Livelihood Status of Cassava Farming Households in Oil spilled and Non-oil Spilled Niger Delta Communities of Nigeria.

O. Igbinidu[1] and K. I. Eweka[1]
[1]Department of Agricultural Economics and Resource Management, University of Benin, Benin City
Email: osayande.igbinidu@uniben.edu and kayode.eweka@uniben.edu

Abstract
 The concept and development of livelihood status for cassava farming households in oil spilled and non-oil spilled communities of Niger Delta region of Nigerian cannot be over-emphasized this study attempted to describe the socio-economic characteristics of the farmers and assess the livelihood status of the rural cassava farming households. Primary data were collected from 345 households from two (2) states of Niger delta region and analyzed quantitatively within a sustainable livelihood framework.

The results showed that simple majority of cassava farmers 50% in oil spilled and 60% in non-oil spilled communities were between 31-50years of age, the distribution further showed that 64% and 57% of the farmer were males with majority 76% and 57% of the farmers in oil spilled and non-oil spilled communities respectively being married.

The composite livelihood status shows that respondents from oil spilled communities had a mean score of 0.377 as against 0.415 mean score of respondents from non-oil spilled communities. Adopting 0.396 benchmark developed for the area. Respondents from non-oil spilled communities were better off, while stimulating households to employ multiple streams of income were recommended.

Keywords: Livelihood Framework, livelihood Status, adoption, oil-spilled and households

Background
Niger Delta region is in the tertiary areas of River Niger. The Niger Delta development commission (NDDC) estimates the size of Niger Delta at 112,000 square kilometers inhabited my more than 3,000 settled communities (Shell, Nigeria, 2020). The population in the oil and gas producing region of Niger Delta is constantly rising in 1991, there were approximately 20.5 million people there today, there are about 30 million and that figure will rise to 46 million beyond 2020.

The main stay of the people in this region are subsistence farming and fisheries. The ecosystem is particular sensitive to changes in air and water quality such as salinity or pollution. The Niger Delta is a wetland containing a number of ecological zones; sandy coastal ridges barriers, mangroves, freshwater permanent and seasonal swamp forest and lowland rainforest (Shell, 2012). Although the river offers immense scope and potentials for augmenting households income by the cassava farming households however, optimizing this natural endowment is be-deviled by the occurrence of oil spilled., the resilience of cassava farming households to still maintain some level of adaptability which in turn lead to their livelihood security is in part due to the nature of cassava crop which has the ability to grow in any agro-ecological zones and even in marginal lands

Livelihood is made up of the capabilities, activities and assets, (including both materials and social resources) that contributes to means of living. Livelihood status therefore, mostly depends on farming as a business. Farming is one of the main sources of income of the people, of Niger Delta households but the cassava farming households does not get the optimal yield due to oil spillage effect thus, the socioeconomic outlook of the farmers are not quite good enough. They lack the ability to secure sufficient amount of money to meet their basic needs hence, they resort to various portfolio of income stream to mitigate the effect of oil spillage and other vagaries on their cassava farming operation.

There have been very few studies done on the socio-economics dimension of cassava farmers livelihood in different part of Niger Delta region. Therefore, the current study are conducted to assess the livelihood status of cassava farmer in Niger Delta region.

## 2.0	Methodology
### 2.1	Study areas
The study was carried out in the oil producing communities of Edo State and Delta State, this selection was based on the researcher's knowledge of these states as core oil producing states other criteria for selecting as core oil production states. Another criteria for selecting these states is that they often have oil spill incidence Prekeji (2015), finally the selection of the two states was also considered along the times of having the same agro-ecological indices.

Delta states is located within the south-south region of Nigeria and lies approximately between longitude 5º and 6,º45 E of the greenish meridian and latitude 5º,00' and 6º,30′N of the equator. It has a total land areas of about 17,000km^2 and a total population of 4,112,445 people with 2,043136 females and 2,064309 males National Population Commission (NPC, 2006).

Edo state has 18 local government area with the capital in Benin City it is predominantly a rainforest region. It is made up of three major tribes namely Benins, Esans and Afiemai. The State lies between the geographical coordinates of longitudes $5°04'$ East and Latitudes $5°44'$ North of Greewish Meridian the state characterized by a tropical climate which ranges from humid to sub-humid at different times in the year.

2.2 Study Population and Scope of Study

The study population were small scale cassava farming households engaged in farming in two (2) states Niger Delta region. The study covered communities in Edo state and Delta State that have been impacted which will act as a control, during the period of 2004-2014. This period allows for sampling of representative communities. The scope was further narrowed to crude oil spill by this motor oil and lubricant were excluded from the study

2.3 Types of data and data collection instrument

The data employed in this study were obtained from primary and secondary sources. The primary data were collected by the use of pre-tested and wells structured questionnaire to elicit information while secondary data were obtained from journals, internet and libraries.

2.4 sampling procedure

A multi-stage sampling techniques was employed for this study in the first stage, two states from the Niger-delta region were purposively selected for the study. The states were Delta states and Edo state, Delta was selected on the ground of being a major oil producing state, a major producer of cassava and having a incidence of oil spill pollution while Edo state was selected on the ground of being a minor oil producing state, has a high level of cassava farming enterprise and has witness the occurrence of oil spill pollution, other states of Niger Delta were excluded from the study for either being an off-shore oil providing state, or having no oil-spill incidence of or it is a wet land state or not a major cassava producing state according to relevant literature. The second stage involve proportionate sampling of six (6) LGAs from Delta state and 3 LGAs from Edo state. This was based on representativeness, geographical spread, for Edo state the LGA were Ikpoba-okha, Ovia south west and Orhionmwon LGAs for Delta state, they were, Ughelli-North, Isoko South, Burutu, Warri North, Ethiope East and Udu LGAs.

The third stage involve random selection of oil spilled affected communities from the list of communities affected by oil spill spillage from the period of 2004 to 2014 as obtained from Ecological Dept, Ministry of Environment of the two states. Since there were no list of non-oil spill communities, the study employed snow-ball sampling for identifying adjacent communities without oil-spill having comparable agro-ecological and edaphic indices with that of oil-spill communities for proper comparisons

The final stage involve random selection of ten (10) registered ADP cassava farmers. Finally giving us a representative sample size of 378 cassava farming households, but only 345 samples were useful

2.5 Data Verification

The questionnaire was checked per day taking the interview granted. These were carefully rechecked after collecting all data and coded prior to entering into computer software. The data were edited in case of sighting discrepancy

2.6 Data Analysis and Model Specification

Descriptive statistics which include, percentages, mean, frequency tables and T-test statistics were used to achieve the description of socio- economic characteristics.

To estimate and compare livelihood status of cassava farming households between oil-spill affected households and non-oil spill areas. Principal components analysis. The method is derived from sustainable livelihood approach (Koshline and thamzaefa, 2014) in this approach, 23 livelihood assets were used the indicators of this assets were first standardized to convert -them to the same unit following the procedure adopted in measuring life expecting in human development (Hahn *et al.,* 2019) for example, a standardized indicators of a household were given

$$Z_1 = \frac{X(Z1) - \bar{x} -}{s_n}$$

Where Z_1 = standardized indicator

X = variable of an indicator

$\bar{x}$ = mean sample values

S_n = standard deviation

After standardization of the indications of the various assets they were converted into status index using Principal Component Analysis with an alternating with an alternating least square algorithm (Deleeum and Van rijekevorsel, 1980) was used to estimate optimal scaling and principal component simultaneously

The estimation minimizes the following objectives function

$A (X, Y) = M^{-1} \Sigma SSQ(X - GiYi)$

Where:

SSQ = The Sum of Squares

M = Number of Variables

X = Matrix Object Score

G = Indicator Matrix for Variable Ji

Y = (Scaling) in the Matrix Quantification for Ji

Finally the livelihood status index of the zone would be obtained by combining the above indices using optimum weight

SLi = Σ **Wi Mi C**

C = the optimal combination indices

Wi = weight given to each indices

The value of sustainable livelihood index is, if close to 0, livelihood status a poor if close to 1, livelihood status in good

3.0 Results and Discussion

The results of the socio economic analysis is presented in Table 1, the distribution of respondents by age shows that a simple majority of cassava farmers (50%) in oil spill and (60%) in non-oil spill communities were between 31-50 years of age, this being the active age group according to Fakoya *et al,* (2010) respondent within this age bracket are more innovative, motivated and adaptable individuals who can with optimism, cope with farming challenges. The distribution based on sex revealed that 64% and 57% of the respondent forming a simple majority in both group were males this indicating that males were more engaged in cassava farming operation. On marital status the table showed that 76% and 70% of

respondents representing majority were married this results agrees with the finding of Kimaro and Toribio (2018) that majorities of arable crop farmer were married. Marriage is considered to be very important to cassava farming operations because along the cassava value-chain are activities which each structures within the family can effectively handle. Finally, in oil spill communities 63% of respondent attained both primary and secondary level of education is against 64% of respondents from non-oil spill communities. Attaining primary and secondary school level of education increases farmers proficiency

Table 1: Socio-economic characteristics

		Oil spill Communities			Non-oil spill Com		
		Frequency	%	Mean	Frequency	%	Mean
Age range	<31	12	7.64		14	7.44	
	31-40	24	15.28		45	23.93	
	41-50	55	35.03		67	35.11	
	51-60	37	23.56		37	19.68	
	>60	29	18.47		25	13.29	
	Total	157	100.00		188	100.00	
sex	Male	100	63.64		107	56.91	
	Female	57	36.31		81	43.08	
	Total	157	100.00		188	100.00	
Marital status	Single	14	8.91		24	12.76	
	Married	119	75.79		132	70.21	
	Separated	8	5.09		11	5.85	
	Divorced	4	2.54		5	2.65	
	Widowed	11	7.00		13	6.91	
	Widower	1	0.63		3	1.59	
	Total	157	100.00		188	100.00	
Level of education	No formal	29	18.47		19	10.10	
	Primary	44	28.02		45	23.93	
	Secondary	55	35.03		76	40.42	
	Tertiary	29	18.47		48	25.53	
	Others	0	0.00		0	0.00	
	Total	157	100		157	100	

Source: Field survey, 2019.

3.2 Livelihood Status of Respondents in the Study areas

The results of Table 2 revealed respondents assets assessment based on livelihood assets index it was observed that respondents from oil spill communities attained livelihood index of 0.36 mean score on their human assets which showed a poor rating on their human assets, respondents from the non-oil spill on the other hand showed a fairly better-off livelihood index on human assets with 0.30 mean score the implication of the results is that in the Niger Delta region human capacity development is still very poor among farmer, there is a need for government at all levels to help in this regard. The results of physical

assets dimension in the table indicates that respondent from oil spill communities had a livelihood index mean score of 0.36, while respondents from non-oil spill communities attained livelihood index of 0.30 on their assets mean score it can therefore be inferred from the results that both groups have poor livelihood index mean score on their physical assets which is quite revealing as physical assets are parts of a household store of capital and their availability is an important coping mechanism during period of adversity and shock (Lucas *et al.*, 2015).

Estimates of mean score on social assets assessments between respondents in oil spill communities and non-oil spill communities competed on the table, indicated what respondents from oil spill communities attained a livelihood index mean score of 0.35 on their social

assets as against the 0.21 mean score of respondents from non-oil spill communities. It was observed therefore that although both groups of respondents displayed poor livelihood index mean score on social capacity, respondents from oil spill communities had fairly higher mean score, the reasons might not be unconnected with shocks and poverty arising from the effect of oil spillage on their farmland which translate to greater social cohesion, it is a well-known fact that social cohesion increases as poverty increases

The results in row (4) in table 2 further revealed the financial assets mean score distribution between respondents in oil spill communities and non-oil spill communities respondents from non-oil spill communities attained livelihood means score of 0.50, while respondents from non-oil spill communities had livelihood index mean score of 0.57, on the whole, this is an average results, and displays a fairly good

livelihood status one obvious explanation for the paradigm shift is the availability of various intervention programmes in oil spill communities and the practical diversity of income stream in non-oil spill communities respectively.

Finally, the results of table 2, indicates that the respondents from the oil spill communities attained 0.46 natural assets mean score on their livelihood index in contrast to 0.62 natural assets mean score by respondents in non-oil spill communities. The basic explanation for their differentials is predicated upon the fact that, the land in oil spill communities is worse-off with respect to fertility decline than in non-oil spill communities, the obvious speculation is the effect of oil spillage on farmlands. The above coupled with the facts that respondents from non-oil spill communities owned more livestock than their counterparts accounted for the better score.

Table 2: **Livelihood status of Respondents in the Study areas**

	Oil spill		Non-oil spill	
	Mean	SD	Mean	SD
Human assets				
Level of education	0.518	0.3	0.601	0.3
Current job experience	0.218	0.1	0.245	0.2
Know how to access information from government	0.340	0.5	0.320	0.5
Total mean	0.36		0.39	
Physical assets				
Owned vehicle	0.208	0.4	0.232	0.4
Owned house	0.523	0.5	0.355	0.5
Source of water	0.311	0.4	0.325	0.4
Type of toilet	0.301	0.4	0.406	0.404
House type	0.506	0.5	0.541	0.4
Fuel type	0.291	0.4	0.392	0.4
Total mean	0.36		0.29	
Social assets				
Society member	0.335	0.5	0.184	0.4
Agriculture association	0.188	0.4	0.184	0.4
Cordial relation	0.269	0.4	0.136	0.3
Political party	0.274	0.4	0.136	0.3
Help from government	0.701	0.5	0.390	0.3
Total mean	0.35		0.21	0.5
Financial assets				
Total income	0.264	0.2	0.141	0.2
Other sources	0.701	0.5	0.886	0.3
Other from non-economic	0.497	0.5	0.680	0.5
Total mean	0.50		0.57	
Natural assets				
Land for agriculture	0.570	0.5	0.675	0.5
Fertile land	0.386	0.4	0.736	0.5
Own livestock	0.421	0.5	0.447	0.5
Total mean	0.46		0.62	
Grand mean	0.377		0.415	

Source: computed from field survey, 2019.

3.3 Composite Livelihood Status of Respondents in Niger Delta Region

A composite livelihood status was computed to fully complement the livelihood status of respondents in the study area. This analysis was further complemented with data from local survey done in the region. The standard index range is from 0 to 1, as the index gets closer to 0, it is assumed as a poor livelihood status, however, as the index range gets closer to 1, it is assumed a good livelihood status because of the peculiarity of the area, the need to define 1/3rd and 2/3rd of the standard becomes inevitable just as in most poverty literature which features the construction of a benchmark. So therefore, a benchmark of 0.398 was used to determine the results of Table 3, the results indicated that respondents from oil spill communities had 9% low mean index which is one third (1/3) defined for the area while their counterparts from non-oil spill communities has 6% low mean index, however, respondent from oil spill communities had 15% as against 21% average mean score by respondents in non-oil spill communities

Finally respondents from oil spill communities had a mean score of 0.377 as composite livelihood index as against 0.415 mean score of respondents from non-oil spill communities. In checking against the benchmark 0.396, respondents from oil spill communities mean score was below 0.396 thus, indicating that their livelihood assets status were poor and not significant, while respondents mean score of 0.415 from non-oil spill communities was better-off and significant

Table 3: Respondents composite relative index

	Oil spill		Non-oil spill	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Low (<1/3) mean index	14	8.91	12	6.38
Average (1/3-2/3) mean index	23	14.70	39	20.74
High (>2/3) mean index	120	76.44	137	72.81
Total	157	100	188	1000
Mean		0.377		0.415

Bench mark 0.396
Source: computed from field survey, 2020.

Conclusion and recommendation

The study revealed that the socio-economic condition of cassava based farmers in Niger Delta region was not very satisfactory. The overall livelihood status comprising of the local and regional livelihood status was very poor indeed. The above findings should facilitate governmental and non-governmental organization in the capacity of oil-majors and various intervention agencies to help upgrade the livelihood status in the region. It was recommended that the development of livelihood status index should be encouraged as it will act as early warning system whose indicators can prompt timely intervention from time to time.

REFERENCES

Delerum and vanrijeike-vorsel, J. (1980). Nomas and Principals: some generalizations of principal component analysis. In E. Diday *et al.*, (eds). Data Analysis and Informatics pp: 231-241 amsterdam; north Holland.

Fakoya, E.O. Banmeke, T.O.A, Ashimolowo, O.R. and Faboyewo O.S. (2015). Cassava Production and Poverty Eradication among Crop Farmers in Ondo State, *Nigeria. International Journal of Sustainable Development* 2 (5): 67-70

Hahn, M.B., Anne, M.R. and Stanley. O.F. (2009). The Livelihood Vulnerability Index. A Pragmatic Approach to Assessing Risks from Climate Variability and Change a Case Study in Mozambique Centre for Sustainability and

the Global Environment University of Wiscon sin. Madison

Kimaro, E.G and Toribo, M.L. (2018) Climate Change Perception and Impacts on Cattle Production in Pastoral Communities of Northern Tanzania Pastoral respolic prat, Pp 8-9.

Lucas, A., Erdgin, M. and Donata. R., (2015). Measuring Households Resilence to Food Seciruty: Application to Pastoralist Households. Wiley Publisher Rome Italy pg 341-365

NPC, (2006). Ensuring Global Population Competitiveness Data for National Development (data set) retrived january2, 2015 from http//www.population.gov.ng/index.php/stat e.population

Prekeyi, T. (2015). Man Disposes, Environment Reacts, Man is at Risks. Inaugural lecture series 134 University of Benin, University of Benin Press. Pp 15-17

Rosline and shamzaefa, (2014). The Sustainable Livelihood Index: a Tool to Access the Ability and Preparedness of the Rural Poor in Receiving Entrepreneurial Project. *Journal of Economic Research* 1 (1): 108-117.

Shell Nigeria (2012). Shell in Nigeria. briefing notes pg 12 retrived from www.shellnigeria.comon11/07/2016.