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# Analysis of Engagement Outcomes of Female Headed Households from Off And On-Farm Livelihood Activities in Imo State, Nigeria

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**ABSTRACT**
*The study analyzed choice of livelihood activities among female-headed households in rural communities of Imo State, Nigeria. Specifically, the study identified the outcomes emerging from these livelihood activities and determined the poverty status of the respondents in the study area. Purposive and multi-stage random sampling techniques were used to select one hundred and sixty (160) respondents. Data were collected with a structured questionnaire and analyzed using descriptive statistics and inferential statistics (Probit regression). The result shows that 23.12 % of the respondents were extremely poor, with poverty lines of ₦14, 820.00, 27.50% were moderately poor, with poverty lines of ₦33, 210.00 and 49.38%(non-poor) with poverty lines of ₦69, 765.74. Probit regression analysis result showed that coefficients of reduction in poverty (0.26118**), increased income (0.1402***), improved social status (0.2501**) and diversification (0.3299**) has effect on desired off – farm livelihood outcomes, as against increased food availability (0.6421**), household employment (0.4224***), diversification (0.0488**) and sustainable resources (0.5028**) that had effect on desired on – farm livelihood outcomes engaged by respondents in the study area. Policies aimed at access to credit and women empowerment programmes, diversification were advocated for desired outcomes from engaging in these livelihood activities by female headed households.*
***Keywords: Engagement, Outcome, Female-headed, Livelihood, Activities***

## INTRODUCTION

Female-headed households in the rural communities seem to be more involved in agricultural production. When devoted to off-farm activities, they focus more on self - employment rather than in the more remunerative activities, which are, in Nigeria contexts, non-agricultural wage employment (Tikwe, Ndaghu, and Gbana, 2018). As a result, the potential to exploit a particular livelihood activity option is as much governed by the social meanings attached to particular tasks and modes of income generation. Female headed households have to embark on various relations. However, negotiation at any level is related to the amount of capital they possess and the position they have in the society. Many studies have affirmed that inability of agriculture to fully support livelihood security and diversification, different income-generating activities offer alternative

pathways for households to get out of poverty as well as a mechanism for managing risks in an uncertain environment. Therefore, supplementary sources of livelihood and household diversification strategies have assumed importance in this situation to ameliorate this situation (Sanzidur and Shaheen, 2014).

The sustainable livelihoods reflect both the ability to accumulate wealth and the capabilities (or assets) that households can deploy to secure a living. Within this wider context of sustainability of livelihoods of rural people, the purpose of diversification is twofold: first, to increase household incomes, and second, to minimize risks of livelihood failure. Broadly, the rationale for diversification emanates from the opportunities for more employment and generation of higher incomes through more efficient use of resources and through exploitation of comparative advantage (Dickson, Ekpe and Even, 2014). Livelihood strategies are composed of activities that generate the means of household survival and are the planned activities that men and women undertake to build their livelihoods. Livelihood outcomes are the achievements of livelihood strategies, such as more income, increased wellbeing, and reduce vulnerability, improved food security and a more sustainable use of natural resources. It is sustainable when it has the capacity to meet the immediate needs of the people while its ability to meet future needs is not jeopardized. Ensuring the income of women is an essential precondition for the elimination of poverty and the upholding of human rights in particular at the individual level, as it helps build a base for social change. When different dimensions of the livelihood issue are considered, the incidence of income is the most important (Dilruba and Roy, 2012).

Livelihood outcomes are the achievements livelihood strategies, such as more income, increased wellbeing, and reduce vulnerability, improved food security and a more sustainable use of natural resources. It is sustainable when it has the capacity to meet the immediate needs of the people while its ability to meet future needs is not jeopardized Oyesola and Adeosun, (2012). Strategies for the income of women are essential precondition for poverty reduction and guarantee of food security. Off-farm activities provide employment options outside the farm reduce rural urban migration, promote income distribution and diversification and development of rural economy. Tesfaye, Roos, Campbell and Bohlin, (2011) opined that these activities enable farmers handle the problems arising from seasonality of agricultural production as it concerns labour, output and income.

When different dimensions of the livelihood strategies or options are available, the incidence of poverty will be minimal. Reduction in poverty levels of the female headed households would only be uplifted when they receive income from the economic activities. However, female household heads play a significance role in service sector when on-farm livelihood activities are faced with risks and uncertainties mostly during the off-farm season to get work for sustaining their livelihood (Okoye, Okoye, and Chijioke, 2016). Despite the significant contributions of these livelihood activities on engagement of female household heads, it seems the outcomes are yet to be ascertained. In view of the above assertions, this paper was undertaken to analyze outcomes derived by respondents by engaging in these livelihood activities.

**Specific Objectives were to:**

i. identify the outcomes emerging from respondents' engagement in off-farm livelihood activities
ii. identify the outcomes emerging from respondents' engagement in on-farm livelihood activities; and
iii. determine the poverty status of the respondents after engaging in these livelihood activities.

**Hypotheses**

**$Ho_1$:** Respondents' engagement in off-farm livelihood activities has no significant effect on desired livelihood outcomes.

**$Ho_2$:** Respondents' engagement in on-farm livelihood activities has no significant effect on desired livelihood outcomes.

**METHODOLOGY**

The study was carried out in Imo State. The State has a projected population of 3,934,899 persons (National Population Commission, 2017). Imo state is made up of 27 Local Government Areas (LGAs) and three Agricultural zones of Okigwe, Owerri and Orlu. The population for this study comprised of all female household heads in rural communities of Imo State. Purposive, multistage stage random sampling and snowball sampling techniques were adopted in the selection of Local Government Areas (LGAs,) communities, women groups and respondents. Purposively, the respondents were randomly selected based on widow, absentee husbands and relegation of roles to the more favoured female in the house. First, ten (10) LGAs were randomly selected namely: Aboh Mbaise, Ahiazu Mbaise, Ehime Mbano, Ikeduru, Isiala Mbano, Nkwerre, Obowo, Okigwe, Oguta and Isu out of the twenty one (21) LGAs that make up the state. From, the selected LGAs, two (2) communities each namely; Nguru-Nweke, Aboh, Oru Ahiara, Afor-Oru, Nsu, Umeze 1, Akabo/Amatta, Abazu, Umuduru, Isiebu, Amaigbo, Obinuhu, Umulogho, Avutu, Ope, Ubaha, Okeichi, Obutu, Umudigo and Umudike were randomly selected to give a total of twenty (20) communities. Also, two (2) active women groups each namely: Aladinma Women Association, Umuada Meeting, Umuamaraulo, Ahiaeke Women Group, St. Peter's Women's Guild, Achara Women Group, Ukoma Wives Forum, St. Joseph's CWO, St. Mark's CWO, Umuamara Village Meeting, Afo di Nkpa Women Association, Umuhu Home/Abroad Women, Atta Home/Abroad Women, Umuna Home/Abroad Meeting, St. Paul's Mother Union, Ezeoke Nsu Cathedral Women Group, Umudim Women Association, Eziobodo Intercessors, Uboma Wailing Women, Ikpa Progressive Mothers Forum, St. John's CWO Añara, Awuchi Home/Abroad Women, Avutu Women Group, Ozimba Meeting, Dorcas Charity Women Organization, Okigwe South Mother Union, Ikeduru Mothers Union, Owerri Nta Women Welfare Group, Obiakpo Home/Abroad Women, Ehume Umuada, Ugwunwanyi Women Association, Obiwuruotu Women Union, Aladinma Women Association, Obichineyere Progressive Front, Umuchiako Women Prayer Group, St. Philip's Avom Women Group, Amaram Umuada Women Organization, Umuchima Women Group, St. Luke's Avom CWO, were randomly selected from the selected communities to give a total of forty (40) women groups.

Snowball sampling technique which deals with a non-probability sampling used by researchers to identify potential subjects in studies where subjects are hard to locate were employed to generate a list from the women groups to form the sampling frame. Finally, simple random sampling technique was used to select four (4) female household heads each based on the set criteria to give a total of 160 respondents. Descriptive statistics such as frequency counts, percentages and means were used to realize objectives i, ii while objective was captured using poverty gap analysis. The hypothesis was tested with probit regression analysis.

**Model Specifications**

**i. The poverty profiles of the female headed households**

This was analyzed using Per Capita Household Food Expenditure (PCHFE) (poverty gap analysis) (Ezeh, 2007). Standard of living index for clients for the women were computed by dividing each household head total monthly food and non - food expenditure by household size, which is stated as follows:

Given;

$$\text{Per capita expenditure} = \frac{\text{Total monthly household expenditure}}{\text{Household size}} \quad (1)$$

The classification of the respondents poverty profiles were based on Mean per capita household expenditure (MCHE). Mean per capita household expenditure was calculated as follows;

Mean capita household expenditure = Total per capita household expenditure / Total number of households (2)

The poverty line was drawn from the mean per capita household total expenditure, to get two mutually exclusive classes and the classification of the respondents. This was derived as follows;
Respondents whose PCTHE is equal to or greater than 2/3 mean of PCTHE are considered non poor.
Respondents whose PCTHE is less than 2/3 mean PCTHE are considered poor.
A core poor (or extreme poverty) is defined as 1/3 of the mean per capita total household expenditure. Any respondent with per capita less total household expenditure was considered extremely poor. All respondents whose expenditure falls between core poor and below 2/3 PCTHE are considered moderately poor, poor and non-poor.

ii. **Respondents' engagement in major livelihood activities has no significant relationship on desired livelihood outcomes**

This was tested using probit regression model at 95% confidence level. Since the levels engagement of female headed households in off-farm and on – farm livelihood activities cannot be negative (the threshold is zero), the dependent variables can be written using an index function approach.
The empirical models are presented below:

$$I^{x}_{i} = B^{T} X + ei \quad (3)$$
$$Yi = O \text{ if } Ii^{*} = T \quad (4)$$
$$Yi = I \text{ if } 1^{*} > T \quad (5)$$

Where,
Y represents a limited dependent variable, which simultaneously measures the decision to engage in major livelihood activities and intensity of engagement.
I is an underlying latent variables that indexes engagement
T is an observed threshold level
X is the vector of parameter to be estimated error term. If the non - variables T becomes a continuous function of the independent variables and O otherwise.
For the generalized case, the value of the log likelihood form of engagement is given as the variables used in the analysis.
$Y = f\ (X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_{9,} + ei)$
Y = Probability of FHHs engaging in off or on – farm livelihood activities ranges from 0.- 1
$X_1$ = Increased food availability (yes = 1, otherwise = 0)
$X_2$ = Increased income (yes = 1, otherwise = 0)
$X_3$ = Reduction in poverty (yes = 1, otherwise = 0)
$X_4$ = Improved social status (yes = 1, otherwise = 0)
$X_5$ = Household employment (yes = 1, otherwise = 0)
$X_6$ = Diversification of income (yes = 1, otherwise = 0)
$X_7$ = Reduced Vulnerability (yes = 1, otherwise = 0)
$X_8$ = Sustainable resources (yes = 1, otherwise = 0)
ei = Error term

**RESULTS AND DISCUSSION**

**Emerging Outcomes of Off-Farm Livelihood Activities**

The distribution of respondents according to emerging outcomes from off-farm livelihood activities is shown in Table 1. The result indicates that the respondents claimed that majority (83.7%) and 76.87% affirmed that increased food availability and diversification of income were the outcomes they derived from off-farm livelihood activities respectively. However, majority (75.63%) and most (61.25%) viewed household employment and reduced vulnerability as the outcomes from off-farm livelihood activities. Also, a good proportion (55.63%) and 54.37% opined that poverty reduction and improved social status respectively were off-farm livelihood outcomes. Livelihood outcomes

are the achievements of livelihood strategies such as more income, increased wellbeing and reduced vulnerability, improved food security and a more sustainable use of natural resources (Afees, 2016).This result is in consonance with the findings of Pratt, (2016). that income diversification and livelihood generating activities of rural dwellers over the past decades have been directed to meeting daily needs amidst declining returns to agriculture. In the same vein, Idowu *et al*, (2013), argued that off-farm livelihood activities promote empowerment and poverty reduction among female headed households in Nigeria.

Table 1: Distribution of Respondents According to Emerging of Outcome from Off-farm Livelihood Activities

| **Livelihood Outcomes** | **Frequency** | **Percentage*** |
|---|---|---|
| Increased food availability | 134 | 83.75 |
| Increased income | 57 | 35.63 |
| Reduction in poverty | 89 | 55.63 |
| Improved social status | 87 | 54.37 |
| Household employment | 121 | 75.63 |
| Diversification of income | 123 | 76.87 |
| Reduced vulnerability | 98 | 61.25 |
| Sustainable resources | 85 | 59.37 |

Source: Field Survey, 2018. *Multiple Response Recorded

**Emerging Outcomes of On-Farm Livelihood Activities**

The distribution of respondents according to emerging outcomes from livelihood activities is shown in Table 2. The result reveals that majority (88.75%) and 75.63% affirmed that diversification of income and increased food availability respectively were identified outcomes from on-farm livelihood activities. Also, most (64.37%) and a good proportion (54.37%) claimed that household employment and increased income were outcome they derived from on-farm livelihood activities. Okoye *et al*., (2015) affirmed that on-farm livelihood activities serve as an income generating venture that reduces household poverty. Adeleke *et al*., (2016) in their study found that the major outcome from on-farm livelihood activities among women is empowerment. In the same vein, Aderinoye - Abdulwahab *et al.,* (2015) emphasized that on-farm livelihood outcomes encompass strategies that improve food access and nutrition.

Table 2: Distribution of Respondents According to Emerging Outcomes from On-Farm Livelihood Activities

| **Livelihood Outcomes** | **Frequency** | **Percentage*** |
|---|---|---|
| Increased food availability | 121 | 75.63 |
| Increased income | 87 | 54.37 |
| Reduction in poverty | 59 | 36.87 |
| Improved social status | 71 | 44.37 |
| Household employment | 103 | 64.37 |
| Diversification of income | 142 | 88.75 |
| Reduced vulnerability | 51 | 31.87 |
| Sustainable resources | 88 | 55.00 |

**Source***: Field Survey, 2018*

*Multiple Response Recorded

**Determination of Poverty Status**

The result on poverty gap analysis of the respondents is shown in Table 3. The result shows that the respondents had an estimated mean expenditure (poverty line) of ₦83. 654. 00 per annum, with average annual income of ₦ 194, 855.00. The result also indicated that, the incidence of poverty otherwise known as the head count ratio was 0.2832%/. This implies that 28.32 per cent of the female headed households were poor because their incomes fell short of the mean household expenditure used as the poverty line. Coleman – Jensen *et al*., (2018) argued that the livelihood

engagement efforts by female-headed households over the past years have been directed towards poverty reduction and food security.

Table 3a: Poverty Gap Analysis of Female – Headed Households in the Study Area

| Variables | Amount (₦) |
|---|---|
| Mean Household Expenditure (₦) | 83,654.00 |
| Average Income (₦) | 194,855.00 |
| Poverty Incidence (%) | 28.32 |
| Poverty Gap (%) | 16.88 |

Source: Field Survey, 2018

The result in Table 3b shows percentage distribution of poverty line among respondents in the study area. The result shows that 23.12 % of the women were extremely poor, with poverty lines of ₦14, 820.00. Also, 27.50% of the women were moderately poor, with poverty lines of ₦33, 210.00. The result also shows that a moderate (49.38%) of the respondents were non-poor with poverty lines of ₦69, 765.74. This implies that the engagement in both off – farm and non-farm livelihood activities must have reduced poverty among the female – headed households in the study area. The result is in tandem with the findings of Adepoju & Obayelu, (2013) as they obtained a similar result on livelihood diversification and welfare of rural women households in Ondo State, Nigeria.

Table 3b: Poverty Line Analysis (Two Third) of Per Capita Expenditure of Female – Headed Households in the Study Area

| Variables | Frequency | Percentage | Poverty Line (₦) |
|---|---|---|---|
| Extremely Poor | 37 | 23.12 | 14,820.00 |
| Moderately Poor | 44 | 27.50 | 23,210.00 |
| Non Poor | 79 | 49.38 | 42,765.00 |
| **Total** | **160** | **100** | **80,795.00** |

Source: Field Survey, 2018

**Respondents' Engagement in Off-Farm Livelihood Activities Has No Significant Effect On Desired Livelihood Outcomes**

The results in Table 4 show the Probit regression estimates of the effect of desired livelihood outcomes on engagement in off-farm livelihood activities. The $Chi^2$ value of 15.18 was significant at 5% level of probability indicating goodness of fit of the Probit regression line. The $R^2$ value of 0.4242 indicates 42.42% variability in engagement in off-farm activities as a result changes in the livelihood outcomes.

Table 4: Probit Regression Estimates of Effect of Engagement in Off-Farm Livelihood Activities on Desired Livelihood Outcomes to the Respondents

| Outcomes | Coefficients | Standard Error | T-values |
|---|---|---|---|
| Constant | 0.3437 | 0.2375 | 1.45 |
| Increased food availability | 0.0351 | 0.2528 | 0.14 |
| Increased Income | 0.1402 | 0.0222 | 6.31*** |
| Reduction in Poverty | 0.26118 | 0.1038 | 2.51** |
| Improved Social Status | 0.2501 | 0.0656 | 2.92** |
| Household Employment | - 0.0903 | 0.2246 | -0.40 |
| Diversification | 0.3299 | 0.1246 | 2.64** |
| Reduced Vulnerability | - 0.2262 | 0.2621 | -0.86 |
| Sustainable Resources | 0.1520 | 0.2553 | 0.60 |
| $Chi^2$ ($\varkappa^2$) | 15.18** | | |
| Pseudo $R^2$ | 0.4242 | | |
| Log likelihood | -52.542 | | |

Source: STATA BA Results. **P≤0.5 and ***P≤ 0.1

The coefficient of increased income (0.1402) was positive and highly significant at 1.0% level of probability. This implies that any increase in income will lead to a corresponding increase in probability of engagement in off-farm livelihood activities in the study area. The result is in consonance with the findings of Okolo *et al.,* (2018) and Gimenez *et al.,* (2015) that income influences choice off – farm activities thereby reducing poverty. The coefficient of reduction in poverty (0.26118) was positive and significant at 5.0% level of probability. This implies that any increase in poverty reduction will lead to a corresponding increase in probability of engagement in off-farm livelihood activities in the study area. This result is in tandem with Okoye *et al.,* (2015) as they affirmed that engagement in livelihood activity serves as a means of poverty reduction which is the outcome derived my participants. Shuiabu *et al.,* (2015) posits that off-farm livelihood activity offers a wide range of strategies that generate income for rural women. The coefficient of improved social status (0.2501) was positive and significant at 5.0% level. This implies that any increase in social status will lead to a corresponding increase in probability of engagement in off-farm livelihood activities among the farmers in the study area. The result concurs with the findings of Oyesola & Ademola (2012) as they found that social status of an individual has direct relationship with outcome of engaging is any livelihood activity which is normally built on social capital of the individual. Babatunde *et al.,* (2015) also affirmed that off-farm livelihood activity assures household employment thereby increasing social status of the famer. The coefficient of diversification (0.3299) was also positive and significant at 5.0% level of probability. This implies that any increase in diversification will lead to a corresponding increase in probability of engagement in off-farm livelihood activities among the farmers in the study area. This result concurs with Afees (2016) and Babatunde, (2013) infer that engagement in off-farm livelihood activities encourages experimenting on available natural resources that are of economic benefit to them.

**Respondents' Engagement in On-Farm Livelihood Activities Has No Significant Effect On Desired Livelihood Outcomes**

The results in Table 5 show the Probit regression analysis of effect of engagement in major livelihood activities on desired livelihood outcomes in the study area on-farm. The results showed $Ch^2$ value of 15.63 which was significant at 1% level of probability indicating that the Probit regression line was good. The pseudo $R^2$ value of 0.5078 indicate a0.79% variability in probability of engagement in on-farm activities in the study area.

Table 5: Probit Regression Estimates of Effect Engagement in On - Farm Livelihood Activities on Desired Livelihood Outcomes to the Respondents

| Outcomes | Coefficients | Standard Error | t-values |
|---|---|---|---|
| Constant | 0.8813 | 0.2423 | 3.64*** |
| Increased food availability | 0.6421 | 0.2993 | 2.15** |
| Increased Income | 0.2344 | 0.3102 | 0.76 |
| Reduction in Poverty | -0.3304 | 0.3319 | -1.00 |
| Improved Social Status | 0.2451 | 0.3813 | 0.64 |
| Household Employment | 0.4224 | 0.1058 | 3.99*** |
| Diversification | 0.0499 | 0.088 | 2.66** |
| Reduced Vulnerability | -0.26159 | 0.3690 | -0.71 |
| Sustainable Resources | 0.5028 | 0.1826 | 2.75** |
| $Chi^2$ | 15.63*** | | |
| Pseudo $R^2$ | 0.5079 | | |
| Log Likelihood | -64.6253 | | |

Source: STATA BA Results. **P≤0.5 and ***P≤ 0.1

The coefficient of increased food availability (0.6421) was positive and significant at 10% level. This implies that any increase in food availability will lead to a corresponding increase in probability of engagement in on-farm livelihood activities in the study area. Losch, Freguin-Gresh and White, (2012) posit that food availability is the outcome or gains derived from engaging in any livelihood sources of female household heads. The coefficient of household employment (0.4224) was also positive and highly significant at 1% level of probability. This implies that any increase in household employment will lead to a corresponding increase in probability of engagement in on-farm livelihood activities among the farmers in the study area. This result corroborates with the findings of Idowu *et al.,* (2013) that participation of female-headed households encourages household employment, as the heads determine

the wage and income accruing from the activity. Bryceson (2014) affirmed that livelihood strategies results to gainful employment thereby creating multiple choices for the participant. The coefficient of diversification (0.0499) was positive and significant at 5% level of probability. This implies that any increase in diversification will lead to a corresponding increase in probability of engagement in on – farm livelihood activities among the respondents in the study area. Kebede *et al.,* (2014) in their study on sustainable livelihood and diversification concluded that while livelihood diversification is normal for most people in rural areas of Nigeria the outcomes are enormous. In addition, livelihood diversification is pursued for a mixture of motivations and these vary according to context; from a desire to accumulate, invest and the need to spread risk or maintain incomes. The coefficient of sustainable resources (0.5028) was positive and significant at 5% level of probability. This implies that any increase in sustainable resources will lead to a corresponding increase in probability of engagement in on- farm livelihood activities among the farmers in the study area. The result concurs with Afees (2016) that engagement n on – farm livelihood activities encourages experimentation of available natural resources that are of economic benefit to them. Therefore, the hypothesis which states that respondents' engagement in on-farm livelihood activities has no significant effect on desired outcomes is thereby rejected.

**CONCLUSION**

Increased income, reduction in poverty, improved social status and diversifications were outcomes that influenced female-headed households' engagement off- farm livelihood activities whereas, increased food availability, household employment, diversification and sustainable were outcomes that influenced their engagement in off- farm livelihood activities. Engagement in these livelihood activities has reduced the poverty levels of the respondents in the study area.

The study therefore recommends that;

i. Policies directed towards creating enabling environment for diversification to other forms of livelihood activities that improve source of livelihood thereby reducing the poverty status of the respondents.
ii. Improvement in capital sources will enhance higher return on investment thereby increasing diversification and volume of economic activities in the area. This is expected to create employment under enabling environment.
iii. Government women poverty and empowerment programmes should be advocated.This can be targeted on the provision of modern storage facilities, credit at free or low interest rates, infrastructure especially good rural roads to enhance diversification.

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