RESEARCH ARTICLE

CONTRIBUTION OF NON-TIMBER FOREST PRODUCTS (NTFPs) UTILIZATION TO THE WELL-BEING OF WOMEN: EVIDENCE FROM NIGERIA

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ABSTRACT

This paper assessed the contribution of NTFPs to the well-being of women living in Ewekoro Local Government Area of Ogun State, Nigeria. Logistic regression and Ordered Logistic regression models were used to assess the contribution of NTFPs to the well-being of 120 women in the study area. The mean age, monthly household income, distance of homestead to forest and homestead to the nearest market were 47 years, \$144.4, 2.0km and 1.8km respectively while 70.5% of the women used NTFPs as food. The housing dimension had the highest index of 0.537 while the overall index of 0.491 indicates a moderate level of well-being for respondents. NTFPs utilization significantly increased with household income and primary occupation but decreased with increasing age, level of education, distance from homestead to forests, distance to the nearest market and access to credit. Women's well-being increased with utilization of NFTPs, being married, distance from homestead to the nearest market and access to credit but decreased with the distance of homestead to the forest, association membership and income. It is recommended that agricultural advisory and extension services in terms of NTFPs collection and utilization be provided; unconditional cash transfers and other consumption smoothening aids should be provided; necessary road networks should be rehabilitated or constructed, this will enhance NTFPs utilization; credit access should be provided for rural women, and rural women should be mobilized to form and/or join associations. Given that, NTFPs utilization contributes to the well-being of women, policies and programs that will enhance women's utilization of NTFPs should be put in place.

Keywords: Non-timber forest products, Well-being index, Utilization, Women, Logistic regression model

INTRODUCTION
Issues affecting women and their well-being have been accorded increasing attention because women are still much more likely than men to be poor (UNFPA 2010), despite many international agreements affirming their human rights. United Nations estimates indicate that up to 70% of the world's poor are women, and in developing countries they constitute the majority of the labour force, playing key roles in managing community resources and helping to improve food security and protecting the environment (UNEP 2006; UN WomenWatch 2009). Alleviating poverty and particularly that of women in the rural areas is therefore of central policy-making concern to people and governments all over the world.

The idea of a good life makes well-being a relative concept defined according to material circumstances as well as individual preferences and social and cultural contexts. This has resulted in the shift from money-metric measures of well-being to subjective well-being that takes into account subjective aspects such as the perception of satisfaction, happiness, security and freedom (Kingdon and Knight 2006; Costanza *et al*. 2007). Subjective well-being refers to the well-being as declared by the person. It can be treated as a self-reported measure of utility and has been used as "an umbrella term" which describes how people feel about their lives in the social sciences (Dolan *et al*. 2008; Diener *et al*. 1999). It is measured from a subjective well-being/happiness approach, which is common in the relevant literature (Rojas 2012).

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Furthermore, subjective well-being approaches have been used to measure the perceived poverty line, thus complementing or replacing income-based approaches (Kingdon and Knight 2006; Pradhan and Ravallion 2000; Rojas 2008; Guardiola and Garcia-Munoz 2012).

One way towards the enhancement of women's well-being is the utilization of forest products, which is central to poverty alleviation of rural women as forests provide products for different uses at households and industrial levels (Appiah 2009). In recent years, the role of forest resources in household economies and rural development in developing countries has received increasing attention (Angelsen *et al*. 2014).

A large proportion of the rural population earn their living from the collection and sales of non-timber forest products (NTFPs). They also meet some parts of their construction, storage, agricultural, energy, nutritional and medicinal needs from forests.(Agbogidi and Okonta 2003). NTFP collection and marketing is a traditional and cultural activity in many regions of the world. Currently, about 75% of poor people in the world depend on NTFPs for their subsistence while 80% of rural populations living around forests in developing countries use NTFPs daily (Noubissie *et al*. 2008). NTFPs have also significantly met the health and nutritional needs as well as the income of over 80% of women in the developing world (ILO 2002).

The world is grappling with a myriad of problems, including deepening poverty in many countries; especially forest-dependent communities. These communities are mostly located in remote areas where many services are limited. Consequently, these communities find themselves heavily reliant on the natural resources within their proximity. It is estimated that about 1.6 billion people worldwide depend on forests for food, fuel, shelter, and income (Ban Ki Moon, 2015). Therefore, forest resources, particularly NTFPs have been established as an essential source of livelihood for the majority of forest-dependent communities (Suleiman *et al*. 2017). However,

despite the importance of NTFPs in sustaining livelihood and poverty, smoothening in rural communities, especially those living on the forest fringes of Nigeria, they are highly depleted and poorly conserved (Ros-Tonen 2012). Poverty is more widespread in the rural areas where the major sources of income are farming and harvesting of forest products. Many studies have focused more on the utilization of NTFPs as well as the level of participation and economic empowerment of women through NTFPs, amongst others, notable of such studies are Suleiman *et al*. (2017) and Adedayo *et al*. (2010) in Nigeria; Mainga (2016) in Nairobi; Laaribya and Alaoui (2017) in Morocco and Rahut *et al*. (2016) in Bhutan. However, there is a scarcity of empirical information on how NTFPs have contributed to the well-being of women in rural areas, although they are the main users of NTFPs. Thus, for a sustainable enhancement of well-being, empirical studies on the utilization of NTFPs and their contribution to the well-being of women are important contemporary policy requirements. Arising from the foregoing, the objective of this study is to examine the utilization of NTFPs and their contribution to the well-being of women in Ewekoro Local Government Area of Ogun State. This study has implications for change in policies directed towards enhanced well-being of women, improved conservation practices of NTFPs and community development with a view on sustainability.

MATERIALS AND METHODS
Study area
The study was conducted in Ewekoro Local Government Area of Ogun State. It lies between 6°56'N and 3°13'E and has a total area of 594 square kilometers. With a population of 55,156 people, indigenous dwellers of this local government area engage primarily in farming, forest management and trading activities. It is located in the moderately hot, humid tropical climatic zone of Southwestern Nigeria. There are two distinct seasons in this area: the rainy season which lasts from March/April to October/November and the dry season which lasts for the rest of the year, October/November to

March/April. The temperature is relatively high during the dry season, while low temperatures are experienced during the rain especially between July and August when the temperature could be as low as 24°C. There is also an adequate arable land space that supports the production of agricultural products like sugarcane, cassava, kolanut, palm kernel, yam, cocoa, rubber, coffee and a variety of fruits and vegetables as well as fish farming, piggery, poultry and livestock production.

The study area is a settlement of fringe communities where people are allowed to freely collect NTFPs.

Data collection
For equal representation, five out of the ten wards in the study area were randomly selected at 30 respondents per ward to give a total of 150 respondents. However, one hundred and twenty (120) women gave consistent responses and were included in the analysis. The survey included questions about the socio-economic characteristics, availability and utilization of NTFPs and dimensions of well-being (health, autonomy, education and housing).

Analytical techniques
The dimensions selected for measuring household well-being were measured into different scales, as such, indices were created for each of the dimensions and these were aggregated into a composite index following the method adopted by Gautam and Anderson (2016). The numbers of indicators created for each of these were five for health, autonomy and education while housing had nine. To obtain the index for each dimension, the average of the weights of all indicators was derived. The composite well-being index was then estimated by averaging all the dimension weights. The composite well-being index ranged from 0 to 1. A score around 0 indicates a low level of well-being while a score around the value of 1 indicates a high level of well-being.

Logistic Regression Model.

The logistic regression model was used to identify the factors influencing the utilization of NTFPs by women. The Logistic Regression Model describes the relationship between categorical response and a set of predictor variables. The categorical dependent variable can be binary, ordinal or nominal. Logit Regression is useful in that it can take input with any value from negative infinity to positive infinity. This study used a binary Logit regression model as the response variable is dichotomous. The general model is stated explicitly in equations 1 to 8 as follows:

$$P(Y_{i=m}) = \frac{1}{1 + e^{-z}} \ldots \ldots \ldots \ldots eqn\ 1$$

$$\frac{P}{1-P} = e^{z} \ldots \ldots \ldots \ldots eqn\ 2$$

P is the probability of occurrence of the dependent variable Yi equal to a certain value,

m, z is the predictor variable and can be said to be a linear combination of the c on version factors,

e is the base of natural logarithm and

P is the estimated probability of occurrence of one point of the dependent variable. From eqn 2,

$$1 - P = 1 - \frac{1}{1+e^{-z}} \ldots \ldots \ldots eqn\ 3$$

1-P is the probability of failure.

Given that,

$$Y = \frac{P}{1-P} \ldots \ldots \ldots \ldots eqn\ 4$$

Then,

$$Y = e^{z} = \exp(z) \ldots \ldots \ldots \ldots eqn\ 5$$

$Y = \frac{P}{1-P}$, represents the odd of the evaluative factors occurring for each explicative factor.

Assuming Z is a linear function of a set of predictor variables, then,

$$Z = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i}$$
$$+ \cdots .. + \beta_n X_{ni} \ldots \ldots \ldots \ldots eqn\ 6$$

If equation (6), then;

$$Y = e^{\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \cdots + \beta_n X_{ni}} \ldots eqn\ 7$$

The logit regression model is given as:

$$Y = \exp\left(\begin{matrix} \beta_0 + \beta_1 \Sigma X_{1i} + \beta_2 \Sigma X_{2i} \\ + \beta_3 \Sigma X_{3i} + \cdots .. + \beta_n \Sigma X_{ni} \end{matrix} \right) \ldots eqn\ 8$$

The Ordered Logistic regression model was used to examine the effect of NTFPs utilization on the well-being of women in the study area. The model, based on a continuous latent variable was employed to investigate and determine the effect of socioeconomic variables such as education, age, marital status, income, distance to forest, distance to market, access to credit and primary occupation (definition of model variables is presented in Table 1) on the well-being of women and the impact of each variable on the likelihood of individuals to be placed in one of the three well-being groups which are high, medium and low. The Ordered Logistic Regression model is stated explicitly as follows:

$$y_i^* = \beta_1 X_i + \varepsilon_i \quad \infty < y_i < -\infty \quad \ldots eqn\ 9$$

where

y_i^* : well-being group/category (low, medium, high)

β_1: Vector of parameters to be estimated

X_i: Observed vector of non-random explanatory variable which shows the characteristic of ith person

ε_i :Residual error which is logistically distributed.

Since y_i^* is a latent variable, standard regression techniques are not applicable to estimate the sample size.

If y_i is considered as a discrete and observable variable which shows different levels of people's well-being, the relation between latent variable y_i^* and observable variable y_i is obtained from ordered Logit model as follows:

$$y_i = 1 \ if \ -\infty \leq y_i^* < \mu_1 ,$$
$$i = 1 \ldots n \ldots eqn\ 10$$

$$y_i = 2 \ if \ -\infty \leq y_i^* < \mu_2 ,$$
$$i = 1 \ldots n \ldots eqn\ 11$$

$$y_i = 3 \ if \ -\infty \leq y_i^* < \mu_3 ,$$
$$i = 1 \ldots n \ldots eqn\ 12$$

$$y_i = J \ if \ \mu_{J-1} \leq y_i^* < +\infty,$$
$$i = 1 \ldots n \ldots eqn\ 13$$

In which "n" is the value for the sample size, "μ" and "s" are the thresholds that define observed discrete answers and should be estimated.

The probability of $y_i = J$ should be calculated by the following relation:

$$Pr(y_i = J) = Pr(y_i \geq \mu_{J-1}) =$$
$$Pr(\varepsilon_i \geq \mu_{n-1} - \beta X_i) = F(\beta X_i - \mu_{J-1}) \ldots eqn\ 14$$

However, while most studies have attempted to link the contribution of NTFPs' utilization to the well-being of farmers, this study is unique in that it provides a link between the availability and utilization of NTFPs and the four dimensions of the well-being of women in Ewekoro LGA, Nigeria.

RESULTS AND DISCUSSION
Socio-economic characteristics of respondents

Table 2 presents the socio-economic characteristics of the respondents. The majority of the women were between 40 and 49 years while only 9.2% were above 60 years. However, the mean age was 47±11.1 years. More than four-fifths (80.8%) of the respondents were married and 77.5% of the respondents had at least one form of formal education or the other since only about one-fifths had no formal education. The mean household size was approximately 6±1 members with 69.2% having between 6 and

Table 2: Socio-economic characteristics of the respondents

Variable	Frequency	Percentage	Mean	Std. Dev.
Age				
0-29	21	17.5	47.0	11.1
30-39	33	27.5		
40-49	35	29.2		
50-59	20	16.7		
>60	11	9.2		
Marital status				
Single	2	11.7		
Married	97	80.8		
Divorced/Separated	14	11.7		
Widowed	7	5.8		
Educational status				
No formal Education	27	22.5		
Primary	50	41.7		
Secondary	25	20.8		
Tertiary	18	15.0		
Household size (number)				
1-5	37	30.8	6.0	1.0
6 -10	83	69.2		
Primary occupation				
Farming	50	41.7		
Trading	31	25.8		
Artisan	3	2.5		
Private business	22	18.3		
Government Job	14	11.7		
Access to credit				
Yes	71	59.2		
No	49	40.8		
Source of credit				
Friends/ Relatives	19	26.8		
Cooperatives	33	46.5		
Money Lenders	1	1.4		
Microfinance Banks	18	25.4		
Association Membership				
Yes	94	78.3		
No	26	21.7		
Type of Association				
Cooperatives	23	24.5		
Religious Groups	29	30.9		
Occupational groups	36	38.3		
Cultural Groups	4	4.3		
Gender-based organizations	2	2.1		

Table 2 continued...

Variable	Frequency	Percentage	Mean	Std. Dev.
Household Monthly Income (USD)				
<88.32	10	8.3	144.4	70.6
88.32-166.64	62	51.7		
166.65-249.96,000	20	16.7		
>249.96	28	23.3		
Distance from Homestead to Forest (Km)				
<2.01	64	56.6	2.0	1.8
2.01-4.00	23	20.4		
4.01-6.00	22	19.5		
Distance to Market (Km)				
<2.01	88	73.3	1.8	1.4
2.01-4.00	22	18.3		
4.01-6.00	10	8.3		
Collection of NTFPs				
Yes	71	59.2		
No	49	40.8		
Utilization of NTFP Products				
Yes	88	73.3		
No	32	26.7		
NTFPs mainly used				
Firewood	52	59.1		
Medicinal plants	20	22.7		
Honey	4	4.6		
Charcoal	8	9.1		
Mushroom	2	2.3		
Bamboo products	2	2.3		
Extent of Use of NTFPs				
Daily	63	71.6		
Weekly	16	18.2		
Monthly	6	6.8		
Occasionally	3	3.4		
Source of Main NTFPs used				
Forest	54	61.3		
Farm	5	5.7		
Market	27	30.7		
Gifts	2	2.3		

Source: Field Survey

10 members per household.

In terms of occupation, 41.7% were primarily engaged in farming while 59.2% had access to credit and the main sources of credit were cooperatives, friends/relatives and microfinance banks. In addition, 78.3% of the respondents belonged to an association that included occupational groups, religious groups, cooperatives, cultural groups and gender-based organizations. The mean monthly household income was $144.49±70.6 while 51.7% reported monthly incomes between $83.32 and $166.64. The mean distance from homestead to the forest and from homestead to the nearest market were 2.0km±1.8 and 1.8km ±1.4 respectively. About three-fifths (59.2 %) of the respondents

collected NTFPs while 73.3% used the products collected. The NTFPs mainly used were firewood, medicinal plants, charcoal, honey, mushroom and bamboo products. In terms of the extent of use, 71.6% used NTFPs daily, while the main sources of NTFPs used were from forests and markets followed by the farm and gifts.

The common NTFPs used as food were fruits, walnut, bitter leaf, scent leaf, bushmeat, snails, mushroom, ginger, honey, waterleaf, *Thaumatococcus danielli*, *Megaphrynium macrostachyum* while bitter leaf, bitter kola, ginger, honey, roots, seeds, resins and barks of trees were commonly used as medicine. Bamboo and Raffia palms were commonly used for crafts/construction while firewood, charcoal, honey, bushmeat, bamboo products, herbs were sold.

NTFPs were mainly used as food (70.5%), medicine (22.7%), crafts/construction material (3.4%) and sold for income (3.4%). This finding conforms to the findings of Arnold and Townson (1998) and Reddy and

Table 3: Well-being capability index to the elementary subsets (indicators)

Dimension	Indicator	Index Per Indicator	Index Per Dimension
Health (μ_1)	μ_{11} Type of illness suffered in the last year	0.2892	
	μ_{12} Use of health facility by household members	0.9083	
	μ_{13} Type of facility consulted by household	0.3569	
	μ_{14} Suffered injury in the last year	0.675	
	μ_{15} Level of satisfaction	0.3304	
			0.5116
Housing (μ_2)	μ_{21} Dwelling ownership	0.3667	
	μ_{22} Type of housing unit	0.7667	
	μ_{23} Quality of construction material	0.5680	
	μ_{24} Wall of house plastered	0.8083	
	μ_{25} Type of toilet facility	0.3410	
	μ_{26} Source of drinking water	0.6250	
	μ_{27} Connection to the national grid for electricity	0.7250	
	μ_{28} Refuse disposal	0.3313	
	μ_{29} Level of satisfaction	0.3150	
			0.5373
Education (μ_3)	μ_{31} Primary school in the community	0.9000	
	μ_{32} Secondary school in the community	0.5667	
	μ_{33} Presence of qualified teachers	0.6083	
	μ_{34} Good condition of school facilities	0.3637	
	μ_{35} Level of satisfaction	0.2221	
			0.5328
Autonomy (μ_4)	μ_{41} Decision on obtaining healthcare for household	0.3167	
	μ_{42} Personal savings	0.9083	
	μ_{43} Decision on birth control	0.2704	
	μ_{44} Dependence on spouse	0.1008	
	μ_{45} Level of satisfaction	0.3192	
			0.3862
Composite index			0.4913

Source: Field Survey

Chakravarty (1999) which noted that forest products and the income generated from them can be quite significant in alleviating the high level of food security of local communities and throughout the developing world.

Well-being capability index
The well-being index estimation (Table 3) showed that the housing dimension had the highest score of 0.537, followed by education (0.552) and health (0.511). The dimension with the lowest score was autonomy with a score of 0.386. The overall well-being index for this study of 0.491 implies that the women in the study area have a moderate level of well-being. This overall index is lower than the National Human Development Index (HDI) of 0.532 (UNDP 2018).

This is expected because the index for this study was estimated only for women in one Local Government Area while the HDI was for the whole country. The HDI is a composite measure of well-being that used three dimensions of health, education and income, while this study used an index with four dimensions - health, education, housing and autonomy. Majumder (2009) in analyzing the well-being of Indian women over two periods estimated well-being values of 0.606 and 0.649 for the data set of 1998/1999 and 2005/2006 respectively. The values are much higher than that estimated for this study as expected since the study concentrated on Indian women in both urban and rural in contrast to this study which focused on women in rural Nigeria.

Factors influencing the utilization of NTFPs
The factors influencing NTFPs utilization is presented in Table 4. Significant factors influencing the utilization NTFPs by women in the study area were age, level of education, primary occupation, the distance of homestead to the forest, distance of homestead to market and household income.

The utilization of NTFPs decreased significantly with age, level of education, distance to forest and distance to market. The negative relationship between age, distance to forest and distance to market with the utilization of NTFPs is consistent with the

Table 4: **Factors influencing non-timber forest products utilization**

Variables	Coefficients	Z	dy/dx
Age of respondent	-0.563**	-1.98	-0.059
Level of Education	-0.407***	-3.43	-0.042
Primary Occupation	1.240*	1.73	0.142
Marital Status	0.191	0.17	0.021
Household Size	-0.137	-0.42	-0.014
Distance of Homestead to Forest	-0.414***	-3.48	-0.043
Distance of Homestead to nearest market	-0.554**	-1.95	-0.058
Access to credit	-0.246	-0.31	-0.025
Association Membership	0.002	0.00	0.000
Household income	0.220***	3.60	0.047
Constant	9.422	1.25	
Prob> chi^2	0.000		
Log likelihood	-35.23		
Number of observations	120		
LR chi^2 (10)	68.71		
Pseudo R^2	0.494		

Source: Logistic Regression Analysis Result
Note: *, ** and *** represent significance level at 10%, 5% and 1% respectively

findings of Suleiman *et al.* (2017) where the tendency to engage in NTFPs reduced with age and households living further away from market were less likely to collect NTFPs for household consumption and sales for cash income generation. However, the negative association between level of education and utilization of NTFPs is consistent with the finding of Shemnga (2015) in which utilization of NTFPs reduced with increasing formal education.

However, utilization of NTFPs increased significantly with being engaged in farming which follows after the finding of Suleiman *et al* (2017). NTFPs utilization was also positively related to household income and is consistent with the findings of Ogundele *et al.* (2012) where utilization of NTFPs improved income generated from the sales of fuel wood, fruits, vegetables, bush meat marketing and other forest-based activities.

The marginal effects results show that a year increase in age reduced the likelihood of the use of NTFPs by 5.6%. This is consistent

with the findings of Mulenga *et al.* (2012) and Suleiman *et al.* (2017) which reported inverse relationships between age and NTFPs utilization. As such, as women grow older, their likelihood of utilization of NTFPs declines. Similarly, with respect to the level of education, a change in formal education decreased the likelihood of utilizing NTFPs by 4.1%. That is, women's utilization of NTFPs reduced with an increase in the level of formal education. Also, a kilometer change in the distance from homestead to the forest and nearest market decreased the utilization of NTFPs by 4.1% and 5.5% respectively. This could be due to the drudgery and costs associated with walking long distances to the forest and transporting the NTFPs from the forest to the homestead and from the homestead to the market. This usually promotes the use of nearby alternatives (Suleiman *et al.* 2017; Raufu *et al.* 2012; Opaluwa *et al.* 2011).

On the other hand, being a farmer, increased the likelihood of utilization of NTFPs by 12.4%. This is expected as NTFPs are readily

Table 5: Effect of non-timber forest products utilization on the well-being of women

Variables	Coefficients	Standard Error	Z
Age of respondents	-0.033	0.024	-1.35
Level of Education	-0.049	0.064	-0.04
Primary Occupation	-0.516	0.446	-1.16
Marital Status	2.618***	0.784	3.34
Household Size	-0.013	0.205	-0.06
Distance to Forest	-0.041***	0.133	-3.09
Distance to nearest market	0.305*	0.179	1.70
Access to credit	1.085**	0.550	1.98
Association Membership	-1.697**	0.662	-2.56
NFTPs Utilization	1.539***	0.587	2.62
Household income	-1.171**	0.497	2.36
Cut 1	-15.942	5.568	
Cut 2	-10.907	5.366	
Prob> chi^2	0.000		
Log likelihood	-75.813		
Number of observations	120		
LR chi^2 (10)	66.72		
Pseudo R^2	0.306		

Source: Ordered Logistic Regression Analysis Result
Note: * , ** and *** represent significance level at 10%, 5% and 1% respectively

available in farms and forests, thus making it easier for farmers to use more of NTFPs and sell some (Moubarakatou 2017; Suleiman *et al*. 2017).

A unit change in household income increased the utilization of NTFPs by 22.0%, which implies increased purchasing power and level of NTFPs utilization by 22.0%. This finding supports the findings of Ogundele *et al.* (2012) in which   collection and sales of NTFPs improved income.

Effect of NTFPs utilization on the well-being of women
To evaluate the effect of NTFPs utilization on the well-being of women, the well-being index was categorized into three groups: low (<0.4914), medium (0.4914 – 0.6127) and high (>0.6127). All the women had a well-being index between 0 and 1 and each was categorized into one of these three groups. The results are presented in Tables 5 and 6.

NTFPs utilization had a positive effect on the level of well-being of women, this implies that the use of NTFP improved well-being. Since NTFPs utilization contributes positively to health, nutrition and level of income, the level of well-being of women who utilize these products in different ways is expected to be higher than that of those who do not use

them (Suleiman *et al*., 2017).

Marital status also positively influenced the level of well-being, which implies that being married   improved the level of well-being. This finding agrees with the findings of Liang and   Shen   (2016)   in   which   married respondents reported higher well-being than single respondents. However, this contradicts the findings of Olowe *et al.* (2014) in which married respondents had a lower well-being index when compared to the divorced or single respondents.

Access to the credit also had a positive effect on the level of well-being as expected. This is expected because accessibility to credit would enable the women to increase the scale of their business and improve livelihoods and cause   an   increase   in   income   level. Furthermore, the distance of homestead to nearest market also had a positive effect on well-being, this contrasts with the findings of Suleiman *et al.* (2017) where an inverse relationship was reported.

The   negative   effect   of   association membership   on   the   level   of   well-being contrasts with the findings of Olowe *et al*. (2014) in which membership in groups with a high   diversity   of   members   improved well-being. Being a member of one or more groups

Table 6: Marginal effect of NTFPs utilization on well-being of women

Variables	High	Medium	Low
Age of respondent	0.008	0.002	0.000
Level of Education	0.012	0.004	0.000
Primary Occupation	0.128	0.038	0.006
Marital Status	-0.560***	0.371**	-0.093
Household Size	0.003	0.000	0.000
Distance to Forest	-0.102***	-0.030**	0.004*
Distance to nearest market	-0.075*	0.179	0.003
Access to credit	0.265 **	0.088*	-0.022*
Association Membership	-1.697**	0.091***	-0.014
NFTPs Utilization	1.539***	0.587	-0.310***
Household income	0.291**	0.086**	-0.474***

Source: Ordered Logistic Regression Analysis Result
Note: * ** and *** represent significance level at 10%, 5% and 1% respectively

or associations especially cooperatives and occupational groups should ordinarily increase the accessibility to credit and vital information for improved well-being.

In addition, income had a negative effect on well-being, this implies that as income increased, the level of well-being decreased. This contradicts the work of Knight *et al.* (2009) which noted that relative income influenced happiness which was used as a proxy for well-being. It also contradicts the work of Cheryl (2014) whose study revealed that income positively influenced well-being and explained about 95.5% of the variation in well-being. Furthermore, the distance of the homestead to the forest also had a negative effect on well-being. This contrasts the direct relationship as reported by Suleiman *et al.* (2017).

The marginal effects for the three well-being categories on women's NTFPs utilization are presented in Table 6. Accordingly, utilization of NTFPs increased the probability of reporting high and medium well-being by 34.5% and 11.9% respectively while it decreased the probability of reporting low well-being by 31.0%.

Being married decreased the probability of reporting high well-being by 56.0% while it increased the probability of reporting a medium level of well-being by 37.1%. An additional increase in the distance to the forest decreased the probability of reporting high and moderate well-being by 10.2% and 3.0% respectively while it increased the likelihood of reporting low well-being by 0.4%. Also, an additional increase in the distance to the nearest market decreased the probability of reporting high well-being by 7.5% and the probability of reporting medium well-being by 2.2%.

Accessibility to credit increased the probability of reporting high well-being by 26.5%, medium well-being by 8.8% and reduced the probability of low well-being by 22.1%. Further, association membership increased the probability of reporting medium and high well-being by 9.1% and 35.2%

respectively while income increased the probability of reporting a high and medium level of well-being increased by 29.1% and 8.6% respectively while the probability of reporting low well-being decreased by 47.4% as income increased.

CONCLUSION
The involvement of women in NTFPs activities cannot be undermined given the fact that such activities are women inclined and a major propelling factor in the level of collection and utilization which play a significant role in their well-being.

It is recommended that agricultural advisory and extension services in terms of NTFPs collection and utilization be extended to rural women as engagement in agriculture was positively significant to its utilization, also in order to make farming attractive as a primary occupation, policies and programs that will enhance women's participation in farm and off-farm activities should be made; also since income positively influenced NTFPs utilization, cash transfers and other consumption smoothening aids should be provided to rural women as this will enhance their utilization of NTFPs. Also necessary road networks that will facilitate access to forests as well as to market should be rehabilitated or constructed, this will enhance NTFPs utilization.

Also since NTFPs utilization significantly affected well-being, extension services should be provided to rural women on its effective utilization; developing optimal road networks that link rural communities to the nearest markets and forests should be done, this will facilitate transportation of NTFPs from forests to these markets and enhance well-being; credit access should be facilitated for rural women, this will serve to expand their capital and enhance well-being, thus to improve access to credit, loans should be made available to women by banks and cooperatives; rural women should be mobilized to form and/or join associations, as this will enhance their well-being through information-sharing, resource-pooling and cooperatives' formation. Given that, NTFPs

utilization contributes to the well-being of women, policies and programs that will enhance women's utilization of NTFPs should be put in place.

AUTHOR CONTRIBUTION

AAO and JOB designed the study. AAO, AAA and JOB designed the materials and methods. AAO, AAA and JOB developed the paper from inputs from all authors. AAO and JOB designed the survey instrument, collected and analysed the data. AAO and AAA discussed the results and commented on the manuscript.

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