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Analysis of Effects of Forest Resources Exploitation and Their Utilization on the Socio-Economic Well-Being of Rural Households in Benue State, Nigeria

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Abstract: *The study analysed the impact of forest resources exploitation and utilization activities on the socio-economic well-being of rural households in Benue State, Nigeria. Information was collected purposively from 300 eligible respond ents with the help of a well structured interview schedule. The results of the study revealed that 70.0% of the respondent engaged in farming as their major occupation, 68.0% were found to be males, 67.0% were male gender households heads, 58.0% were married 52.0%have household size of 11-15 members, 51.0% were found to be in their active productive age of 26-35 years (with means average of 32 years), 46.0% were found engaged in forest resources exploitation and utilization and with annual income of 19100-220000 as indicated by 50.0% of the respondents. The study concluded that forest resources exploitation and utilization impacted positively on the socio-economic well-being of the rural households in the study area. It was recommended that: processing industries should be established in the study area by government and private firms and individuals for processing the abundant forest resources exploited; access roads should be constructed through communal self-help efforts for easy transportation of exploits forest resources; and loans should be granted to the rural households by government and NGOs for rational exploitation and processing of forest resources.*

Key words: *Impact, utilization, exploitation, well-being, forest resources*

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I. Introduction

Forest resources are key component of the natural resources base of any rural community, region or country and they play a fundamental role in the socio-economic well-being of the people of these rural communities. This is particularly so in sub-Saharan Africa where most of the countries have large rural population that depend on forest resources exploitation for their livelihood (Townson, 2012).

Inoni (2009) stressed that tropical forests are of great socio-economic significance both to the rural and urban poor. Forest resources add to the well-being and at times, the very survival of millions of rural poor throughout the world (Wunder, 2013). Moreover, Shackleton *et al.* (2012) observed that such benefits are not restricted to rural people since many forest resources are marketed within the urban communities.

In developing countries such as Nigeria, Zimbabwe and Tanzania, tropical forest resources are integral component of the livelihood of the majority of the rural households and a lower proportion of urban households (Inoni, 2009). Despite being integral component of the livelihood of the households, in many rural households, the use of forest resources is not a primary source (Sunderlin *et al*, 2005). Inoni (2009) noted that apart from meeting the socio-economic needs of the rural households for food and shelter, tropical forests are also major source of both industrial wood products and fuel wood. He further stated that fuel wood and charcoal make up 56% of the global wood exploitation and approximately 90% of this is produced in developing countries such as Nigeria, Tanzania, Zimbabwe, Ghana and Liberia. Roper and Roberts (2014) emphasized that fuel wood also known as fire wood is the most important source of energy for developing countries and the only source of energy for most of the world's rural households.

The main purpose of this study was to assess the impact of resources exploitation and utilization on the socio-economic well-being of rural households in Benue State, Nigeria. The study was specifically designed to assess the socio-economic characteristics of rural households that exploit and utilized forest resources in the study area.

II. Methodology

The study was carried out in Benue State. The State was created in 1976 with Makurdi as the State capital. It is found in the middle belt region of Nigeria, approximately located between latitude 6.5° and 8.5°N and longitude 7.5° and 10.5°E of the equator. The State has a total land area of about 30,995 square kilometers and a projected population of about 2,780, 398 people (BNARDA), 1995) and (NPC, 1995) in (Atongo, 2013).The State shares boundary with five states: Nassarawa to the North, Taraba to the East, Enugu to the South west, Cross River to the South east and Kogi also to the south west. The south eastern part of the state shares boundary with the Republic of Cameroon. It is bordered to the North by 280km of River Benue, second largest river in Nigeria, which the state derived its name. The state is also traversed by 202km of River Katsina-Ala in the in-land area with its catchment area from Cameroon.

A three stage sampling procedure was used for this study. In the first stage, out of 23 LGAs in Benue State, 2 Local Government Areas (LGAs) from zone A, B and C were purposively selected because of the forest resources availability in such LGAs giving a total of 6 LGAs (Katsina-Ala, Kwande, Makurdi, Tarka, Otukpo, and Okpokwu) covered for the study. During the second stage, 4 communities from each of the 6 LGAs were selected using simple random sampling balloting technique giving a total of 24 communities. During the third stage, 50 households were randomly selected from the 4 communities in each of the 6 LGAs using simple random sampling balloting technique giving a total of 300 respondents for the study.

Data for this study was collected from the households through the use of structured interview schedule to elicit information from rural households. It was subjected to both face and content validity to avoid ambiguity of items as well as to ensure its validity. The interview schedule contained relevant questions on the study. It was pretested in one of each villages sampled for the study, the reliability of the instrument was determined using the split half technique. Secondary information was collected through the review of relevant literatures, maps, pamphlets bulletins, biographies, previous projects, theses, dissertations and materials from internet sources.

Multiple regression model was used to estimate the contribution of each variable to the dependent variable to determine the best variable predictive of livelihood activities by rural households and their effects on the livelihood of rural households in the study area due to forest resources exploitation and utilization activities.

III. Results and Discussion

Socio-economic Characteristics of Utilizers of Forest Resources

Age

The result of the analysis of the age of household members presented in Table 1 shows that the age category 26 – 35 has the highest percentage of 51% while category 66 -75 have 4.0% respectively. The majority (51.0%) are in their active and productive age group and are capable of carrying out forest resources exploitation and use in the study area, this is also evident from the mean age of 32. This is in similar view with Marla (2011) who observed that the younger the household member, the more active he or she participates in forest resources exploitation and utilization while the older the household member (4.0) the lower the probability of his/her participation in forest resource exploitation and utilization due to decline in strength. They stressed that the older the household member the more decline in his/her ability to exploit forest resource especially ones that require application of hard laobur. Wunder (2013) argued that though the older people in the rural households who no longer have enough strength to exploit forest resources employ the labour of the youth to remain in the business. They are always successful because of their contacts and market opportunities due to long stay in the business.

Table 1: Distribution of respondents according to their age

Age (Years)	Frequency	Percentage	S.E	S.D
15-25	30	10.0	0.47	8.30
26-35	150	51.0		
36-45	60	20.0		
46-55	30	10.0		
56-65	18	6.0		
66-75	12	4.0		
Total	**300**	**100**		
Min 14				
Max 60				
Mean 32				

Sex

The result on sex of rural households presented in Table 2 shows that 68.0% of the respondents were males and 32.0% were females respectively. This implies that males in the study area participate in forest resource exploitation/ utilization more than their female counterpart. This is because they have more responsibility to shoulder than the females. In a similar vein, Wunder (2013) revealed that generally, females have less access to credit and other necessary technologies required for forest resource exploitation/utilization. Thankur (2013) argued that some technologies used for forest resources exploitation required intensive labour which could not be handled by women. He further noted that other labour intensive forest resources exploitation activities such as cutting of big trees, breaking of wood into fuel wood, burning of big trees into charcoal, sawing of timber and loading/off-loading of logs of wood are mostly carried out by men while women and children carryout complementary activities which are less labour intensive. Arnold and Ruiz-Perez (2014) reported that less labour intensive complementary activities of forest resources exploitation/utilization such as fruits picking, fruits gathering, fuel wood collection, charcoal gathering, timber packing to accessible points, roasting of animals, smoking of meat, harvesting of lower fauna and flora products as well as sale of products exploited are carried out by women and children as complementary activities of major forest resources exploitation/utilization activities in the rural areas.

Table 2: Distribution of the respondent according to their sex

Sex	Frequency	Percentage
Male	204	68.0
Female	96	32.0
Total	**300**	**100**

Marital Status of households

The result on marital status of the households presented in Table 3 shows that 58.0% of household heads were married and 4.0% were divorced respectively. The majority (58.0%) were married indicated that more work force is needed because the household heads have responsibility of feeding the family and need to diversify their activities to forest resources exploitation to compliment households income from agriculture needed to improve their wellbeing. This agreed with study by Thankur (2013) who stated that most member of household get married not only to get helping hands from the married wives for agricultural and non-agricultural activities to boost households income but as well project increase in labour force because of the children that will be produced in the family. The irony to this effect as noted by Wunder (2013) is that the more wives the members of rural households have, the more the household income is diverted to other ways of spending rather than investing in agriculture or income diversifying opportunities like forest resources exploitation to boost households income for increased households as thought.

Table 3: Distribution of respondents according to their marital status

Marital Status	Frequency	Percentage
Single	66	22.0
Married	174	58.0
Widow	48	16.0
Divorced	12	4.0
Total	**300**	**100**

Household size

It is evident on Table 4 that the result on households' size shows that in the study area was 52.0% of the household heads have 11-16 members while 11.0% have 21-25 members respectively. This indicates that households' size is very important for agricultural activities and income diversifying activities such as forest resources exploitation and utilization. This hinged on the fact that large household size to a large extent supply surplus labour to farms as well as provided enough hands to carry out other income diversifying activities. McSchweeny (2005) similarly reiterated the significance of a large household size is appreciated only when the availability of labour for farm production, the total area cultivated to different crop enterprises, the amount of farm produce retained for domestic consumption and the marketable surplus are all determined by the size of the farm household. While this is true only if members of the household partake in the family farm business, a large household with many members could get involved in other livelihoods which could be sources of wealth to aid the household with income which could be used to purchase farm inputs for farm production, purchase of food, payment of children school fees, ease ability of payment of hospital bills, purchase of household items and some other household needs.

Manza (2014) opined that the implication of large family size is that where majority of the household members can be productively used on the farm and other non-farm investments like forest resources exploitation and so on will most likely increase the possibility of the households being economically viable and sustained. On the other hand, if however, a large household is not used on the farm or some other productive employment, it may likely cause the household to suffer severe income set back by always deeply immersed in vicious cycle of poverty. Inoni (2009) noted that though a very large family size may constitute a social burden, larger familiar use their labour input to an advantage in farming and forest products exploitation. According to Baland and Francois (2004), the intensity of forest resources exploitation has been found to have a direct relation with household size. This is in agreement with the finding by Unongo (2016) which indicated that the mean household size value of 10 for households in the study is a large number capable of pushing them into forest resources exploitation /utilization to complement income from agricultural production.

Table 4: Distribution of respondents according to their size of households

Household Size	Frequency	Percentage	S.E	S.D
1-5	30	10.0	0.24	4.16
6-10	39	13.0		
11-15	156	52.0		
16-20	42	14.0		
21-25	33	11.0		
Total	**300**	**100**		
Min 0.00				
Max 20				
Mean 9.53				

Sex of household heads

The result of the analysis of the gender of household heads in Table 5 shows that 67.0% of the respondents in the study area were male while33.0% were found to be females. This implies that majority of the household heads are men who engaged in farming as a major occupation as well as carry out other income diversifying activities such as forest resources exploitation to complement income from agricultural production. This agreed with study by Shackleton and Shackleton (2004) who observed that in developing countries, most households result to active exploitation of forest resources as income diversifying strategy to cushion the stock experienced due to failure in crop production. Marla (2011) viewed that hence most forest resources exploitation requires intensive labour, most of such activities are carried out by men with women and children assisting in the less labour intensive aspects to complement the tasks. Madsen (2011) stressed that except in cases where household heads are women who are widow that could not do otherwise than to engage in such labour intensive activities of forest resources exploitation such as fuel wood exploitation and charcoal production to boost the income of the household other than from farm produce.

Table 5: Distribution of respondents according to their sex of Household heads

Sex of Households head	Frequency	Percentage
Male	201	67.0
Female	99	33.0
Total	**300**	**100**

Level of Education

It is evident on Table 6 that the educational level of the household heads shows that majority(44.0%) having no formal education, while 10.0% had acquired tertiary education respectively. Most of the respondents (44.0%) have not had the opportunity for formal education, this implies that the respondents level of awareness concerning aforestation and forest preservation programmes, global warming due to excessive forest resources exploitation particularly trees could be attributed to their illiteracy level. They actively exploit the forest resources for their domestic use and economic gains. Townson (2012) in his study also emphasized that excessive exploitation of forest resources is greatly attributed to the high rate of illiterate population prevalent in the rural communities that always refute possible measures to moderately exploit forest resource to acceptable rate. In a similar view Kumar (2012) stressed that low literacy among rural population tends to limit their ability to understand the dangers of excessive forest resources exploitation, they only based on their economic gains to improve the household income.

Table 6: Distribution of respondents according to their educational status

Educational Status	Frequency	Percentage
No formal education	132	44.0
Primary education	93	31.0
Secondary education	45	15.0
Tertiary education	30	10.0
Total	**300**	**100**

Occupation of households

The result on primary occupation of the households' members in Table 7 revealed that majority (70.0%) have farming as their primary occupation while 46.0% have their source of livelihood through forest resources exploitation and utilization respectively. The implication of this result is that majority of the household members take farming as their main income activity which is complemented by other income diversifying activities to complement income derived from farming. It is evident from the result that forest resources exploitation ranks second (46.0%) after farming meaning it is the most preferred income diversifying activity by the rural households in the study area. Only 15.0%, 10.0% and 7.0% were involved in income diversifying activities like trading, artisan and civil service respectively. The implication of this finding is that rural households heads who are predominantly farmers partake in non-farm and off-farm activities that are usually undertaken by the farmer during his/her spare time to avoid been distracted from farming activities. This is evident from study by Manza (2014) who stated that off-farm activities are beneficial to rural households because they earned some extra-income which could be used on the farm to pay hired hands for farm operations and also off-set some households financial needs. He further stressed that despite the major economic role played by off-farm activities, rural households' members are careful in selecting the most gainful ones as well as allot time for such activities to avoid been distracted from farm operations.

Table 7: Distribution of respondents according to their primary occupation

Primary Occupation	Frequency*	Percentage
Farming	210	70.0
Forest Resources Exploitation/utilization	138	46.0
Trading	45	15.0
Civil Servants	21	7.0
Artisans	30	10.0
Total	**444**	**148**

*Multiple responses

Year of forest resources exploitation and utilization experience

The result of the analysis of years of forest resources exploitation and utilization of rural household in Table 8 shows that 58.0% of the respondents have had 16-20 years experience on forest resources exploitation and utilization while 8.0% have 1-5 years of experience respectively. The implication of the finding is that majority who earn their livelihood through forest resources exploitation and utilization signifies that they have preference for the non-farm activity amidst others to compliment income from the farm for a long time now. This result is supported by Rogerson and Sithole (2010) who stressed that experience on forest resources exploitation and utilization is an important factor of productivity in forest exploitation. They posited that the effect of forest resources exploitation and utilization experience on productivity becomes positive or negative. Generally, Manza (2014) also observed that it would appear that up to certain number of years, just like farming experience, forest resources exploitation experience would have a positive effect. After that, the effect may become negative. The negative effect may be derived from aging or reluctance to change from old and familiar practices and techniques to those that are modern and improved. Hames and Vickers (2011) also agreed that years of experience on forest resources exploitation and utilization has great influence on forest resources exploitation, marketing knowledge and social group formation of forest users as indication of their expertise on the activity. The mean years of experience as revealed in Table 8 based on the finding is 14, this usually provide forest exploiters a wide horizon of experience to be versatile in the forest resources exploitation/utilization business.

Table 8: Distribution of respondents according to their years of forest resources Exploitation and utilization experience

Years of experience	Frequency	Percentage	S.E	S.D
1-5	24	8.0	0.33	5.82
6-10	30	10.0		
11-15	42	14.0		
16-20	174	58.0		
21-30	30	10.0		
Total	**300**	**100**		
Min 2.0				
Max 32.0				
Mean 13.6				

Annual income of households

The result on annual income of households in Table 9 shows that majority (50.0%) derived annual income of 191000-220000 from sale of forest resources and 3.0% deriving the least annual income of 1000-40000 naira. The 50.0% (majority) of the rural households who exploit the forest resources implies that they found the off-farm activity to have contributed to their income and have paid much attention to it apart from farming as a good source of income to promote agricultural production as well as eased other household financial burdens. This is evident in the finding which revealed the mean income of 127,340 naira, this is a good indication that income from forest resources exploitation/utilization relieves the rural households of great financial burden.

Similarly, Inoni (2009) revealed that common pool resources are always found to contribute substantial part of the income of rural households. He noted that rural households collect forest products to meet their daily consumption needs and the surplus is sold in local and urban markets to boost household income.

Table 9: Distribution of respondents according to their annual income from forest resources exploited

Annual Income(₦)	Frequency	Percentage	S.E	S.D
10000-40000	9	3.0	2100.8	36387..9
41000-70000	12	4.0		
71000-100000	24	8.0		
101000-130000	30	10.0		
131000-160000	36	12.0		
161000-190000	30	10.0		
191000-220000	151	50.0		
221000-250000	10	3.3		
Total	**300**	**100**		
Min 38000				
Max 192000				
Mean 127340				

IV. Conclusion and Recommendation

The study concluded that forest resources exploitation and utilization have impacted positively on the socio-economic well-being of the rural households in the study area. It was recommended that: vivid population, habitat, types and uses of forest resources should be surveyed nation-wide by government for their easy access for rational exploitation; processing industries should be established by government, private firms and individuals for processing of abundant forest resources for utilization and sale; and access roads should be constructed through communal self-help projects for easy access to forest resources in the study area.

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