

Assessment of Livelihood Assets of Youth in Rubber Production in Edo and Ogun States, Nigeria BY

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ABSTRACT

Increased participation of youth in agriculture is currently being emphasized as the major means of sustaining agricultural production as well as combating the high unemployment rate among youth in Nigeria. The capability of youth to sustain rubber development in the country requires a proper understanding of the current situation of livelihood assets of youth in rubber production. The study adopted the sustainable livelihood approach to assess the assets portfolio of youth in rubber farming -plantation owner (PO) and wage labourer (WL) and its implication on their participation in rubber production. Proportional random sampling was used to select 240 youth from available youth data in rubber farming, obtained from Rubber Research Institute of Nigeria (RRIN) and selected Rubber estate plantations in Edo and Ogun States Nigeria. The study used a descriptive analysis, t-test and multinomial regression model and results indicated that Physical asset ($\bar{X}= 4.46$, $\bar{X} = 4.48$) was the highest asset available to the youth in rubber farming while financial asset ($\bar{X}= 2.09$, $\bar{X}= 2.54$) was the least available asset in the study area. There was a significant difference in the mean of natural ($t= 8.655$; $p\leq 0.05$), human ($t = 6.092$; $p\leq 0.05$), financial ($t= 4.740$; $p\leq 0.05$) and social assets ($t= 3.606$; $p\leq 0.05$) of PO and WL. PO thus have potential for sustainable livelihood compare to WL. Natural ($\beta=0.491$; $p<0.05$), Physical ($\beta=0.051$; $p<0.05$) and social ($\beta=0.286$; $p<0.05$) assets had positive and significant influence on level of youth participation in rubber production. It is recommended that natural, physical and social assets of the youth should be improved to ensure increased participation in rubber production. Also, efforts should be made to improve the financial asset of the youth in the study area.

Keywords: Livelihood assets, rubber production, youth

INTRODUCTION

Livelihood refers to the means of earning a living or the activities undertaken by a family to obtain the basic materials needed to sustain household development (Liu, Chen and Xie, 2018). Rubber industry is a major source of livelihood for the majority of people in rubber producing countries including Nigeria. Rubber industry alone provides jobs for around 50 million people throughout commodity chain worldwide (IRSG, 2000). It provides employment for farmers, tappers, manufacturers and other personnel in marketing. In Nigeria, about 80% of the smallholder rubber farmers depend on rubber for their main source of income (Balogun, Giroh and Abubakar, 2008).

Natural Rubber has also played a significant role in economic development of Nigeria. Before the oil boom in the 1960's, Nigeria was the biggest producer of natural rubber in Africa and ranked sixth in the world contributing about 3 % of the world output (Umar et.,al 2011). NR ranked third as the major exchange earner after oil palm and cocoa in the seventies and eighties (Abolagba et., al 2003). In 2011, Nigeria was the fourth largest producer of natural rubber in Africa with an average production of 90,000 - 100,000 mt. The area under rubber is estimated at 154,000ha comprising 96,00ha under smallholdings and 58,000ha under estate (Umar et.,al 2011).

Over time, stakeholders have always urged the federal government to take advantage of an expected production glut predicted by the International Rubber Study Group (IRSG) and motivate farmers to invest more in rubber production. In the opinion of Brook, Zorya and Guatam (2012), increased productivity in agricultural sector depends on the youth who comprise about 30-40% of the world active population. Considering their energy, creativity and networking capacity, the youth have a significant potential of contributing towards agricultural development especially as literature have shown that rubber farmers in Nigeria are ageing with an average age of 55 years (Abolagba and Giroh, 2006; Balogun, Giroh and Abubakar, 2008).The youth constitute about 40% of Nigeria's population (NPC, 2006) and they comprise about 64% of the unemployed people in Nigeria (NBS, 2012). Hence, increased participation of

youth in agriculture is currently emphasized as the major means of increasing agricultural productivity as well as combating the high unemployment rate among the young people in Nigeria especially those who live in rural areas. Youth participation in various agricultural activities such as livestock husbandry, crop farming, crop processing, marketing as well as the determinants of participation have been reported in different parts of the country (Adedoyin, 2001; Nnadi and Akwiwu, 2008; Bello, Madza and Saror, 2011; Agwu, Nwanko and Anyawu, 2012)

However, for agricultural productivity to be sustainable, considerable assets or capital are required. People must own different types of assets to achieve positive livelihood result. Parrot, Paw and Westendorp (2006) assert that ownership of assets enable people to make a living and also work efficiently. According to Akpan, et.al (2016), majority of rural farmers in Nigeria are poor as a result of poor asset base that cannot adequately sustain them.

Livelihood asset refers to natural and manpower resources essential for people to survive and they can be stored, exchanged or allocated to generate revenue streams or other benefits (Krantz, 2001). He also asserted that a livelihood is considered sustainable when it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets and provide sustainable livelihood opportunities for the next generation. In determining the level of sustainability of household livelihood, sustainable livelihood framework is often used as proposed by Department for International Development (DFID) (2000). The essential feature of sustainable framework is the analysis of five different types of assets. These assets include natural, human, financial, physical and social asset. By definition, natural asset is the natural resource stock from which resource flows and services useful for livelihoods are derived. It consists of resource stock such as land, water, forest resources and livestock that is used to support livelihood activities of household. Financial asset denotes resources that people use to achieve their livelihood objective. This includes loan and free assistance obtained from both formal and informal channels. Human asset represent the resources that determine the ability and scope of farmers. This includes knowledge and skills, health and labour capacity.

Physical asset comprises basic infrastructure and producer goods needed to support livelihood. They are items of economic and exchange value such as farm tools and equipment and properties owned by household members while social asset provides external support and help for farm household. These are developed through network, membership of more formalized groups, relationship of trust and reciprocity and exchange. (Udoh et, al, 2017).

These categories of assets constitute livelihood building blocks that enable the households to respond to shocks such as poverty, climate change, changes in price, flood and drought among others (Udoh et. al 2017). Farmers can also use these assets to improve their living condition. According to FAO (2010), absence or denial of these basic necessities of life may constitute absolute poverty especially among the youth who are the most vulnerable group. Ashley (2000) averred that an analysis of assets is a review of what people have rather than an analysis of needs. Asset analysis considers how access to assets has changed over time, what changes, what the causes of changes are and how access and control of assets differs between social groups (Kamarudin and Samsudin, 2014).

The strong correlation between assets owned and livelihood sustainability necessitates the need to assess the asset profile of youth in rubber farming. The knowledge of asset profile of youth in rubber farming is important in order to know their capability to sustain rubber production in Nigeria as well as help government and donor agents to decide on the type of intervention to provide for these youth during shocks or stress. Thus, this study adopted the sustainable livelihood approach to assess the asset portfolio of youth in rubber farming (plantation owners and wage labourers) and its implication on their participation in rubber production. The study specifically sought to;

- i. describe the personal characteristics of youth involved in rubber production activities in the study area;
- ii. examine the livelihood assets of youth in rubber production
- iii. determine the level of youth participation in rubber production activities.

Hypothesis of the study

Ho: There is no significant influence of youths' access to livelihood assets on level of participation in rubber production activities.

MATERIALS AND METHODS

The study was conducted in Edo and Ogun States of Nigeria where rubber is predominantly grown (RRIN, 2010). The two States are characterized by a tropical climate which ranges from humid to sub- humid at different times of the year. The mean annual rainfall in the Northern part of Edo State ranges from 1,270 mm to 1,520 mm while the Southern part of the State receives about 2,520 mm to 2,540 mm rainfall (Emokaro et., al 2010). The distribution of rainfall in Ogun State ranges from 1,000 mm in the Western part to about 2000 mm in the Eastern part, especially Ijebu and Ogun Waterside LGAs. The two States are naturally endowed with forest and its associated resources. The climate and soil of the States are suitable for the cultivation of a wide range of crops.

The population of the study comprises of youth who derived their livelihood from rubber farming. This includes youth who supply labour in rubber plantation - wage labourer (WL) and youth who own rubber plantation- plantation owner (PO). A one stage sampling procedure was used to select 30% of rubber estate plantations in each of the States and a list of 194 youth involved as wage labourer in rubber plantation was obtained from these selected estate plantations, while the list of 156 youth engaged as PO was obtained from Rubber Research Institute of Nigeria. Proportional (44.6% and 55.4%) random sampling was used to select 107 PO and 133WL giving a total of 240 respondents. Interview schedule was used for collecting data from the respondents.

Measurement of Variables

Livelihood assets

The study adopted DFID framework to assess how access and control of assets differs between the youth participating as plantation owner (PO) and the youth participating as wage labourer (WL) in the study area, using individual level data on asset ownership. Livelihood asset comprised five categories as follows; natural, physical, human, financial and social assets. Households' asset intensity was used to generate asset capacity index for each category of asset as used by Udoh et.,al (2016). Six indicators were used to measure each asset category and each indicator was scored 1. The total point for each asset category was 6. Livelihood index was obtained by summing up the scores of the five categories of assets. This gave a maximum of 30 (6 x 5) and a minimum of 0.

Participation in rubber production.

In this study, participation is conceived as extent of participation in rubber production activities. This was measured using a 3- point scale of Rarely (1), Often (2) and Very often (3) to assess respondents on the basis of labour, cash, ideas and motivating others they put into each of the twelve production activities which include; Seed collection, planting of seed, budding, land clearing, field lining, holing, planting of budded stumps, weeding, spraying, fertilizer application, pruning and tapping. The maximum participation score per respondent was $4 \times 12 \times 3 = 144$ and the minimum was $4 \times 12 \times 1 = 48$.

In determining the level of participation of youth in rubber production, equal interval approach was used (Ajayi, 2007). Using the participation score, the maximum and the minimum score was used to determine the range ($144 - 48 = 96$). Since participation was grouped into high, moderate and low, the range was divided into three ($96 \div 3 = 32$) to obtain the cut off which was added to each category point. Thus, participation scores were grouped into 48-79 (low), 80-112 (moderate) and 113- 144 (high).

Multinomial regression analysis was used to test the hypothesis

The model specification is as follows;

$$\log\left(\frac{\pi_j(x_i)}{\pi_k(x_i)}\right) = \beta_0_j + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_p x_{pi}$$

Where; $j= 1, 2, \dots, (k-1)$ and $i=1, 2, \dots, n$

Score (xi, k) = Participation (Level of participation in rubber production activities)

β = Regression coefficient corresponding to outcome k and score

x_i = vector of explanatory variables describing observation i.

X_1 = Natural asset score

X_2 = Financial asset score

X_3 = Physical asset score

X_4 = Human asset score

X_5 = Social asset score

RESULTS AND DISCUSSION

Personal characteristics of youth in rubber production

Evidence from Table 1 shows that the mean age of the respondents was 31 years. However, the mean age of the youth who participated as plantation owner (PO) was higher (31.59 ± 6.79) compared to the mean age (30.55 ± 6.06) of the youth who participated as Wage labourer (WL). This suggests that older youth were more involved in rubber production as plantation

owners than younger youth who participated as Wage labourer. It is likely that access to resources might have enhanced their participation. This is in line with Adekunle, et.al (2009) assertion that older farmers are more experienced and resource endowed. Furthermore, more than three quarter (85.4 %) of the respondents were males while very few (14.6 %) were females. Among the female participants, a greater percentage (19.5%) were WL. The finding implies the dominance of male over female in rubber production. This agrees with Adekunle, et.al (2009), who reported that majority of the youth engaged in agriculture are predominantly male. This might be due to the fact that males are often more energetic and could readily be available for energy demanding jobs like agricultural production activities (Agwu, et., al 2012).

Also, the mean years of schooling of the respondents was 10.90 ± 3.53 . This means that the youth possessed secondary school certificate hence they are literate. However, the mean years of schooling of youth who participated as PO was higher (11.91 ± 3.87) compared to that of WL (10.12 ± 3.01). Given the number of years of formal education, it implies that the productive capacity of respondents in terms of skills and knowledge is expected to be high and thus their ability to improve their livelihood. Results further showed that majority (64.2 %) of the youth were married. This suggests that the youth in rubber farming were responsible people and might likely show more commitment to their work to improve their livelihood in order to generate more income to meet the needs of their wife and children. This agrees with the findings of Bello, Madza and Saror (2011) who reported that majority of the youth in agriculture were married. However, more (67.7 %) of the youth who participated as WL were married compared to 59.8 % who participated as PO. The results also show that the mean farm income of the respondents was ₦ 399,082. Given the high inflation rate, it could be inferred that the income of the respondent was low and might likely affect the capacity to accumulate productive assets. However, the mean income of youth who participated as PO was higher (₦454, 645) compared to the mean (₦ 343,519) income of those who participated as WL.

Table 1. Distribution of respondents according to their personal characteristics

Personal characteristics	WL (n=133)		PO (n=107)		Total (n=240)	
	%	Mean	%	Mean	%	Mean
Age (years)						
18-25	25.5		23.4		24.6	
26-33	41.4	31.10 ± 6.06	29.9	32.10 ± 6.79	36.2	31.02 ± 6.41
36-40	33.1		46.7		39.2	
Sex						
Male	80.5		91.6		85.4	
Female	19.5		8.4		14.6	
Years of schooling						
1- 6	27.1		15.9		22.1	
7 – 12	65.4	10.12 ± 3.01	48.6	11.91 ± 3.87	57.9	10.90 ± 3.53
Above 7	7.5		35.5		20.0	
Marital status						
Married	67.7		59.8		64.2	
Single	32.3		40.2		35.8	
Estimated income per annum (₦)						
200, 000 and below	16.5		16.8		16.8	
200,001-600,000	83.5	345,519	64.5	484, 645	64.5	399, 082
Above 600,000	-		18.7		18.7	

Livelihood assets of youth in rubber production

The livelihood assets situation of the youth were presented in Figures 1 to 5. Figure 1 shows the natural asset situation of the respondents. Results show that land (95.3 %), arable crop (84.1 %) and other tree crops (64.5 %) constituted major natural assets available to PO. Water sources (49.5%), forest resources (24.3%) and livestock (26.2%) were not prominent in their human asset profile. Access to land implies that PO might be able to use the land for productive purpose to support their livelihood activities. Also, they might likely derive additional income from food and other tree crops to improve their livelihood. Thus ability to sustain their livelihood as well as their participation is expected to be higher than that of WL, who only owned arable crop (57.9 %) as major natural assets.

The more the financial sources available to rural households, the higher their income and the more their ability to improve their livelihood (Yusuf, 2009). Figure 2 shows that the major financial asset owned by the youth was mainly (87.9 % PO, 84.2 % WL) savings from farm income. There was less access to financial resources from informal credit (46.7%, 44.0%), transfer payment from friends and relations (44.4%, 18.7%), cooperatives (42.9 % PO, 6.8 % WL), remittance (39.3% PO, 21.8% WL) and banks (21.5 % PO, 7.5% WL). This indicates that respondents are deficient in financial asset and this implies a weak ability to improve their livelihood and also cope with risk.

Figure 3 shows the human asset situation of the respondents. The result shows that education (86.9%) temporary worker (73.8%) and training (54.2%) were the major human asset owned by PO. Professional skill (48.6%), long years of experience (38.3%) and large family size (20.6%) were not prominent. The highest human asset owned by WL were education (82.7%) and training (72.9%). Their education and training implies increased ability to obtain, process and use information relevant to rubber production and as a result make right decision which might likely improve their livelihood. However, the small household size might likely affect family labour which is a veritable source of human asset.

Figure 4 shows the physical asset situation of the respondents. Results show that the most common physical asset among PO and WL were agricultural tools (94.4 % and 94.7 %), mobile phone (94.1 % and 94.7), personal dwelling apartment/room (83.2 % and 75.9%), means of transportation (77.6% and 77.4%) and motorable road to farm (77.6 % and 78.9). The least physical asset was electricity supply (45.8% and 43.6%). This suggests that almost all the respondents owned the asset that represent the basic necessity of livelihood sustainability.

Figure 5 shows that group membership (85.0%), cosmopolitans (81.3%), participation in community development activities (72.9%) and extension contact (73.8%) were the major social assets available to the youth who participated as PO while group membership (75.9%), cosmopolitans (75.2%) and participation in community development activities (63.2%) were social assets available to the youth who participated as WL. This indicates that there is a high rate of social activities which brings the youth together in the study area and this will likely facilitate innovation and knowledge sharing. Thus participation in rubber production is expected to increase as they are able to support each other in times of need. However, respondents' social status was low as few (15.0 % WL and 41.1% PO) reported holding executive positions in social groups and in the community (17.3% WL and 29.0% PO).

Table 2 shows that the asset with the highest mean among PO was physical asset (4.73) followed by social (3.83), natural (3.44) and human (3.22) asset. The financial asset has the lowest mean (2.54). Among the WL, physical asset has the highest mean (4.65) while the mean of social (2.94), human (2.49), natural (2.14) and financial (2.09) were low. Result of t-test revealed that youth who participated as PO significantly had more access to natural ($t= 8.655$; $p\leq 0.05$), human ($t= 4.740$; $p\leq 0.05$), financial ($t= 3.606$; $p\leq 0.05$) and social ($t= 6.092$; $p\leq 0.05$) assets than the youth who participated as WL. This means that there are good level of physical, social, natural and human asset that are capable of supporting sustainable rubber livelihood among the PO compared to the WL. The implication of this is that they have greater ability to participate more in rubber production as well as sustaining their livelihood.

Table 2. Test of differences in mean of livelihood assets of plantation owners (PO) and wage labourer (WL).

Asset	Mean (WL)	Mean (PO)	Std, error	Mean diff	t- stat	P-value
Natural	2.14	3.44	0.149	1.30	8.655	0.000***
Financial	2.09	2.54	0.123	0.45	3.606	0.000***
Physical	4.65	4.73	0.142	0.07	0.525	0.600
Human	2.49	3.22	0.155	0.73	4.740	0.000***
Social	2.94	3.83	0.146	0.89	6.092	0.000***

***Significant at 1%

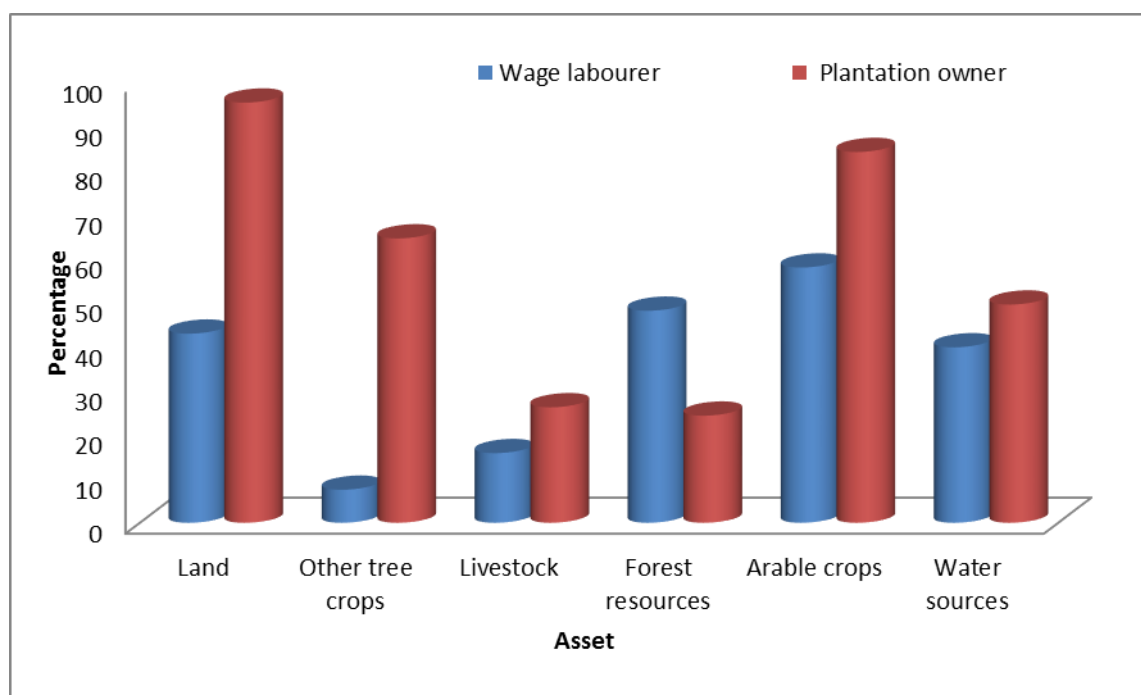


Fig 1: Natural assets of respondents

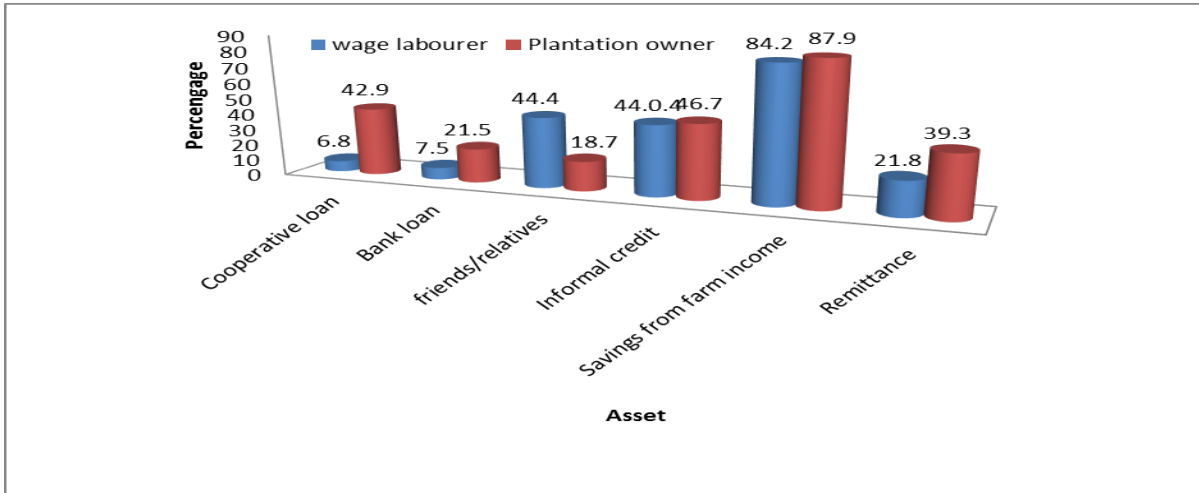


Fig 2: Financial assets of respondent

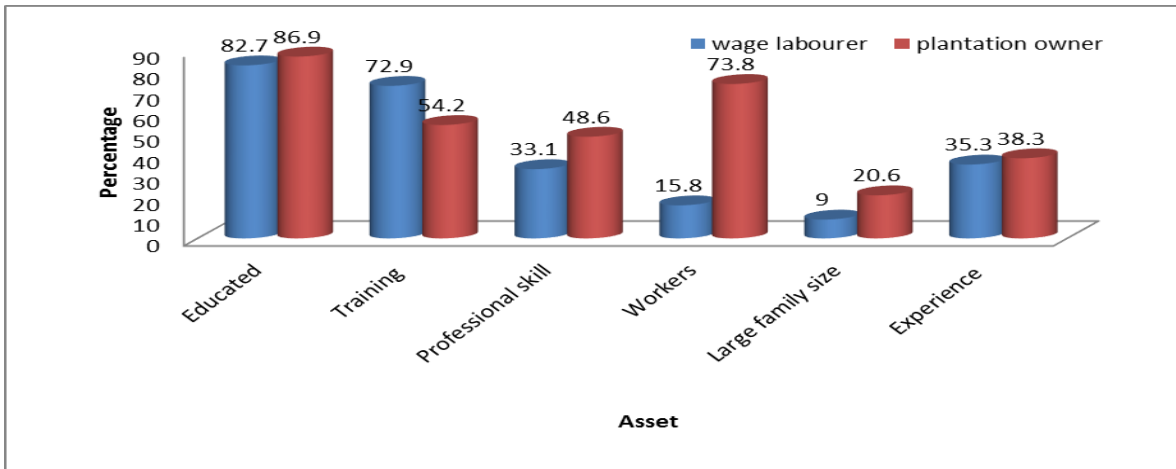


Fig 3: Human assets of respondents

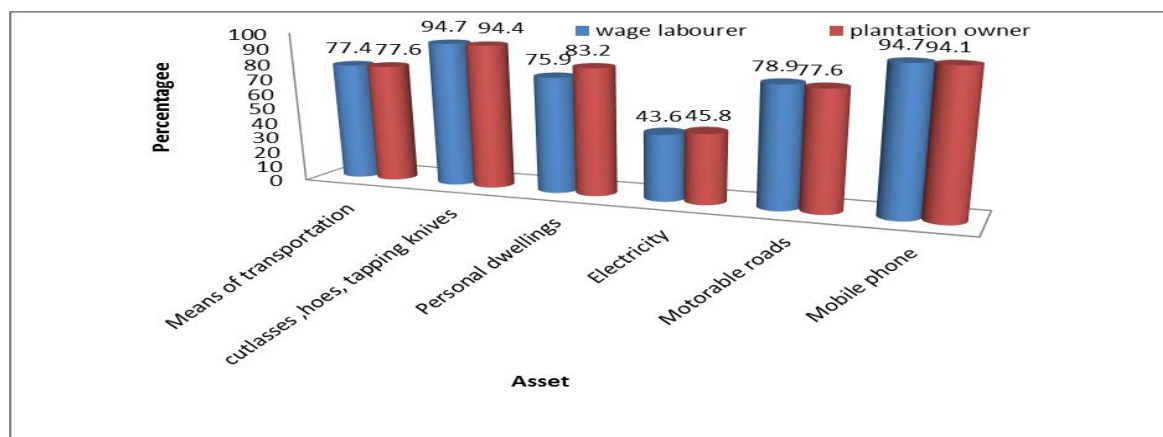


Fig 4: Physical assets of respondents

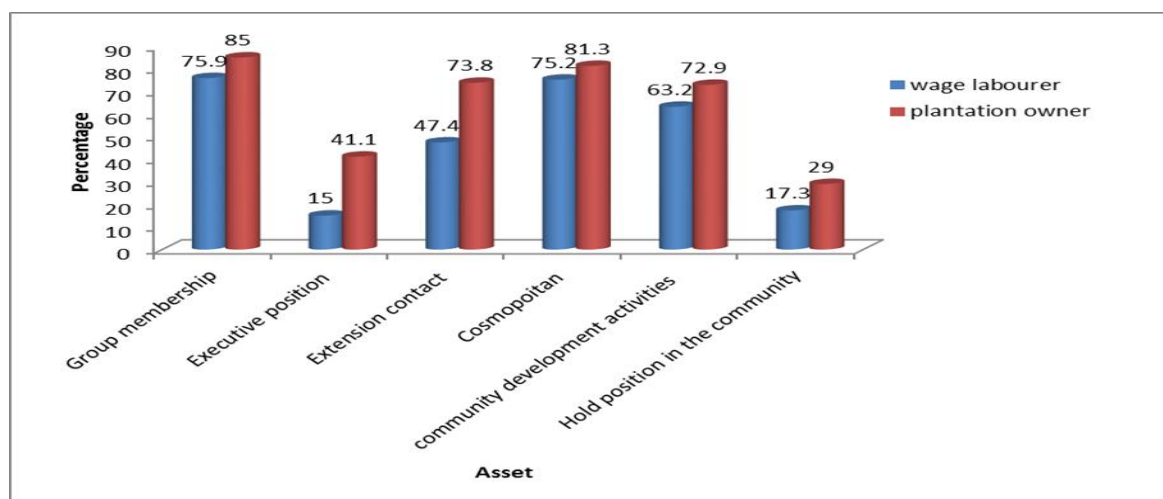


Fig 5: Social assets of respondents

Level of youth participation in rubber production activities

The summary of level of participation of youth in rubber production activities is as presented in Table 3. The results show that the overall level of youths' participation in rubber production activities was moderate. However, a higher proportion (71.9%) of youths who participated as PO had moderate level of participation compared to (30.1 %) youth that participated as WL.

This could be attributed to access to more productive assets as supported by the findings of this study (Table 2).

Table 3. Distribution of respondents according to level of participation in rubber production

Level of participation	Wage (WL)		Labourer		Plantation Owners (PO)		Total	
	F	%	F	%	F	%	F	%
Low (48-79)	88	66.2	20	18.7	108	45.0		
Moderate (80-112)	40	30.1	77	71.9	117	48.8		
High (113- 144)	5	3.7	10	9.4	15	6.2		

The results of the multinomial regression estimate on Table 4 show that the likelihood ratio test ($X^2 = 71.73$) is significant at 5% level. This means that the explanatory variables have significant influence on the level of youth participation in rubber production activities. The Goodness of Fit ($X^2 = 364.91$) was not significant, implying that the model fit the data.

The finding indicate that in the evaluation that takes low participation as the reference, natural, physical and social assets were found to be significant at 5 % probability level. Results in Table 4 shows that physical assets have a significant positive ($\beta=0.268$; $p<0.05$; $\beta=0.656$; $p<0.05$) influence on participation in both moderate and high level participation. This indicates that the more physical assets the youth own, the more likely they have moderate as well as high participation than low participation. The possible reason for this might be that physical assets such as means of transportation, motorable road, mobile phones among others enhances quick access to inputs and markets and some of these physical asset can as well be converted to cash. The coefficients ($\beta=0.491$; $p<0.05$) of natural assets was positive and significant. This implies that youth who had more access to natural assets are more likely to have high participation than low participation. This findings show that land, food and tree crops are important factors that influence participation of youth in rubber production.

A possible explanation of this is that land could be used for agricultural activities as well as collateral for loan. Also, economic trees and food crop could provide back-up income which could be used to purchase input thus enhances participation. This is consistent with Ndayambaje et.al, (2012) assertion that a household with higher alternative sources of income is likely to participate more in tree planting as tree crop cultivation does not yield short-term benefit to household.

Also, the coefficients ($\beta=0.286$; $p<0.05$) of social assets was positive. This means that the more social assets the youth own the more likely they have high participation than low participation. The likely reason is that with more access to social assets, the youth were able to draw more family and mutual support in terms of access to information and emotional support resulting in greater ability to participate more. The odd ratio of natural asset, physical and social assets were 1.634, 1.928 and 2.740 respectively. This means that the probability of having high participation with respect to natural asset, physical and social assets were 63.4 %, 92.8 %, and 74.0% respectively.

Conclusion and Recommendations

Based on the findings from the study, the following conclusions are made; youth who participated as PO have potentials for increased participation and sustainable livelihood as they have more access to natural, financial, human and social assets than those that participated as WL. Physical assets were the most available asset to both Po and WL while financial assets was the least available asset to the youth in rubber farming in the study area. Access to natural, physical, and social assets were important variables for increased participation of youth in rubber production activities.

Based on the findings and conclusion of this study, it is thus recommended that policy measures should be directed at;

1. improving the natural assets of the rural youth through provision of land, promotion of integrated farming through intercropping of rubber with food crops, high value fruit trees and livestock for increased income.
2. improving the social asset by encouraging membership of social organization among the youth, strengthening support for youth associations and also encourage them to use their social networks to draw support in terms of access to information, market and other services.
3. improving the physical asset through provision of infrastructural facilities such as access roads, housing and mobile network in the rural areas

Table 4. Multinomial regression estimates of influence of livelihood assets on participation in rubber production activities

	Moderate participation				High participation			
	B	t value	Probability level	Odd ratio	B	t value	Probability level	Odd ratio
Natural asset score	0.087	0.600	0.549	1.091	0.491	2.154	0.031**	1.634
Financial asset score	0.300	1.613	0.107	1.350	0.144	0.518	0.604	1.155
Physical asset score	0.286	1.946	0.051**	1.332	0.656	2.254	0.024**	1.928
Human asset score	0.100	0.599	0.547	1.105	0.397	1.594	0.111	1.488
Social asset score	0.212	1.233	0.216	1.237	1.008	3.692	0.000***	2.740
Constant	- 2.128	-2.533	0.011		-10.421	-5.815	0.000	
Log likelihood	-378.91							
LR chi² (10)	71.735		0.000					
Pseudo R²	0.307							

The above table takes low level of participation as the reference result; Note ***, **, denotes 1%, 5% level of significance respectively.

REFERENCES

- Abolagba E. O, Aigbekien, E.O and Omokhafa, K.O (2003). Farm gate marketing of natural rubber in the Southeast rubber growing Zone of Nigeria. *Nigeria Journal of Agriculture and Rural Development* 6: 40-48
- Abolagba E. O. and Giroh D.Y. (2006). Constraints to sustainable development of rubber industry in Nigeria. *Moor Journal of Agricultural Research*. 7(1):42-48.
- Adedoyin, S. F. (2001). Sustainable children in agriculture programme in Nigeria. *A keynote address in book of proceeding of the 3rd Annual conference of Children in Agriculture Programme. Ago-Iwoye, Ogun state, Nigeria: p 10 -21.*
- Adekunle, A. O., Oladipupo, F.O., Adisa, R.S. and Fatoye, A. D. (2009). Constraints to youth involvement in agricultural production in Kwara State, Nigeria. *Journal of Agricultural Extension*. 13(1): 102-108.
- Agwu, N. M, Nwanko, E. and Anyanwu. C. I. (2012). Determinants of agricultural labour participation among youths in Abia State. *International Journal of Food and Agricultural Economics*. 2 (1): 157-164.
- Ajayi, A.R. (2007). Measures of association in agricultural extension research. In Olowu T.A (Ed). *Research methods in Agricultural Extension*. Pp 192-205
- Ashley, C. (2000). Applying livelihood approach to natural resource management initiatives: Experience in Nambia and Kenya, ODI Work Paper 134, London: ODI.
- Akpan, S.B, Edet, J.U and Inimfon, V. P. (2016). Sustaining small scale farming: Evidence of poverty and income disparity among rural farming households in South - South Region of Nigeria. *Path of Science: International Electronic Scientific Journal*.
- Balogun, F.E. Giroh, D.Y. and Abubakar, M. (2008). Survey of age distribution of rubber farmers, farm and rubber replanting activities in selected farm settlements in Nigeria. *Journal of Research in Agriculture*. 5(1& 2): 63-66.
- Bello, M., Madza, T. and Saror, S.F. (2011). Nigerian youth involvement in rice production: A case study of Lafia Local Government Area, Nasarawa State. *Journal of Environmental Issues and Agriculture in Developing Countries*. 3 (1): 88-97.
- Brook, K., Zorya, S. and Gautam, A. (2012). Employment in Agriculture: Jobs for Africa's Youth, 2012 Global Food Policy Report, International Food Policy Research Institute (IFPRI).

- Department for International Development (DFID) (2000). Sustainable rural livelihoods guidance sheet, London, Online document: http://www.livelihoods.org/info/guidance_sheets_pdfs/sect8glo.pdf (Accessed on February 12, 2019)
- Emokaro, C.O, Ekunwe, P.A. and Osawaru, J. (2010). Profitability and viability of cassava marketing in lean and peak season in Benin City, Nigeria. *Journal of Applied Science Research*. 6(5): 443-446
- Food and Agriculture Organization of the United Nations (FAO) (2010). The state of food in the World: Addressing food insecurity in protracting crises. Alinovi, C., Russol., and Maxwell (Eds). Food and Agriculture Organization of the United Nations. Pp 62-66
- International Rubber Study Group (IRSG) (2000). Rubber Statistical Bulletin. International Rubber Study Group. London. 51 (4): 9- 11
- Kamarudin, R. and Samsudin, S. (2014). The Sustainable Livelihoods Index: A tool to assess the ability and preparedness of the rural poor in receiving entrepreneurial project. *Journal of Social Economic Research*. 6: 108-117.
- Krantz, L. (2001). The sustainable livelihood approach to poverty reduction, an introduction to SIDA, 1-27
- Liu, Z.F.; Chen, Q.R. and Xie, H.L.(2008) Comprehensive evaluation of farm household livelihood assets in a western mountainous area of China: A case study in Zunyi City. *Journal of Resource. Ecology*. 9: 154–162.
- National Bureau of Statistics (NBS) (2012). Nigeria’s unemployment challenge and role of agriculture, Abuja, Nigeria
- National Population Commission (NPC), (2006). Analytical report of National level. Orrinia Press, Lagos
- Ndayambaje, J. D, Hejima W.J. M and Mohren, G.M. J (2012). Household determinants of tree planting on farms in rural Rwanda. *Small- scale Forestry*. 11, 477-508
- Nnadi, F. N. and Akwiwu, C. D. (2008). Determinants of youths’ participation in rural agriculture in Imo state, Nigeria *Journal of Applied Sciences*. 8:328-333. <http://sccalert.net/abstract/?dol=jas.2—8.328.333>. (Accessed on 20th September, 2013).
- Parrot, N, Paw, H and Westendorp, A. (2006). Livelihood. <http://www.livelihood.wur.nnu.index.php?S=O-Composers>. Accessed 30th April 2020
- Rubber Research Institute of Nigeria (RRIN), (2010). Annual report. Federal Ministry of Agriculture, Abuja Nigeria. p 153

- Udoh, E. J; Akpan, S. B and Ukoh E. F (2017). Assessment of Sustainable livelihood assets of farming household in Akwa-Ibom State of Nigeria. *Journal of Sustainable Development: 10(4)*. 83-96
- Umar, H. Y, Giroh, D. Y., Agbonpolor, N. B. and Mesike C. S. (2011). An Overview of world naturalrRubber production and consumption: An implication for economic empowerment and poverty alleviation in Nigeria. *Journal of Human Ecology*. 33 (1): 53-59
- Yusuf, O.J (2009). Analysis of livelihood strategies employed by household heads in rural communities of Osun State, Nigeria. M.sc unpublished Thesis. Department of Agricultural Extension and Rural Sociology ObafemiAwolowo University, Ile-Ife, Nigeria. p 172