019). Keeping accurate records has its benefits, like helping farmers plan and complete realistic forecasting. It will also enable them to accurately determine their profitability. However, based on the above findings, respondents did not keep critical records that would enable them to make valid decisions with respect to their profitability. Records of self and family, sales, amount consumed and given out as gifts and well as records of input used must be adequately kept in order to accurately determine the level of profitability of a business enterprise.

To accurately determine profit, the use of innovative records keeping practices such as the use of computer and software would help farmers to be abreast information that would need to be kept for profit determination. Accounting and payroll system may be adopted as it is used in developing countries even with small scale farmers. This will involve management of expense receipts, and the use of clouds to store information on transactions. This means that agricultural extension agents have a lot to do in educating farmers on the use of information telecommunication technology (ICT) in records keeping. This is possible due to the availability and accessibility of android phones by farmers who are not even educated.

Table 3: Type of records kept

Assets	Freq	Percentage
Variable Assets		
Quantity of seeds	73	40.8
Quantity of agrochemicals	58	32.4
Cost of seeds	91	50.8
Cost of agrochemicals	91	50.8
Cost of transporation	56	31.3
Cost of hired labour	101	56.4
Cost of self labour	-	-
Cost of family labour	12	6.7
Fixed Assets		0.0
Size of land	137	76.5
Cost of rent	109	60.9
Cost of equipment	81	45.3
Revenue		
Amount sales	179	100.0
Cost of amount consumed	37	20.7
Cost of amount given out as gift	15	8.4

Source: Field survey, 2021.

Determinants of Participation

The results in Table 4 show that the binary logistic regression model could be used to explain about 51.2 of the variance in participation in arable production with the Nagelkerke R^2 value of 0.512. The model was able to accurately predict and classified about 69.3% cases in the regression. The model specifically shows that education (odd ratio = 1.790), farm size (odd ratio = 1.602), annual income (odd ratio = 1.775), experience (odd ratio = 4.402) and labour source (odd ratio = 1.061) significantly determined respondents' participation in arable crop production in the study area at $p<0.05$. With the odd ratio of 4.402 for experience, it means that high experience increases the likehood of participating in arable crop production by 4 times. This further shows that respondents with higher experience are more likely to participate 4 times more than those with lower experience in the production of arable crops. The findings are in tandem with the study of Simpa (2014), which reported experience as a critical variable that influenced the production of yam. Also, Adedokun et al. (2018) findings further supported this study by the assertion that variables such as education, income and farm size significantly influenced farmers' participation in arable crop production. The log likelihood value of 812.117 is large enough and this shows the fitness of the binary logistic regression model for this analysis.

Table 4: Determinants of participation in arable crop production

variable	B	Wald	Odd ratio
Education	0.582	3.517*	1.790
Farm size	0.471	2.155*	1.602
Income	0.574	4.251**	1.775
Experience	1.482	2.183*	4.402
Household size	0.721	0.482	2.056
Labour source	0.059	2.156*	1.061

Source: Field survey, 2021.

Overall percentage prediction = 69.3%
-2log likelihood = 812.117
Nagelkerke R Square = 0.512

IV. CONCLUSION AND RECOMMENDATIONS

Profit is the goal of any business enterprise and adequate records management is critical to making valid decisions in the determination of profitability of such business enterprise. In this study, records that would enable arable crop farmers to make accurate decisions on the profitability of their enterprise were not kept. Therefore, it was established that arable crop production practices adopted by the respondents and the types of records kept showed that farmers' profitability cannot be accurately determined. Hence, agriculture is still being practiced as an art and not as a business. It is therefore, recommended that stakeholders in the field of agriculture in Nigeria should intensify efforts in training farmers on the appropriate records keeping techniques that must be kept in order to ascertain their profitability status with a view to

viewing agriculture as a business. Innovative system of keeping records such as computer and simple accounting software should be introduced by the agricultural extension agents to farmers for up to date records of their farming enterprise. This will encourage farmers to adopt approaches and innovations that may enable them to increase their productivity and by extension, ensuring food and meal securities in Nigeria.

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