

# PARTICIPATION OF RURAL WOMEN IN EXPLOITATION OF NON-TIMBER FOREST PRODUCTS AS A MEANS OF SUSTAINABLE LIVELIHOOD IN SOUTHWESTERN NIGERIA

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**ABSTRACT.** The study examined the participation of rural women in exploitation of non-timber forest products (NTFPs), as a means of sustainable livelihood in Southwestern Nigeria. A number of 320 respondents were interviewed through pre-tested structured interview schedule in the four purposively selected forest reserves using a multistage sampling procedure. Data collected were presented using appropriate descriptive and inferential statistics. The mean age and mean year of experience in NTFPs exploitation were  $40.9 \pm 11.5$  years and  $16.4 \pm 3.4$  years, respectively. NTFPs participated by the respondents in the study area were palm fruits, vegetables, snails and fire wood among others. Actor categories identify in the NTFPs business chain were collectors, processors, traders among others. In addition, majority of the respondents show willingness to continue in NTFPs exploitation irrespective of alternative livelihood. The findings revealed that age ( $t=2.39$ ), number of

hours of collection per week ( $t=3.48$ ), years of experience of NTFPs exploitation ( $t= -3.88$ ) and external orientation ( $t=2.20$ ) of respondents significantly contributed to their participation in NTFPs exploitation. The study concludes that participation in NTFPs exploitation by the respondents was moderate. It was recommended that more enlightenment programmes should be organized by relevant stakeholders for the rural women to create awareness on the income generation opportunities that abound in the NTFPs activities.

**Keywords:** socioeconomic variables; tropical forest; income generating activities; forest resources.

## INTRODUCTION

In the last decade, there has been a growing recognition of adoption of livelihood approaches to development, especially in the rural areas of many

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developing countries (Akanni, 2013; Adisa and Alao, 2011; Ogunbanjo and Aina, 2013). Research efforts at alleviating rural poverty in developing countries have identified what communities can do to improve rural livelihoods in a sustainable manner. One of such ways, which has begun to receive more attention globally, is utilization of Non-Timber Forest Products (NTFPs) (Bisong and Ajake, 2001; Dovie, 2003; Shackleton and Shackleton, 2004; Jimoh *et al.*, 2012, Angoni, 2015). Non-timber forest products (NTFPs) refer to natural resources collected from forests, apart from sawn timber, and these include other wooded land and trees outside forest reserves (FAO, 2012). There are several types of NTFPs for exploitation in Nigeria and these include a wide range of edibles and non-edibles, such as fruits, seeds, leaves, nuts, bush meat, roots, tubers, fibres, resins, latex, sticks, ropes, and construction materials like bamboos and rattans among others (Adisa and Alao, 2011; Akanni, 2013; Sulaimon, 2016). Exploitation of such natural resources increases the range of income generating options for rural women, especially in developing countries, including Nigeria (Amusa *et al.*, 2012; Fernande and Ghislaine, 2014).

Traditionally, households, especially rural women living around forest areas collect various NTFPs in Nigeria and such households are, therefore, dependent on the continued growth of forest products. Collection and selling of NTFPs is therefore not only an important source of income

by increasing their purchasing power, but also provides medicine and contributes to food security in the household (Chikamai and Kagombe, 2002; Jimoh *et al.*, 2012). Rural women have vast indigenous knowledge on the medicinal, nutritional, spiritual and economic uses of a wide range of NTFPs. Hence, they are increasingly taking advantage of such products because of the immense contributions to their subsistence, daily life, their welfare and in general the development of rural economies (Ellis and Allison 2004; Olaniyi *et al.*, 2013).

Exploitation of NTFPs is usually less destructive than timber harvesting, and offers good opportunities for improving livelihoods, as NTFPs are generally easily accessible to the rural poor and little capital investment is needed for collection, processing and marketing (Ellis and Allison, 2004). Consequently, trading NTFPs potentially offers a means of concurrently achieving both conservation and development goals (Olaniyi *et al.*, 2013; Suleiman *et al.*, 2017).

During the 1960s and 1979s, forest products earned large amounts of foreign exchange and the sector was ranked highest in employment generation in Nigeria (National Bureau of Statistics, 2014). NTFPs are rapidly growing and as such the importance goes beyond meeting basic needs of food. Despite the importance of NTFPs for rural livelihoods, as well as its good potentials for socio-economic

development of Nigeria, the sector has generally been overlooked by policy makers. Until in the last decade, forestry Departments have not paid much attention to the potentials of NTFPs resources (Biswas and Chowdhury, 2007; Vantomme *et al.*, 2002). The available literature on exploitation of NTFPs have focused on prevalence and collection (Jimoh *et al.*, 2012; Jimoh and Haruna, 2007; Aiyelaja and Ajewole, 2006; Suleiman *et al.*, 2017) and conservation strategies of forest products (Jimoh *et al.*, 2012), as well as the importance of NTFPs (Aiyelaja and Ajewole, 2006). Evidence is scarce on the level of participation of rural women in the exploitation of NTFPs, as a means of livelihood in the study area. In the light of the above, the study described the socio-economic characteristics of the respondent: identified actor categories in NTFPs exploitation along business chain; examined the willingness of respondents to continue the exploitation of NTFPs and determined respondents' level of participation in the exploitation of NTFPs.

### **Hypothesis**

There is no significant relationship between socioeconomic variables of respondents and their participation in exploitation of NTFPs.

## **MATERIAL AND METHODS**

The study was carried out between May 2018 and December 2018 in the forest communities in the selected States

in Southwestern Nigeria. The population for the study comprises all rural women living, who engage in the collection of NTFPs. The major forest reserves are Omo in Ogun State, Shasha in Osun State and Oluwa and Akure-Ofosu in Ondo State. Omo forest reserve (OFR) is located between latitudes 6°35' - 7°05'N and longitudes 4°19' - 4°40'E in the Ijebu East and North Local Government Areas of Ogun State, Southwestern Nigeria. The Reserve covers an area of about 130,500 ha forming common boundaries with Osun, Ago-Owu and Shasha Forest Reserves in Osun State and Oluwa Forest Reserve in Ondo State (Ogunjemite and Olaniyi, 2012). The study design was cross-sectional in nature and utilized multistage sampling procedure in selecting the sample.

At first stage, three out of six States in Southwestern Nigeria were purposively selected based on the size of the forest reserves. These States were Ogun, Osun and Ondo. In all, there are a total of 37 forest reserves in the three selected States (9 in Ogun, 11 in Osun and 17 in Ondo States). Each of the forests has some degree of encroachment. At the second stage, 10% of all the 37 forest reserves were selected and this translates to four forest reserves. In selecting the four forest reserves, the largest in each of the selected States was purposively selected. To make the selection to be proportional to the number in each State, and on the basis of forest reserve size, Oluwa and Akure-Ofosu were selected in Ondo State, Omo and Shasha Forest Reserves were selected from Ogun and Osun States, respectively. At the third stage 20% of the total number of communities in the forest reserves was randomly selected making a total of 32 communities across the three States. At the last stage, a total of 320 respondents

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were randomly selected for interview. Validated and pre-tested interview schedule was used to collect quantitative data while focus group discussion guide was used to elicit qualitative information from the respondents. Data management and analysis were carried out using Stata 14. Descriptive statistics, such as frequency counts, percentages, means and standard deviation, were used to summarise the data while regression analysis.

The dependent variable is participation in exploitation of NTFPs. In order to capture this variable, respondents were asked to rate their extent of participation in each of the forest produce/products on a 4-point Likert type scale - Always (3), Sometimes (2), Rarely (1) and Never (0).

The mean plus or minus one standard deviation was used to classify the participation scores into three levels: low, moderate and high, as used by Famakinwa (2017) and Bamiwuye (2014). Level of participation was classified as low when the total participation score fell below the difference between the mean score and one unit of standard deviation. Participation in exploitation was at the high level when score was above the sum of the mean score and one unit of standard deviation, while at the medium level, participation score fell in between the two extremes (plus or minus one unit of standard deviation).

## RESULTS AND DISCUSSION

### Socioeconomic characteristics of the respondents

Results in *Table 1* show that the mean age of the respondents was  $40.9 \pm 11.5$  years, suggesting that substantial proportion of the

respondents were in their middle ages, this indicates that many of the respondents were still active and agile; are expected to be found in productive enterprise that will contribute to livelihood; in addition, the mean years of experience of women who have been involved in the NTFP business was  $13.5 \pm 4.6$  years. This implies that the NTFPs exploitation activities in the study area is stable, sustainable and dependable since these women have been in this business for a long time without quitting and that they have realized the great potentials of NTFPs as a means of livelihood in recent yrs. This is in agreement with the work of Raufu *et al.* (2012) in a study of economic analysis of rural women income from NTFPs in Ife South Local Government Area of Osun State, which stated that rural women have found NTFPs as alternative source of livelihood.

Furthermore, most (82.8%) of the respondents claimed to be involved on part time basis, indicating that majority of the respondents have other means of survival aside NTFPs exploitation and that they engaged in NTFPs, as a means of augmenting their major source of livelihood. Majority (71.6%) got their collection from cultivated forests, this could be as a results of danger and risk involved in natural forest exploitation. Also, majority (91.2%) of the respondents had travelled out their communities in the last one year, indicating high external orientation, as they will be exposed to more

information on how are things are done elsewhere with respect to NTFPs. The mean number of collection hrs spent by the respondents in any given week was  $12.47 \pm 2.07$  hours on the NTFP business. More than half of the respondents (52.2%)

spent 10 hours or less in any given week to source for NTFPs. The implication of the finding is that women in the rural area dedicate bulk of their time on NTFP business for livelihood purpose.

**Table 1 - Distribution of respondents by experience with exploitation of NTFPs (n=320)**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age (years)</b>		
Below 25		
25-34		
35-44		
45 and above		
<i>Mean and standard deviation</i>	<i>40.9± 11.5 years</i>	
<b>Years of experience in exploiting NTFPs</b>		
Less than 10 yrs	112	35.0
10-19 years	110	34.4
20 or more	98	30.6
<i>Mean ± Standard deviation</i>	<i>13.5± 4.6 years</i>	
<b>Extent of exploitation of NTFPs</b>		
Full time	44	13.8
Part time	265	82.8
Seasonal/Contract	11	3.4
<b>Sources of NTFP collection</b>		
Natural forest	91	28.4
Cultivated forest	229	71.6
<b>External orientation</b>		
Never travelled	294	91.9
Travelled	26	8.1
<b>Number of collection hours per week (hrs)</b>		
10 or below	167	52.2
11-19	75	23.4
20-29	46	14.4
30 or more	32	10.0
<i>Mean ± Standard deviation</i>	<i>12.47±2.07</i>	

Source: Field survey, 2018

### **Actor categories in the NTFP business chain**

Result in *Fig. 1* identified six categories of actors in the NTFP

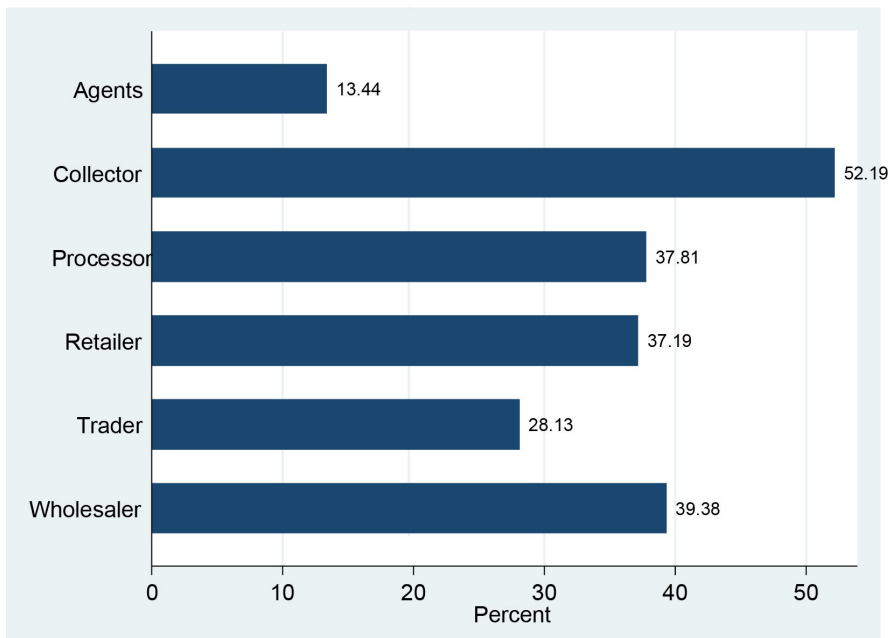
business chain. These actors were the collectors, the processors, the agents and the traders. Others were the wholesalers and the retailers.

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The collectors are those who go and collect NTFP from forest; the processors are those who process/produce the NTFP based products. The agents search out and/or organize the NTFP supply for other people in the NTFP value chain; they do not buy and sell, but work on commission or contract for a trader or other actor in the business chain. The traders both buy and sell NTFP, but don't sell directly to consumers.

The wholesalers sell NTFP to retailer/directly to consumers in bulk volume, while the retailers sell directly to the consumers. Results in *Fig. 1* show that the collectors constitute more than half of the respondents in the actor categories

comprising 52.2% in the NTFP business chain. Closely following the collectors in this chain were the wholesalers (39.4%) and those who processed NTFPs for sale (37.8%). While 37.2% were retailers in the primary actor categories, less than one-third (28.1%) of the women were traders and the least in the category of actors in the business chain were the agents (13.4%). This distribution of actor categories in the NTFP business chain further buttress the fact that rural women can engage in NTFPs in various ways to enhance their income. According to Ingram (2009), the relative income generated by NTFPs can differ greatly among actors in the chain.



Source: Field survey, 2018

**Figure 1 - Distribution of respondents by primary actor categories in the NTFP business chain**

### Participation in the exploitation of NTFPs

Results in *Table 2* showed that ranked mean in descending order of participation in NTFPs. Palm fruit (mean = 2.667) ranked highest among NTFPs collected by the respondents. This is closely followed by Kolanut (mean = 2.359), Bitter Cola (mean = 1.597), Vegetable (mean = 1.597), Snail (mean = 1.581), Firewood (mean = 1.494), Bushmeat (mean = 1.447) in that order. This is because they are readily available, easy to get cheap and their benefits. For instance, Palm fruits, vegetables and snail are good sources of food this corroborate the finding of Vongkhamsao (2007), which established that NTFPs serve as important safety net or coping strategies for the rural poor in time of food scarcity. Also, Kolanut and Bitter Cola have high medicinal value, as indicated by some respondents in focus group discussion: "kolanut and bitter cola are used as stimulants and enhances good vision". This in line with the study of Andel (2006), who reported that majority of rural dwellers in developing countries use wild plants to meet some of their health and nutritional needs.

The five least gathered NTFPs in the study area were spring onion (*Alubosa elewe*), Asofeye (*Rauvolla vomitora*), shea butter, Isin and coffee. This result suggests that rural women are involved at the different levels of exploiting NTFPs particularly, those that offer great economic benefit.

### Level of participation in NTFP exploitation

Results in *Fig. 2* show the overall level of participation of the women in the exploitation of NTFPs in the forest communities. About 38.4% of the women have low level of participation in the exploitation of NTFPs, 31.9% moderately participate in the NTFP business, while 29.7% of the respondents have high participation level. This shows that at least 61.6% of the respondents were either moderately or highly involved in NTFPs as livelihood choice. This finding suggested that rural women participate at different levels of gathering NTFPs in the study locations.

Although not classified in terms of level of participation, Dishan *et al.* (2011), in a study of women's participation in non-timber forest products utilization in support zones of Gashaka Gumti national park, showed that 84% of women were involved in NTFP business.

Adisa and Alao (2011), in similar study among youth in Southwestern Nigeria, revealed that as many as 85% and 75.8% of the respondents always exploit *Ocimum basilicum* (Efirin) and *Xylopia aethiopica* (Eeru). Thus NTFPs exploitation has positive influence on livelihood of the rural women in the area. This is in agreement with the study of Carr and Hartl (2008) that Non-Timber Forest Products is a sector that offers great promise for women, therefore, for any poverty-reduction programme in Nigeria to succeed. Women should be

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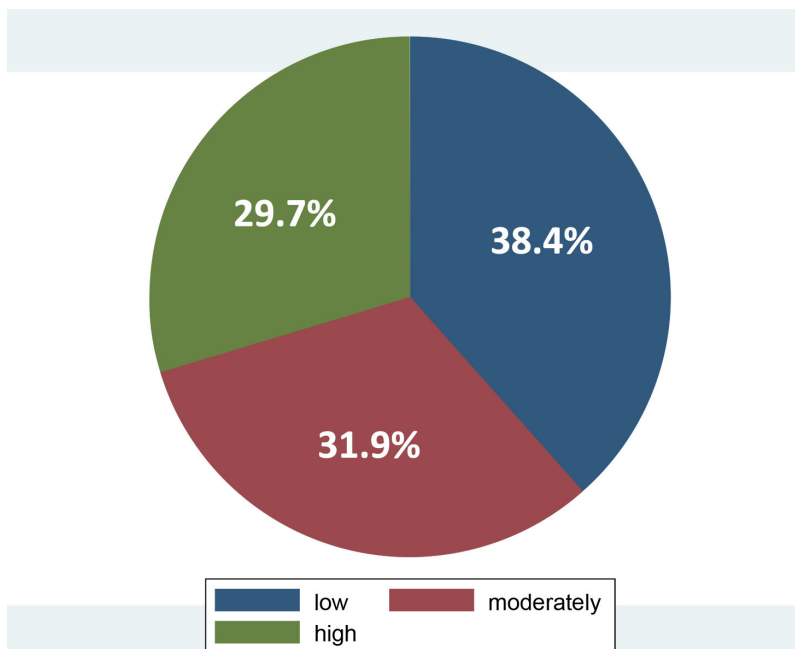
given greater opportunities to participate in exploitation of NTFP products so as to enhance their livelihood.

**Table 2 - Distribution of respondents by their participation in gathering of NTFPs**

NTFPs	Mean score	Rank
Palm fruit	2.669	1
Kolanut	2.359	2
Bitter cola	1.603	3
Vegetable	1.597	4
Snail	1.581	5
Firewood	1.494	6
Bush meat	1.447	7
Mango/Orange fruit	1.447	7
Apon	1.434	8
Kola (obi abata)	1.400	9
Walnut	1.388	10
Coconut	1.359	11
Agbalumo	1.347	12
Palm wine	1.331	13
Alligator pepper	1.272	14
Herbs	1.256	15
Bush mango	1.247	16
Chewing stick	1.244	17
Bamboo	1.228	18
Ginger	1.213	19
Bread fruit	1.203	20
Locust bean	1.191	21
Mushroom	1.181	22
Pearl	1.175	23
Scent plant	1.166	24
Raphia palm	1.163	25
Breadfruit	1.153	26
African guinea pepper	1.153	26
Cheese	0.138	27
Ropes	0.134	28
Black pepper	0.122	29
Garden egg	0.122	29
Gum	0.119	30
Luffa spp	0.119	30
<i>Tetrapleura tetraptera</i>	0.106	31
Honey	0.100	32
Isin	0.097	33
Coffee	0.078	34
Spring onion	0.063	35
Shear butter	0.059	36
<i>Rauvolla vomitora</i>	0.050	37

Source: Field Survey, 2018





Mean= 62.2, SD= 12.1, Low (score 50 or below); n=126, Moderate (score between 51 and 73); n=88, High (score 74 and above); n=106; Source: Field survey, 2018

**Figure 2 - Level of participation in the exploitation of NTFPs (n=320)**

### **Willingness to continue in the exploitation of NTFPs**

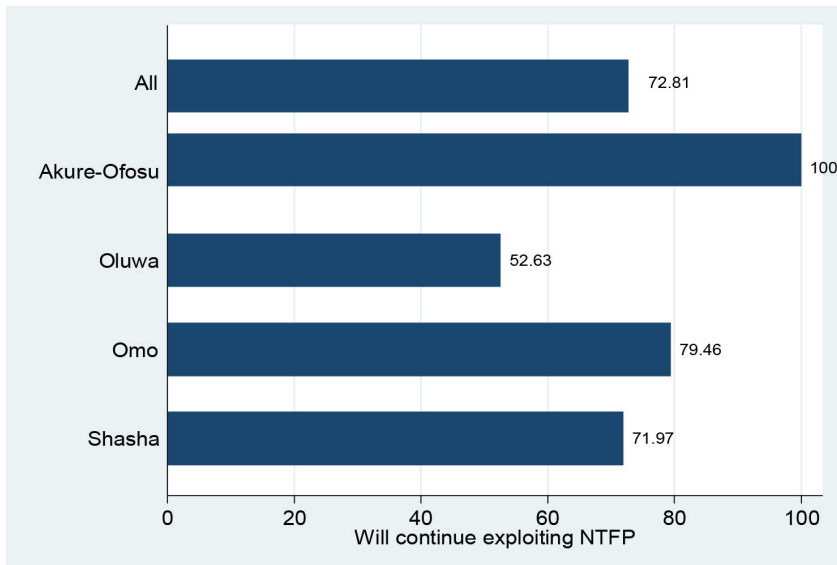
In order to further gauge the importance of NTFPs as a source of livelihood, respondents were asked whether or not they will continue to engage in NTFP business if there is an alternative source of income. *Fig. 3* shows percentage distribution of respondents who will continue to exploit NTFPs, even if there is an alternative source of income according to forest zone.

All the respondents in Akure-Ofosu indicated their willingness to continue with their NTFP trade, even if they have alternative source of livelihood, compared with slightly

more than half (52.6%) of respondents in Oluwa forest zone, and at least 79.5% and 72.0% of those in Omo and Shasha forests.

Overall, 72.8% of the respondents said they will continue to engage in NTFP business, even when they are provided with other means of livelihood. This implies that majority of the respondents see exploitation of NTFP products as sustainable source of livelihood due to benefits they derive from their exploitation.

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Source: Field survey, 2018

**Figure 3 - Percentage distribution of respondents that will continue to exploit NTFP when there is other alternative**

### **Regression analysis of the relationship between socioeconomic variables and participation in exploitation of NTFPs**

Results in *Table 3* show that overall, socioeconomic variables are significantly related to participation in exploitation of NTFPs. This is because the observed probability value associated with F-statistic of 8.72 is small [ $F(5, 314) = 8.72$ ;  $p < 0.01$ ]. Specifically, age of respondents (linearized) ( $t = -2.39$ ;  $p < 0.05$ ), numbers of hours of collecting NTFPs per week ( $t = 3.48$ ;  $p < 0.01$ ), years of experience ( $t = -3.88$ ;  $p < 0.01$ ) and external orientation ( $t = 2.20$ ;  $p < 0.05$ ) are significant predictors of participation in exploitation of NTFPs. In terms of relative importance of each of the independent

variables on participation in exploitation of NTFPs as measured by the Beta coefficient, age of respondents is the most important predictor of participation in exploitation (Beta coefficient = -0.926).

The inverse relationship between age of respondents and participation in exploitation of NTFPs implies that lower the age of respondents is associated with higher participation in the exploitation of NTFPs. This suggests that younger respondents tend to be more involved in the exploitation of NTFPs than the older respondents. Next to age of respondents is the respondents' years of experience, number of hrs spent on collection of NTFPs and external orientation. Years of experience is also inversely related to participation

in the exploitation of NTFPs, as depicted by Beta coefficient of -0.220. This implies that the higher the number of years involved in exploitation, the lower the participation in exploitation of NTFPs and *vice versa*.

External orientation is positively related to participation in NTFPs, which suggests that the higher the frequency of travelling outside the community in relation to NTFP

business, the higher the participation in NTFP exploitation. Similarly, the higher the number of hours spent on NTFP collection, the higher the participation in NTFP exploitation.

In all, the socioeconomic variables in the regression equation jointly explained at least 53% of the total variations in participation in exploitation of NTFPs, as depicted by the multiple coefficient of determination (R-squared=53.15).

**Table 3 - Regression analysis of the relationship between personal and socioeconomic variables and participation in exploitation of NTFPs**

Variable	Beta coefficient	T	p-value
Age of respondent	-0.926	-2.39	0.018*
Number of dependants	-0.004	-0.06	0.951
Number of hours of collecting NTFP per week	0.189	3.48	0.001**
Number of children	0.032	0.51	0.614
Years of experience	-0.220	-3.88	0.000**
External orientation	0.121	2.20	0.029*
Constant		3.72	0.000**

\*Significant at  $p < 0.05$ ; \*\*significant at  $p < 0.01$ ; Number of observation=320; R=0.7291; R-squared=0.5315; Adjusted R-squared=0.1079, F (5, 314) =8.72);  $p = 0.000$ ;  
Source: Calculated from Field survey, 2018

### CONCLUSIONS

Based on the findings of this study, it was concluded that palm fruits, kolanut, bitter cola, vegetables, snails and fire wood ranked high among the NTFPs collected by the rural women in the study area. Also, participation in collection of NTFPs was moderate among the respondents. It is recommended that there is need for concerted efforts to encourage rural women for greater participation in exploiting NTFPs, as a means of

livelihood because of varieties of benefits attached to it. Furthermore, more enlightenment programmes should be organized by the government for the rural women for awareness creation on the income generation opportunities that abound in the NTFPs sector.

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