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## **ECONOMIC EVALUATION OF PRIVATE NURSERY ENTERPRISES IN OYO STATE, SOUTH-WESTERN NIGERIA.**

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### **ABSTRACT**

This study was carried out to economically evaluate private nursery enterprises in Oyo State, South-Western Nigeria. A multistage sampling technique was used to select one hundred and twenty nurseries and data were collected with the aid of well structured questionnaire. Techniques of analysis used include descriptive statistics, benefit cost ratio and ordinary least square analysis. Descriptive statistics revealed that (70%) of the respondents were male and 95% of the nurseries owner were less than 50 years of age. The nurseries owners were new in the business and they were married. The ordinary least square method indicate linear functional form as lead equation with  $R^2 = 0.767$  which shows that 76.7% of variation in the dependent variable was explained by independent variables. Age and Size had negative impact on dependent variable while others had positive impact on dependent variable. The benefit cost analysis of 1.356 reveals that nursery business was profitable and inadequate funding was indicated as a major constraint to nursery production. The study thus recommended that nursery owners should be encourage with necessary facilities, women should also be encouraged in the industry and government should partner with both public and private nurseries owners.

**Keywords:** Nursery, Enterprise, Benefit Cost Ratio, Regression.

## 1. INTRODUCTION

The nursery industry is a growing industry that produces billions of plants every year and making major contribution to the forestry, vegetable, fruit, landscape, cut-flowers and horticulture. The contribution of this business enterprise to the development of an economy cannot be overemphasized (Tonne 1963; Marsden 1990; Gaye 1996). Nursery is a place where seedlings are raised under intensive management for later transplanting into the field. It can be defined as a branch of science that deals with the growing of flowers, fruits and vegetables (williams, 2005). Although, many of the important tree crops can be sown direct into the field, yet experience has shown that raising seedlings in the nursery play a vital role in the establishment of either plantation or renew natural forest. It also serves as a propeller for forest establishment as well as in other field like horticulture. Nurseries have the common goal of producing plant materials for improving site (Clamp1995) and the awareness on the importance of having plants both inside and outside residential areas is on the increase (Adebanjo *et al.*1996). The all year round demand of nursery products as well as the environmental concern of public makes the need for the enterprise inevitable in our society (Babalola and Agbeja, 2006).

In recent time, nurseries have been receiving increasing attention and patronage as more people plant trees, shrubs and grasses around their buildings. Users include the nursery operator themselves, individuals, community organizations, farmer groups, government agencies, non-government organizations, corporate or private customers (Nelson, 2013). This plays a very important role in income generation to the nursery operators as well as generating employment for both urban and rural dwellers directly or indirectly (Usman *et al.*, 2002, Nigeria Economic summit group, 2009). The jobs provided include skilled labour jobs such as nursery managers, jobs for individuals in cultivation and marketing of plants.

Ornamental plants which are part of the plants raised in the nursery provide various benefits to the environment including protection of soil and buildings. They may also be used as hedges which screen or provide privacy, provide edible fruits, and above all beautify the environment (Alberta 1990, 1994; Joshi 1999; Ajewole 2001). The aesthetic value of floriculture could be noticed in public places such as botanical gardens, aboreteum, and parks for public admiration (Hessayon, 1984). Socially, the pionsettias flowers are associated with Yule-tide period, rose are associated with valentine period and lillies are associated with Easter period (Acquaah, 2004). Another benefit of ornamental plants is in the area of sports and recreation. Turfs are cultivated for sport fields and community garden plots that are strategically located along walking paths which serve as convenient places where people converse and interact (Emokaro *et. al*, 2013). Its role in food and nutrition cannot be overlooked as floricultural plant such as cauliflower serves as food (Hacket,1982).

Nursery establishments can generally be grouped into private and public depending on the mode of ownership, size, and ultimate goal of their establishment (Adebanjo *et al.* 1996). One major distinction between the private and the public nursery is the priority on profit maximization (Mailumo *et al.* 2006). The motive and goal of any private business enterprise is to make as much profit as possible while the public enterprise has the ultimate motive of catering for the welfare of the masses (Sargent, 1993).

All over the world, nurseries come in all types and sizes. Many are big family business; some are just a small time hobby business to supplement the family normal source of income. At the other end of scale are large commercial enterprises that employ dozen of people and grow millions of plants. However, Nursery operations are often considered as men business by women folks and are also faced with difficulties in accessing investment capital, relevant technical support, market information and links. This is because they are not always considered as farmers when loans are being granted thereby hindering their production and further development. Most nursery owners established just a temporary nursery and operations were made as source of additional income to the family. Each operator has other major source of income other than selling of seedlings. These operators are characterized with little investment to infrastructure; temporary structures to accommodate and shed the seedlings among others. These itches might be due to the fact that not much research effort have been undertaken on the economics of ornamental plants production compared to other crops like cereals in Nigeria (Emokaro *et.al*, 2013). Also, research on the production of ornamentals and its awareness as regards its profitability or otherwise has remained low (Fakayode *et al.* 2008).

Though previous studies by Clamp (1995), Alberta (1994), Mather (1995) and Joshi (1999) have focused on the environmental protection, conservation and sustainability of avenue plants around residential areas. Among these are landscaping and urban forestry but none of these studies dealt with economics aspect of nursery. Ajayi and Babalola (2002) in their own contribution considered only economic of public nurseries producing tree seedling for commercial purpose leaving out private nurseries which dominate the nursery enterprises and this study is thus designed to fill the gap in literature on economic of nursery production.

There is need for studies that create awareness for people in prospecting the hidden opportunities in the economy, in order to ease the pressure on the government for the provision of jobs and create awareness on how people could become self-employed. The seedling production business is a form of self-employment opportunity that generates income with relatively low investment expenditure, and thereby possesses the potential for enhancing the socio-economic aspect of the economy (Emokaro *et. al*, 2013). This Paper therefore seeks to provide answer to the following research questions;

- (i) Are nursery enterprises profitable or otherwise?
- (ii) What are the factors affecting receipt from nursery operations?

The main objective of this study was to assess the economics of private nursery enterprises in Ibadan, Oyo state, Nigeria but specifically the study will

- (i) Examine the profitability of nursery production in the study area.
- (ii) Identify the factors affecting receipt from nursery operations in the study area.

## **2. METHODOLOGY**

### **2.1 STUDY AREA**

This study was carried out in Oyo State, South-western, Nigeria. The state covers approximately an area of 28,454 square kilometers and is ranked 14th by size. It is bounded in the south by Ogun State, in the north by Kwara State, in the west it is partly bounded by Ogun State and partly by the Republic of Benin, while in the East by Osun State. The Climate is equatorial, notably with dry and wet seasons with relatively high humidity. The dry season lasts from November to March while the wet season starts from April and ends in October. Average daily temperature ranges between 25 °C (77.0 °F) and 35 °C (95.0 °F), almost throughout the year.

The State has a population of about 4.5 million and is predominantly occupied by Yoruba people. Within the State however, there are sub-ethnic groups with distinct dialect peculiarities. The people of Oyo State may be divided into five broad groups which are: Ibadans, Ibarapas, Oyos, Oke-Oguns and Ogbomosos. The economic activities of the people include agriculture, commerce, handicrafts, manufacturing, and service industries.

### **2.2 SAMPLING TECHNIQUE AND DATA COLLECTION.**

The state is comprised of four Agricultural Development Programme (ADP) zones, namely; Ibadan/Ibarapa, Saki, Oyo and Ogbomoso. Ibadan/ibarapa and Oyo zones were purposively selected because of prevalence of nursery operators within relatively a short boundary and majority of these people take up nursery work because they are living near drainage pattern of the roads. Six blocks were randomly selected from the two ADP zones. Two cells were later randomly selected from each of the selected block and ten nursery operators were randomly selected from each cell. In all, this gave a total of 120 respondents that were used for the study.

Primary data were collected with the use of well structured questionnaire. The contents of the questionnaire include questions on socioeconomic characteristics of the nursery operators such as name, age, gender etc., categories of seedlings produced in the nurseries, costs of production and estimate of receipts (returns) from seedlings produced for period of three years (2012 to 2014) were collected.

### 2.3 ANALYTICAL FRAMEWORK

Various analytical techniques were used for this study. Descriptive statistical tools were used to analyze the socio-economic characteristics of the nursery operators, Benefit-Cost ratio (BCR) was used to determine the profitability of nursery production and Ordinary Least Square (OLS) was used to determine factors affecting receipt from nursery operations in the study area.

#### 2.3.1. Benefit- Cost Ratio.

Adegeye and Ditto (1985) describe Benefit- Cost ratio as one of the discounting methods used in determining profitability of a business. The method overcomes the major shortcomings of undiscounted methods. The basic feature of this method is that it considers all the returns of the business over its life span and this return are express in their present value i.e. what the return expected in the future are worth today. The discounted cost and benefit are obtained by multiplying the discounted factor (DF) by cost and benefits. Benefit- cost ratio (BCR) was conducted using the equation 1 and the rule of thumb says that if  $BCR > 1$ , the enterprise is profitable but if otherwise, it is not profitable.

$$B/C = \frac{\sum_{t=0}^{t=n} \frac{B_t}{(1+r)^t}}{\sum_{t=0}^{t=n} \frac{C_t}{(1+r)^t}} \dots\dots\dots(1)$$

Where:  $B_t$  = benefits (Revenue or Receipt or Return);  $C_t$  = costs of production (expenditure);  $n$  = number of years to the end of project;  $i$  = discount rate;  $t$  = time (month).

#### 2.3.2. Ordinary Least Square Regression.

Ordinary least-squares (OLS) regression is a generalized linear modeling technique that may be used to model a single response variable which has been recorded on at least an interval scale. The technique may be applied to single or multiple explanatory variables and also categorical explanatory variables that have been appropriately coded. The relationship between a continuous response variable (Y) and a continuous explanatory variable (X) may be represented using a line

of best-fit, where Y is predicted, at least to some extent, by X. If this relationship is linear, it may be appropriately represented mathematically using the straight line equation.

$$Y = \alpha + \beta x \dots\dots\dots( 2).$$

The relationship between variables Y and X is described using the equation of the line of best fit with  $\alpha$  indicating the value of Y when X is equal to zero (also known as the intercept) and  $\beta$  indicating the slope of the line (also known as the regression coefficient). The regression coefficient  $\beta$  describes the change in Y that is associated with a unit change in X.

The regression equation can come in different functional forms such as Linear, Exponential, Semi-log and Double log functional forms. The models for the functional forms are represented below;

Linear

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + \dots + b_n X_n + \epsilon_t \dots\dots(3)$$

Double Log →

$$\ln Y = b_0 + b_1 \ln X_1 + b_2 \ln X_2 + \dots + b_n \ln X_n + \epsilon_t \dots(4)$$

Semilog

$$\ln Y = b_0 + b_1 X_1 + b_2 X_2 + \dots + b_n X_n + \epsilon_t \dots\dots(5)$$

Where: Y= dependent variable (Receipt from Nursery Operations)

X<sub>1</sub>- X<sub>n</sub> are the independent variables

b<sub>0</sub> is the constant/ intercept

$\epsilon_t$  = Error term. For the purpose of this study, the independent variables are: X<sub>1</sub>=Gender, X<sub>2</sub>=Age, X<sub>3</sub>=Marital Status, X<sub>4</sub>=Religion, X<sub>5</sub>=Ethnicity, X<sub>6</sub>=Education, X<sub>7</sub>=Occupation, X<sub>8</sub>=Other Occupation, X<sub>9</sub>=Experience, X<sub>10</sub>=Farm size

### **3. RESULT AND DISCUSSION**

#### **3.1 Socio-economic Characteristics of Respondent**

Table 1 shows that 70% of the respondents were male while 30% were female. This may be as a result of the fact that most of the operations performed in the nurseries are tedious and assumed to be men's work. The mean age was 35 years and specifically, 50% of the nurseries owners were between 20-30 years of age, 25% were 31-40years of age, 20% were 41-50years of age and 5% were 61-70years of age. This indicate that 95% of the respondents fall within the age group of 50 or less which means that young people tend to show interest in nursery production. In terms of experience, 35% of respondent had 1-5years of experience, 35% had 6-10years, 25% had 10-15years and 5% had 21-25years of experience. This shows that the owners were relatively not new in the field of business and it has been argued that more experienced farmer could predict the future outcome of production with some probability by considering performance of past years. Furthermore, 55% of the respondents were married, 40% were single and 5% were divorcee. This shows that married were dominant in the field of business and look for more ways of making money to cater for their families. Ten percent (10%) of the nursery owners were the Muslim and 90% of the respondents were Christians. Thirty percent (30%) of the respondent were Igbo, 65% were Yorubas and 5% were other ethnicity. This indicates that the Yoruba were the majority in the study area. Majority of the respondent had formal education except 6%. This enhance the ability of the respondent to easily understand the various, technical operation involve in nurseries. Moreover, 70% of the respondents had the nurseries as their main occupation, 45% of the respondents were artisan and 40% of the respondents had either small size of nurseries or medium size.

**Table 1: Socio-economic Characteristics of Respondents**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage (%)</b>	
<b>SEX</b>			
Male		84	70
Female		36	30
Total		120	100
<b>AGE (YEAR)</b>			
≤ 30		60	50
31-40		30	25
41-50		24	20
61-70		6	5
Total		120	100
Mean		35	-
<b>EXERIENCE (Years)</b>			
1-5	42	35	

6-10		42	35
11-15		30	25
21-25		6	5
Total		120	100
Mean		35	-

**MARITAL STATUS**

Married	66	55	
Single		48	40
Divorce	6	5	
Total		120	100

**RELIGIONS**

Islam		12	10
Christian	108	90	
Total		120	100

**ETHNICITY**

Igbo		36	30
Yoruba		78	65
Others		6	5
Total		120	100

**EDUCATION**

No-formal	6	5	
Primary	12	10	
Secondary	24	20	
ND/NCE	48	20	
HND/B.sc	30	25	
Total	120	100	

**OCCUPATION**

No	36	30	
Yes	84	70	
Total		120	100

**OTHER OCCUPATION**

Petty trade	24	20	
Artisan		54	45
Other		42	35
Total		120	100

**SIZE**

Small		48	40
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Medium	48	40	
Large		24	20
Total		120	100

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**Source: Field survey, 2015**

### **3.2 Type of Seedling raised by Nurseries in the Study Area**

Table 2 shows the various types of seedlings raised by the nursery operators in the study area and their frequency of occurrence. Ornamental seedlings accounted for 25%, agricultural seedlings 24%, horticultural seedlings 20%, medicinal seedlings 17% and forestry seedlings accounted for 14%. The ornamental and agricultural seedlings were raised more than others because their high demands by customers who use it for landscaping or beautification purposes, food substances and condiments as shown in table 3.

**Table 2: Type of Seedlings raised by Nurseries in the Study Area.**

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<b>Seedling raised</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Agricultural	29	24.0
Ornamental	30	25.0
Forestry	17	14.0
Horticultural	24	20.0
Medicinal	20	17.0
Total	120	100.0

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**Source: Field survey, 2015**

**Table 3: Uses of Seedling in the Study Area.**

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<b>Uses</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Production	7	6.0
Aesthetic	36	30.0
Protection	11	9.0
Multiple use	66	55.0
Total	120	100.0

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**Source: Field survey, 2015**

### **3.3 Profitability of Nursery Production in the Study Area**

Table 4 shows the benefit cost ratio analysis of nursery owners in the study area. The ratio of discounted benefit to discounted cost gives 1.356 and since the ratio value is greater than 1, it indicated that nursery production in the study area is profitable.

**Table 4: Benefit Cost Analysis Showing the Profitability of Nursery Production in Study Area**

YEARS	PCV	PBV	DF@14%	DC	DB
2012	464120	600000	0.8772	407126.06	526320.00
2013	684880	720000	0.7695	360803.16	554040.00
2014	544120	679200	0.6750	367281.00	458460.00

Source: Field survey, 2015

PCV- Present Cost Value, PBV- Present Benefit Value, DF@14%

Discounted Factor at 22% Interest Rate, DC – Discounted Cost and DB- Discounted Benefit.

### 3.4 Determining Factors Affecting Receipt from Nursery Operations in the Study Area.

Ordinary least square was adopted in the study of factor affecting receipt from nursery operation in the study area. The relevance of this is that the coefficient can be tested for reliability than using descriptive and frequency table. Four functional forms were fitted to explain the cause effect relationship between the dependent variable and independent variables. The functional forms are linear, exponential, semi-log and double log functional forms. However, the combination of economics theory and statistical criteria were applied in order to select the “best fit” equation for the production function of Nursery.

In the selection of the “best fit” equation as the lead equation, the criteria used are the coefficient of multiple determinations, statistical reliability of parameters as well as the prior sign of the coefficient of the explanatory variables. From the four functional forms, linear form was chosen as the lead equation. The regression result table below shows that, it has  $R^2$  value of 0.767 which implies that 76.7% of the total variation in the dependent variable which is the receipt from nursery operation was explained by the independent variables while the unexplained 23.3% may be attributed to other factors not included in the model. All the explanatory variables are significant at one percent except farm size which is significant at five percent. The sex of the respondents has significant relationship with receipt from nursery. This may be attributed to the fact that the business is dominated by male who are energetic than their female counterparts. The age of the respondents is significant but negative relationship exists between the two. This may be because majority of the respondents are less than 30years of age who still engage in other

activities besides nursery operation and this may also be attributed to youthful exuberance among them. Marital status, religion and ethnicity are also found to be positive and significant. Education and experience are significant and contribute positively to receipt from nursery. Education makes adoption easy and since majority of the respondent has post secondary education, this may contribute to the positive relationship between education and receipt. Experience makes an individual get used to frequently done activities and improve the receipt from such activities. The respondent primary occupation which is nursery production and other occupation engaged in by respondents have positive influence on the receipt of the respondents.

The farm size is significant but has a negative relationship with receipt from necessary. This may be attributed to small land requirement for nursery operation. Though, land is important for nursery operation but the size of the land may not necessarily improve receipt from nursery.

**Table 5: Regression Result Showing Factor Affecting Receipt From Nursery Operation**

Variable	$\beta$	Standard Error	t value	Significant
Constant ( $x_0$ )	-455231.791	72538.080	-6.276	0.000
Gender ( $x_1$ )	65699.599	7511.208	8.747	0.000
Age ( $x_2$ )	-2604.868	773.578	-3.367	0.001
Marital status ( $x_3$ )	89816.457	15693.431	5.723	0.000
Religion ( $x_4$ )	55833.991	17773.003	3.142	0.002
Ethnicity ( $x_5$ )	13888.769	4448.387	3.122	0.003
Education ( $x_6$ )	17781.898	3882.867	4.580	0.000
Occupation ( $x_7$ )	21460.992	7751.327	2.769	0.007
Other occupation ( $x_8$ )	56764.905	12404.955	4.579	0.000
Experience( $x_9$ )	11449.330	2305.863	4.965	0.000
Farm Size( $x_{10}$ )	-16886.615	7942.288	-2.126	0.037

**Source: Field survey, 2015**

$R^2$  – value = 0.767, Adjusted  $R^2$  value = 0.735, F-value = 24.071

#### **4. CONCLUSION**

The overall result of this research work showed that men with mean age of 35 years dominate nursery enterprise in the study area operating on either small or medium scale. It was revealed that nursery enterprise is a profitable venture amidst economic challenges in the country and is affected negatively by age of the owner as well as size of the nursery. This study further showed that private nurseries in the study area are producing high quality seedlings under intensive management experts and contributing to the socio-economic well being of the people especially those that find gainful employment in the nurseries. However, inadequate funding was indicated as a major constraint to nursery production as nursery owners were often not considered as farmers when loans were granted.

#### **5. RECOMMENDATION**

Base on the study, therefore the nursery owner should be encourage and should be provided with necessary facilities on the farm to enhance good production. Women should also be encouraged in the industry as percentage of the women is relatively low when compared to that of men.

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