

# Determinant of Demand of Ijebu Development Initiative on Poverty Reduction (IDIPR) Loan among Fish Farmers in Odogbolu Local Government Area of Ogun State, Nigeria

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## Abstract

The role of Non-Timber Forest Products (NTFPs) in sustainable forest management and poverty reduction has received great attention in recent times. Although they were undervalued in the past, their harvesting are less destructive than that of timber thereby making it a vital option for sustainable management of forest biodiversity. Consequently, the lack of proper management of NTFPs is of great concern to local, national and global communities. Therefore, the need to assess the socio-economic impact of non-timber forest products in rural household income in Osho forest reserve, Oyo State, Nigeria, with a view to encouraging sustainable forest management of the resources. Purposive sampling was used to select 3 communities which include: Abokede, Arenjetu and Onikanga from 9 communities around the Osho forest reserve. The selection was based on the fact that these communities were noted for the collection, processing and trading of NTFPs. A set of questionnaire was used to obtain data for this study. Twenty households were selected from each community, making a total of sixty (60) households that were sampled for the study. A set of questionnaire was used to obtain data for this study and data were analyzed using descriptive statistics, chi square and logit regression at  $\alpha_{0.05}$ . The average age of the respondents was  $56.3 \pm 5.3$  years, married (60.0%) and mostly male (63.3%), while about 70% of them had no formal education. The household size of the respondents ranges between 6 and 10 (55.0%) and mostly indigenes (98.0%). The respondents are mostly into farming and collection of NTFPs (63%) with 21-30 years experience (75.0%). Major NTFPs collected are honey (16.7%), fuelwood (15.0%), bush meat (11.7%) and snail (8.3%). About 31.7% of the respondent generated income from NTFPs collected while majority of them (50%) generated as high as between ₦300,000 and ₦399,000 annually. Collection of NTFPs was dependent on gender ( $\chi^2=0.13$ ;df =1; p = 0.72), age ( $\chi^2=2.96$ ;df =5; p = 0.71), household size ( $\chi^2=2.32$ ;df =3; p = 0.51) and education ( $\chi^2=0.91$ ;df =2; p = 0.64). Income generated from sales of NTFPs and availability of NTFPs were the most significant variables contributing to the effectiveness of NTFPs in sustaining livelihood with odds-ratio of 37.71 and 3.10 respectively. NTFPs can be a vital tool in alleviating poverty in the study area as households were sustained through the collection of NTFPs from Osho forest reserve.

Keywords: Non-Timber Forest Products, Sustaining livelihood, Alleviating poverty, Rural Communities

## Introduction

A forest is a large area of land covered with trees or other woody vegetation. According to the widely used United Nation Food and Agriculture Organization definition, forest covered an area of four billion hectares (15 million square miles) or approximately 30 percent of the world land area in 2006 (FAO,2006). Forest accounts for 15 percent of the gross primary productivity of the earth's biosphere. Forests are also direct sources of income for many individuals, communities and states. According to World Bank (2001), forest resources directly contributes to the livelihood of 90 percent of the 1.2 billion people living in extreme poverty and indirectly supports the natural environment that nourish agriculture and the food supplies of nearly half of the population of the developing world. Africa's forests are naturally and globally important for their rich diversity of plants and animals' lives, the livelihood they provide for traditional, indigenous people and income they generate. Non-timber forest products (NTFPs) are also potential source of income from the forest.

Bahru *et al.*, (2012) defined NTFPs as all forest products other than timber that are extracted from the forest ecosystems and utilized within the household or marketed or have social, cultural, or religious significance. The NTFPs therefore, refer to both tangible products that are gathered from the forest by local people for home use as well as for income generation. Unlike timber-based products, non-timber forest products came from large variety of plant parts and are formed into diverse set of products. As submitted by Chamberian (1998), NTFPs contributes significantly to local economics and with the current trend in the trade and use of NTFPs, it is bound to grow substantially the next decades. This proposition has however attracted many conservation in favour of NTFPs management and sustainable use is introduced. It is therefore pertinent to examine NTFPs collections and its contribution to income of forest dependent rural communities.

## Methodology

### Study area

Osho forest is located in the derived savannah ecological zone of Nigeria. It is situated in Ido Local Government Area of Oyo state, Nigeria, between latitude  $6^{\circ} 50^1$  and  $70^{\circ} 30^1$ N and longitude  $3^{\circ} 30^1$  and  $4^{\circ} 30^1$  E. The reserve lies about 152m above the sea level. The rainy season is bimodal occurring from April to July and from September to November, with a brief break in August. The dry season occurs between December and March. The average annual rainfall is above 1257mm while the relative humidity ranges from 84.5% in June to September and 78.8% in December to January. The mean maximum temperature is about  $31.3^{\circ}\text{C}$ . The prominent villages within and around the reserve include: Abokede, Ikeji, Onifufu, Monbole, Arenjetu, Gbagba, Onikanga, Adedapo and Agbetu. The Osho residents in Ido local government are the original land owners and still form 90% of the population living within and around

the forest reserve. There are other ethnic groups in this area and they include Egede (People from Benue State in Nigeria) and Togolese, as well as people from Republic of Benin. The predominant occupation in this area include basket weaving (Popoola and Amusan, 2010).

### Sampling procedure and Data analysis

Osho forest reserve was purposively chosen for this study. Thereafter, simple random sampling procedure was employed. Three (3) communities (Abokede, Arenjetu and Onikanga) were selected from the nine (9) identified communities around the reserve. Simple random sampling technique was used to select twenty (20) household heads irrespective of their age classes, ethnicity and educational levels from each of the selected communities, making a total of sixty (60) households chosen for the study. Hence, the target respondents for this study were the household heads. Opinions of the respondents were then sought through scheduled interview. Both primary and secondary data were collected for this study. Primary data were collected using a set of structured questionnaire and interview, while secondary data were obtained from desk review of relevant literatures to supplement the primary data. The questionnaire were administered through interview guide, filled and retrieved on site because most of the respondents had no formal education. However, 60 questionnaire were administered and retrieved from the field which represents 100%. Data were analyzed using descriptive statistics, chi-square and logistic regression analysis.

### Chi-square analysis

The relationship between the effectiveness of NTFPs in sustainable livelihood of the people and the demographic characteristics of respondents (gender, age, educational status, household size and marital status) was determined using chi-square analysis at confident limit of  $p < 0.05$ .

### Logistic regression

The binary logistic models are very useful in a situation whereby the dependent or response variable is binary in nature. This implies that they can have only two possible values. The models therefore describe the relationship between one or more continuous independent variable(s) to the binary dependent variable. The two common binary models are the logit and probit. The logistic model is particularly preferred because of the unique information it provides. Distinct information provided by logit is the odds ratio. It is defined as the ratio of the odds of an event occurring in the group to the odds ratio of it occurring in another group (Deeks, 1996 and Davies, 1998). The logistic model of a response  $p$  between 0 and 1 is given as:

$$\text{Logit}(p) = \log\left(\frac{p}{1-p}\right) = \log(p) - \log(1-p) \text{----- (1)}$$

The simplest form of logistic model is expressed as:

$$\text{Logit}(p_i) = a + bx_1 + \dots + bx_4 \text{ --- (2)}$$

Where:

$P^i$  = Probability of an effect on the effectiveness of NTFPs on rural livelihood (Dependent variable)

$x_i$  = vector of predictor or independent variables

$a$  and  $b$  = regression parameters

The independent variables are:

$X_1$ = dummy variable indicating whether Years in NTFPs Business (YINTFPB) is a reason responsible for effectiveness of NTFPs or not.

$X_2$ = dummy variable indicating whether Income Generated from sales of NTFPs (IGSNTFPs) is a reason for effectiveness of NTFPs or not

$X_3$ = dummy variable indicating whether Rate of Patronage (ROP) is the reason for effectiveness of NTFPs or not

$X_4$ = dummy variable indicating whether Availability of NTFPs (ANTFPs) is the reason for effectiveness of NTFPs or not

## Results and Discussion

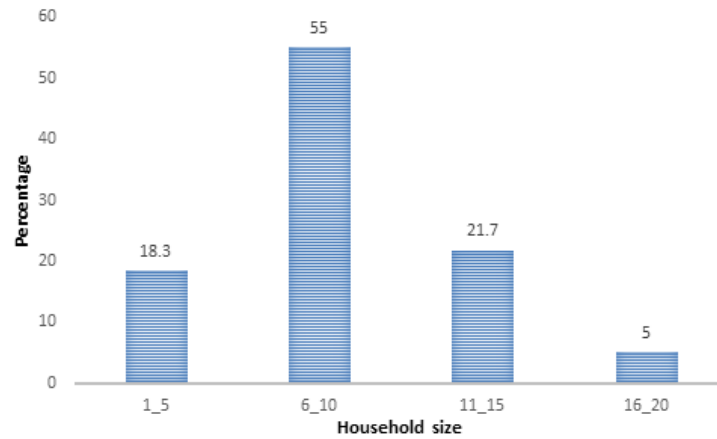
**Table 1: Demographic Characteristics of the Respondents**

Demographic characteristics	Frequency	Percentage
<b>Gender</b>		
Male	38	63.3
Female	22	36.7
<b>Total</b>	60	100
<b>Age</b>		
21-30	1	1.7
31-40	5	8.3
41-50	6	10.0
51-60	28	46.7
61-70	16	26.7
71-80	4	6.7
<b>Total</b>	60	100
<b>Marital status</b>		
Single	17	28.3
Married	36	60.0
Widowed	7	11.7
<b>Total</b>	60	100
<b>Educational status</b>		
No formal education	42	70.0
Primary education	17	28.3
Secondary education	1	1.7
<b>Total</b>	60	100

**Source:** Field survey, 2018

Information on gender indicated that 63.3% were male while 36.7% were female. The average age of the respondents was  $56.3 \pm 5.3$  years. The studies on marital status of the respondents showed that majority of them

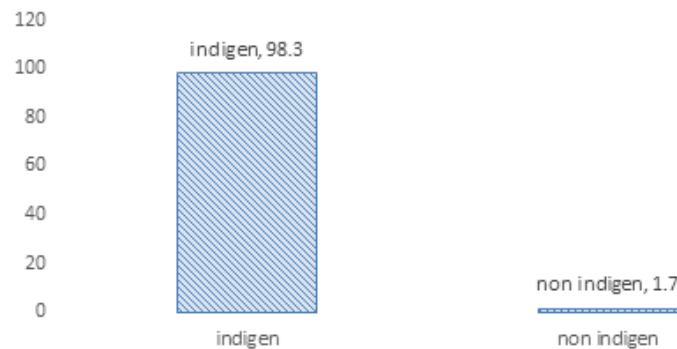
were married (60.0%). Information on the respondents' educational status revealed that majority of them had no formal education (70.0%) (Table 1)



**Figure 1:** Household Size of the Respondents

The distribution of household size of the respondents revealed that majority (55.0%) of the respondents had household size of between 6-10 while a few (5.0%) of the

respondents had a household size of 16-20 (Figure1). Furthermore, 98.0% of the respondents were indigene while 2% were non-indigene (Figure 2).



**Figure 2:** Nativity of the respondents

The occupational status of the respondents in the study area indicated that most (63.3%) of the respondents were involved in both collection of non-timber forest products/ farming while the least percentage (8.3%)

were recorded in those respondents that were both artisans and also involve in the collection of NTFPs (Table 2).

**Table 2:** Distribution of respondents by their occupation

Occupation	Freq.	Percentage
Farmer/ NTFP	38	63.3
Logger/NTFP	10	16.7
Artisan/NTFP	5	8.3
Forest products collector only	7	11.7
<b>Total</b>	<b>60</b>	<b>100</b>

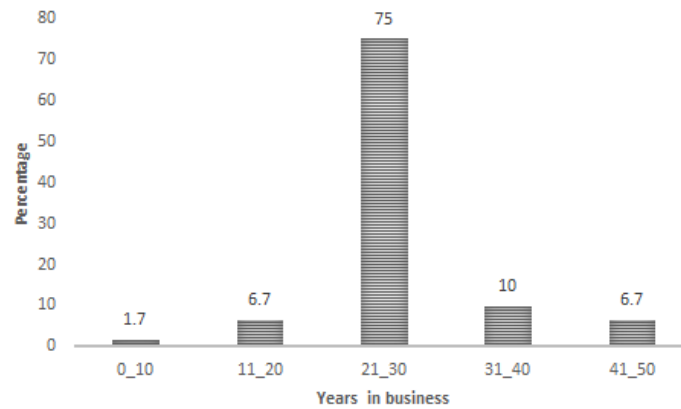
**Source:** Field survey, 2018

It was indicated that majority (75.0%) of the respondents have been in the business for 21-30 years while a few others (1.7%) have been in the business for about 0-10years (Figure 3). However, products collected from the

forest include; honey (16.7%), fuel wood (15.0%), bushmeat (11.7%), snail (8.3%) etc. (Table 3a). Table 3b showed the response of the respondents on the uses of the NTFPs collected in the study area, it was revealed

that majority (31.7%) of the respondents, generated income from the sales of the products. Other uses

include: food (26.7%), medicine (21.7%) and for shelter (20.0%).



**Figure 3:** Respondents years in NTFPs business

**Table 3(a):** NTFPs collected from the forest and their uses in the study area

Products	Frequency	Percentage
Honey	10	16.7
Snail	5	8.3
Mushroom	4	6.7
Forages	1	1.7
Bush meat	7	11.7
Nuts	1	1.7
Fruits	4	6.7
Fuel wood	9	15.0
Gums	1	1.7
Resins	1	1.7
Wrapping leaves	3	5.0
Shea butter	4	6.7
Palm wine	3	5.0
Vegetables	4	6.7
Sponge	2	3.3
Ropes	1	1.7
<b>Total</b>	<b>60</b>	<b>100</b>
<b>b. Uses of NTFPs</b>	Frequency	Percentage
Food	16	26.7
Shelter	12	20.0
Medicine	13	21.7
Income	19	31.7
<b>Total</b>	<b>60</b>	<b>100</b>

Source: Field Survey, 2018

The amount being generated by the respondents from the collected forest products indicated that the majority of the respondents (50.0%) earn between ₦300,000-

₦400,000 yearly while the least percentage (1.7%) of the individuals are respondents who earns about ₦600,000 (Table 4).

**Table 4:** Income generated from the NTFPs

Income(₦)	Frequency	Percentage
100,000- 199,000	20	33.3
200,000-299,000	3	5.0
300,000-399,000	30	50.0
400,000-499,000	1	1.7
500,000-599,000	2	3.3
600,000 above	1	1.7
No response	3	5.0
<b>Total</b>	<b>60</b>	<b>100</b>

Source: Field Survey, 2018

However, the chi-square analysis revealed that the presence or absence of NTFP depended on gender, age, household size and educational status which are highly significant at  $p < 0.05$  while the presence or absence of

NTFPs does not depend on the marital status of the respondents which was indicated as not significant at 5% confidence limit (Table 5).

**Table 5:** Chi-square analysis

Socio-economic characteristics	$X^2$	Df	Sig.
Gender	0.13	1	0.72*
Age	2.96	5	0.71*
Marital Status	1.05	1	0.36ns
Household Size	2.32	3	0.51*
Educational Status	0.91	2	0.64*

**Source:** Field Survey, 2018

Note: \* - significant at 0.05 level of significance; ns- not significant

Logistic regression model for effectiveness of NTFPs in sustainable livelihood

$$\text{ENTFPSL} = 36.86 + 0.00\text{YINTFPB} + 37.71\text{IGSNTPFs} + 0.01\text{ROP} + 3.10\text{ANTFPs}$$

$N = 60$ , Final loss =  $4.8 \times 10^{-7}$ , Chi-square (df, 4) = 47.121,  $P = 0.000$

Odds – ratio (unit change): Constant (36.86); YINTFPB (0.00); IGSNTPFs (37.71); ROP (0.01); ANTFPs (3.10)

Where,

ENTFPSL = Effectiveness of Non-Timber Forest Products in Sustainable Livelihood

YINTFPB = Years in NTFPs Business

IGSNTPFs = Income generated from sales of NTFPs

ROP = Rate of Patronage

ANTFPs = Availability of NTFPs

Model presented for effectiveness of NTFPs in sustainable livelihood gave overall significant fit to the data judging from  $X^2$  value that was significant at  $p < 0.05$ . Income generated (IGSNTPFs) was the most significant variable with odds- ratio of 37.71, this was followed by Availability of NTFPs with odds-ratio of 3.10 (Table 6).

**Table 6:** Binary nature for effectiveness of NTFPs in sustainable livelihood

Independent variable	Coefficient	Odds- ratio
Whether Years in NTFPs Business is the reason for effectiveness	0.000	0.000 <sup>ns</sup>
Whether Income generated from sales of NTFPs is the reason for effectiveness	37.711	37.713*
Whether Rate of Patronage (ROP) is the reason for effectiveness	0.013	0.0128 <sup>ns</sup>
Whether Availability of NTFPs is the reason for effectiveness	0.000	3.10*

Model  $X^2(\text{df}, 4) = 47.121$  Final loss =  $4.8 \times 10^{-7}$ ;  $p < 0.05$

\* = significant at  $p < 0.05$  ns = not significant at  $p < 0.05$

## Discussion

The high percentage of male involvement in farming and collection of NTFPs in the study area is an indication that male is traditionally the major provider of household income and farming is mostly a man's job. This therefore corroborated the findings of BMGF (2008) which stated that men are accorded much higher status than women and this has significant impact on access to resources and assignment of rights and duties. As regard the age distribution, this implies that greater percentage of the farmers in the study area are still very agile and full of

vigour and strength to carry out the laborious activities involved in agricultural production and collection of NTFPs. This supported the findings of Wuranti (2004) who stated that farmers in their active years are productive and can easily adopt agricultural innovations. Furthermore, the high percentage of the married is an indication that most of the respondents practice polygamy. This is in agreement with the findings of Babatunde, (2008) which stated that the farmers in rural communities are married. The implication of the household size showed that the rate of sustainability for larger household sizes will be low when compared to

respondents with fewer household sizes. This supported the findings of Igben (1988) that individuals in rural communities tends to have high percentage of household size which result in the household heads being put under pressure to produce more for his family and sale. The result on educational status is an indication that although education is an engine for development, it is not necessarily needed for the rural communities as their utmost concern is the easy, cheap and readily available farm practices and NTFPs gathering to sustain livelihood Obasi *et al.*, (2012).

### Important NTFPS present in the study area

In the study area, it was discovered that most of the respondents were farmers and NTFPs collectors. This implied that the respondents solely depend on the forest products and agricultural products to sustain their livelihood. This result confirmed the study of Osemeobo (1991) and Okafor (1998) who revealed that Nigerian rural economy is highly dependent on forest products to generate income and provide medical care. It was also revealed that a very high percentage of the respondent collect bush meats, snails, fuel wood and honey from the forest compared to the collection of other NTFPs. This is because bush meats and snails are delicacy and are cherished by most people in the rural communities and also the marketing these product is a worthwhile business. This confirmed the finding of Hoskin (1990) who stated that 80% of animal protein consumed by rural Nigerians in forest adjoining communities in varied forms (either cooked, boiled, sun dried, or smoked) came from bush meat or snails. Also, fuel wood is widely collected because it serves as their main source of fuel used in cooking. It was discovered in the study that most of the respondents collected the forest products for food, medicine, shelter and for income, although the percentage of individuals who collects products for shelter were few. This implies that respondents in the study area depend on both plants and animals of the forest as their source of food either directly or as supplement to other food products. It was also revealed that the NTFPs also serves as source of income generation to the respondents in the study area. This conform to the findings of Poffenberger (2006) who stated that NTFPs still remains an important source of income despite the globalization of the world's economy and the rise of industry.

### Effectiveness of NTFPs in sustainable livelihood

The study revealed that the respondents generate quite much per year to sustain their livelihood, especially those with minimum household size. This is an indication that the NTFPs collected in the area is able to alleviate poverty as all households in these communities were sustained through the collection of NTFPs from Osho forest reserve. This confirmed the findings of Arnold (1994) who stated that apart from the fact that majority of rural households in Nigeria depends on forest products to meet some part of their nutritional needs; very large number of these households generated income from the

sales of NTFPs. In addition, the logistic regression analysis imply that there was sufficient evidence that the estimated coefficient for the factor was not zero. This also implied that the regression parameters in the model were statistically significant. In other words, the higher the value of odds- ratios, the more likelihood the factors contributed to the effectiveness of NTFPs in sustaining livelihood. The implication was corroborated by Deeks (1996) that the logistic model provides information on the consequences of one variable on the other.

### Conclusion

NTFPs play important subsistence and safety net role in the rural economy as most of these products possess potential for sustainable livelihood. It has been of great importance to human, especially local communities where it serves as their means of food, income, and employment. The ability of non-timber forest products to directly enhance people's income is a significant contribution to poverty reduction in Nigeria. Therefore, integration of non-timber forest products into existing forest plantation should be introduced.

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