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Comparative Analysis of Poverty Status Among Adopter and Non-Adopters of Improved Maize Varieties Farmers in Nigeria

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Abstract
This study analysed the poverty status (incidence, depth and severity) among adopters and non-adopters of improved maize varieties (IMVs) in Nigeria so as to know the effect of adoption of IMVs on the adopters' poverty alleviation. Multi-stage sampling procedure was employed to elicit the primary data. A total sample size of 227 (115 adopters and 112 non adopters of Improved maize varieties) randomly drawn from 36 villages across the 3 Agro-ecological zones (AEZs) was used for the study. The data were analysed using descriptive statistics and Foster Greer Thorbecke index. The result of descriptive statistics shows that the respondents sampled were in their productive age with the mean age of 51.04, 58.45 and 54.75 for adopters, non-adopters and pooled respectively. Analysis of poverty status revealed that the percentage of non-poor farmers was greater among the adopters of IMV while non-adopters had higher percentage of poor farmers with pronounced incidence, depth and severity of poverty. Strengthening the efforts by government, policy makers and agro allied company that make production inputs available and accessible to the practicing farmers without bureaucratic bottleneck and increase in the sensitization campaigns by extension agents to encourage adoption of improved maize varieties based on its positive effects of reducing poverty among farmers are suggested.
Keywords: Adoption, Improved Maize Varieties, Poverty status, Maize farmers, Descriptive statistics, Foster Greer Thorbecke index.

INTRODUCTION

Poverty is an economic nuisance that threatens the well-being of the people across various nations of the world (Narayan and Chambers, 2000). It is a multifaceted and multi-dimensional entity and one of the most dangerous diseases ruining mankind. Two groups of essential needs are obvious. The foremost are the minimum necessities of a family for private consumption: adequate food, shelter and clothing as well as certain household equipment and furniture. The subsequent group of basic needs include essential services provided by and for a community such as good drinking water, sanitation, public transport, health, educational and cultural facilities (Otu, *et al.*, 2011) . The value of life one lives is to a great extent attributed to whether he is poor or not. (Oguleye, 2010). According to Aigbokhan, (2002) and World Bank (2001), the poor, on the whole can be described as those who cannot satisfy their basic needs of food, clothing and shelter, are unable to meet social and economic obligations, lack gainful employment, are deprived of access to basic facilities and human well being and unable to attain minimum standards of living. The poor in most developing countries are found among five identifiable economic groups - the urban underdeveloped, the rural landless, the resource poor farmers, the urban underemployed and the unemployed (World Bank, 1997).

The agricultural sector remains a foremost sector in the Nigerian economy both in terms of being a source of food and income to a large segment of the society (Mafimisebi, Ogutade and Mafimisebi, 2010). It is an important sector of the economy with high potentials for employment generation, food security and poverty reduction (Federal Ministry of Agriculture and Rural Development (FMARD), 2011). Agricultural growth is commonly considered as the most efficient means of addressing poverty in the developing world including Nigeria. Consistent with this conception, the Department for International Development, (2003), estimates that a one percent increases in agricultural productivity could reduce the percentage of poor people living on less than 1 dollar a day by between 0.6 and 2 percent and that no other economic activity generates the same benefit for the poor. (Franklin, *et al.*, 2012).

LITRATURE REVIEW

Improved agricultural technologies reduce poverty by increasing rural agricultural incomes, reducing food prices, facilitating the growth of non-farm sectors, and by stimulating the transition from a low productivity subsistence agriculture to a high productivity agro-industrial economy. According to Germano, Wilfred and Hezron (2006), the potential for poverty reduction through the above transmission mechanisms depends on the extent to which agricultural productivity can be increased. Agricultural innovation can have both direct and indirect effects on poverty. Direct effects of technological innovation on poverty reduction are those productivity benefits enjoyed by the farmers who actually adopt the innovation. The benefits typically manifest themselves in form of higher farm profits. The indirect effects are productivity-induced benefits passed on to others by the innovating farmers. These may comprise lower food prices, higher non-farm employment levels or increases in consumption for all farmers. Which of these effects is dominant depends largely on the speed with which farmers adopt new

technologies and on whether or not the affected households are net food buyers or sellers.

The impact of the adoption of a new technology can be studied from the pro-poorness of the new technology. The adoption of a new technology is pro-poor if it benefits the poor relatively more than the non poor (Kakwani, 2005). Obviously, such a technology must be affordable by the poor. Moreover, its benefit must be substantial relative to its cost (including the adoption risks it involves). Some of the literatures on the impact of anti-poverty programs have focused on performance, rural poverty and income. Most of these studies have revealed positive relations between technology adoption and livelihoods (Winter, de Janvry, Saudolet and Stamoulis, 1998; de Janvry and Sadoulet, 2002; Mendola, 2006; Kijima, Otsuka and Sserunkuuma, 2008; Hossain, *et al.*, 2003; Bourdillon *et al.*, 2002). Mendola (2006) and Kijima *et al.* (2008), for instance, pointed out a positive relationship between the adoption of improved crop varieties and wellbeing. While, Bourdillon *et al.* (2002) observed that the adoption of improved maize varieties only modestly increased the crop incomes of adopters in Zimbabwe. Hossain *et al.* (2003), conversely, discovered that the adoption of improved rice varieties had positive effect on wealthy households, but negatively affected poor households in Bangladesh.

In addition, different methods have been developed and used in the literature to assess the impact of programs, policies and adoption of improved agricultural technologies on poverty reduction. Notwithstanding, the results have been varied. For example the Propensity Score Matching (PSM) methods was used by Mendola (2006), to assess the impact of agricultural technology adoption on poverty in Bangladesh and concluded that the adoption of high yielding improved varieties has a positive effect on household wellbeing in Bangladesh.
Similarly, Kijima *et.al.* (2008) carried out a study on the impact of New Rice for Africa (NERICA) in Uganda and established that NERICA adoption lessens poverty without deteriorating the income distribution. The results of Diagne (2006) on the assessment of the impact of NERICA adoption on rice yield in Cote d'Ivoire proved a positive and significant increase in yield particularly on the female farmers. Recently, the outcome of the research conducted by Dontsop-Nguezet, *et al.,* (2011) on the impact of Nerica rice adoption on farmers shows that adoption of NERICA varieties has a positive and significant impact on farm household income and welfare measured by the per capita expenditure and poverty reduction in rural Nigeria.

A close assessment of the various studies on effect of adoption on poverty status of farmers shows that majority of the studies focus on an improved variety of a crop or crops. However, since there are some other improved varieties of a crop or crops that have been developed and distributed to farmers, any observed effect on an improved variety cannot be generalized on entire improved varieties adoption of such crop. Therefore this study will focus on all the existing improved maize varieties in Nigeria available for farmers in Osun state.

METHODOLOGY

Study Area

The study was carried out in Osun State. The State is located in the Southwestern part of Nigeria and lies between Latitudes 5^0 58^1N and 08^0 07^1N and Longitudes 04^0 00^1E and 05^0 05^1E. The State covers a total land area of approximately 14,875km^2 and bounded by Ogun, Kwara, Oyo, Ekiti and Ondo states in the South, North, West and East respectively. The total population of the State is 3,423,535 with sex distribution of 1,740,619 males and 1,682,916 females and population density of 238.1/km^2 (NPC, 2006). According to United Nation Population Fund (UNPFA) (2014), the total population of the State is projected to be 4,299,960 in year 2014 at the growth rate of 3.2 percent per annum. It has three Agro Ecological Zones (AEZs) namely Rainforest (Ife/Ijesa), derived Savannah (Osogbo), and Savannah (Iwo) zones with six administrative zones, thirty Local governments (LGAs) and one Area Office.

The climate is tropical and characterized by bi-modal rainfall pattern. The raining season, which is the cropping season, starts from late march and ends in October. This is followed by a short break of about three weeks and then the dry season starting from November to early March. The annual rainfall ranges from 800mm in the derived savannah zone to 1500mm in the rainforest zone while the mean annual temperature varies from 21.1^0C to 31.1^0C (Osun State Government, 2004). The State's soil type is of the highly ferruginous tropical red soil and the vegetation is mostly rainforest.

The people of the State are mostly farmers, traders and artisans with larger percentage being farmers. The farmers cultivate permanent crops such as cocoa (*Theobroma cacao*), kolanut (*Cola nitida and C. acuminata*), plantain and bananas (*Musa spp*), Oil palm (*Elias guinensis*) and citrus (*Citrus spp*). They also cultivate arable crops especially maize (*Zea mays*) with different varieties widely cultivated. Table 1.1 shows the selected improved maize varieties available for cultivation in Nigeria.

Sampling procedure and Sample size

A multi-stage sampling procedures was used to select 225 maize farmers (115 adopters and 112 non adopters of IMV) in the state. The first stage involved purposive selection of four Local Government Areas (LGAs) noted for maize production in each of the three agro-ecological zones (AEZs) in Osun State, based on the classification of the state's Agricultural Development Programme (ADP). The second stage also involved purposive selection of three high maize producing villages in each of the LGAs. This gave a total of twelve villages. In the third

stage, stratified random sampling was used to categorize maize farmers into adopters and non-adopters of improved maize varieties respectively in each of the village. The fourth stage involved simple random selection of adopters and non-adopters maize farmers by using Yamane (1997) simplified formula to calculate sample size (n) from N population of the maize farmers in the study area as follows.

$$n = \frac{N}{1+N(e)^2} \quad \text{.....(1)}$$

where n is the sample size, N is the population size, and e is the level of precision (i.e sampling error taken at 5%). A total of two hundred and twenty seven questionnaire were distributed i.e. 115 for adopters and 112 for non-adopters of improved maize varieties. In all, a total of 216 were retrieved (108 for adopters and 108 for non-adopters) and the analysis was based on the retrieved questionnaire.

Data

Primary and secondary data were employed for this study. Primary data were collected with the aid of well-structured and pre-tested questionnaire. The questionnaire was designed to obtain information on household socio-economic characteristics such as age, gender, marital status, farm size, education, maize varieties cultivated, level of awareness, adoption of maize varieties as well as input and output quantities, prices involved in maize production, food expenditure and non-food expenditure. Secondary data were obtained from Osun State Ministry of Agriculture and Food Security and Osun State Agricultural Development Program (OSSADEP) on LGAs and Village in each AEZ, as well as on maize varieties grown and their sources.

Method of Analysis

Descriptive statistical and econometric tools were used in analyzing the data collected. The tools include descriptive statistics and the P-alpha measures of poverty (FGT index). Descriptive statistics such as frequency distribution tables and cross tabulations were used to summarize the data on respondents' socio-economic variables of maize farmers in the study area. FGT index was used to investigate the incidence, depth and severity of poverty among the respondents in the study area.

Table 1: Selected improved maize varieties available for cultivation in Nigeria

Variety Name	Characteristics/Traits
Western Yellow NARZO-17 New (FARZ 7) Old	High yielding but susceptible to downy mildew
096EP6 NARZO-18 (FARZ 23)	Fairly high yielding but tall and susceptible to streak and downy mildew
TZPBSR NARZO-30 New (FARZ 27) Old	High yielding and streak resistant but susceptible to downy mildew
TZBSR NARZO-29 New (FARZ 34) Old	High yielding and streak resistant but susceptible to downy mildew
TZSR-W-1 NARZ0-20	High yielding and streak resistant but susceptible to downy mildew
TZESR-20	Fairly high yielding but susceptible to downy mildew
EV9043SR	Fairly high yielding but susceptible to downy mildew
DMR- LSR-W	Late, fairly high yielding, resistant to both streak and downy mildew (white)
DMR- LSR-Y	Late, fairly high yielding, resistant to both streak and downy mildew (yellow)
DMR-ESR-W	Early, fairly high yielding, resistant to both streak and downy mildew (white)
DMR-ESR-Y	Early, fairly high yielding, resistant to both streak and downy mildew (yellow)
TZMSR-W	Late, high yielding, resistant to streak, rust and blight (white)

Source: Agricultural Services Department, State of Osun Ministry of Agriculture and Natural Resources, (2013).

ANALYTICAL TECHNIQUE

Measuring the Poverty Status of Respondents

The respondents' per capita expenditure was used in classifying maize farmers into three, namely non poor, poor and core poor: This was based on World Bank/Federal office of Statistic (FOS)/(NPC), 2013 and FOS, 2012 classification of Poverty status as explained below:

- Non poor: These are farmers whose per capita expenditure is above two-third of the poverty line. i.e NP>2/3 of the mean expenditure per day.
- Poor: These are farmers whose expenditure was below the poverty line. i.e P<2/3 of the mean expenditure per day.
- Core poor: These are farmers whose expenditure was below one-third of the mean expenditure poverty line. i.e P<1/3 of the mean expenditure per day.

The poverty lines were set at 2/3 and 1/3 of the mean expenditure. (World Bank/FOS/NPC,2013; FOS,2012)

The p-alpha measures of poverty

The poverty line was set at two-thirds of the mean per capita expenditure. The first three poverty means of the so-called FGT class (Foster, Greer and Thorbecke, 1984) namely; the poverty headcount, the poverty gap, and the squared poverty gap was estimated to achieve objective 3.

Poverty Headcount: This is the share of the population which is poor, i.e. the proportion of the population for whom consumption is less than the poverty line. This is also known as incidence of poverty.

Poverty Gap: This is often considered as representing the depth of poverty, is the mean distance separating the population from the poverty line, with non-poor given a distance of zero.

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{Z - Y_i}{Z}\right)^\alpha \qquad \text{.....(2)}$$

Where P_α is P-alpha, Y_i is the value of consumption expenditure of respondent i, α is the FGT parameter, which takes the values of 0, 1 or 2 representing the incidence, depth or severity of poverty respectively and Z is the poverty line. When there is no aversion to poverty, α = 0, the index reduces to

$$P_0 = {}^1/_{N^q} = {}^q/_N = H \qquad \text{.....(3)}$$

This is called headcount ratio or incidence of poverty. It is the proportion of the population for whom consumption expenditure Y is less than the poverty line (CBN, 1998). If the degree of aversion to poverty α = 1 then the index will be,

$$P_1 = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{Z - Y_i}{Z}\right)^1 = HI \qquad \text{.....(4)}$$

$$I = {}^{Z - Y_q}/_Z \qquad \text{Where} \qquad Y_q = {}^1/_q \sum_{i=1}^{q} Y_i \qquad \text{.....(5)}$$

Y_q is the average expenditure of the poor. HI is referred to as the poverty gap (World Bank, 2004). Poverty Gap is a useful statistics to assess how much resources would be needed to eradicate poverty through cash transfers perfectly targeted at the poor.

Squared Poverty Gap: this is often used to describe the measure of the severity of poverty. While the poverty gap takes into account the distance separating the poor from the poverty line, the squared poverty gap takes square of that distance into account. Here, the poverty gap is weighted by itself so as to give more weight to the very poor. (World Bank, 2004). This was computed using equation 10.

$$P_2 = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{Z - Y_i}{Z}\right)^2 \qquad \text{.....(6)}$$

Socio Economic Characteristics of Respondents

The socio economic characteristics of the maize farmers in the study area are presented in Table 2 The characteristics presented include age, gender, years of experience, household size and farm size.

Table 2: Socio economic characteristics of respondents

Variables	Adopters	Non adopters	Pooled	Mean difference
Age				
25-35	16 (14.8)	1 (0.9)	17 (7.9)	
36-45	28 (25.9)	11 (10.2)	39 (18.0)	
46-55	22 (20.5)	38 (35.2)	60 (27.8)	-4.27***
56-65	24 (22.3)	34 (31.5)	58 (26.9)	
> 65	18 (16.5)	24 (22.2)	42 (19.4)	
Total	108 (100.0)	108 (100.0)	216 (100.0)	
Mean	51	58	55	
Gender				
Male	92(85.2)	92 (85.2)	184 (85.2)	
Female	16(14.8)	16 (14.8)	32 (14.8)	
Total	108 (100)	108 (100.0)	216 (100.0)	
Years of Experience				
0-15	40 (37.0)	30 (27.8)	70 (32.4)	
16-30	41 (38.0)	43 (39.8)	84 (38.9)	-1.96**
31-45	22 (20.4)	24 (22.2)	46 (21.3)	
46-60	5 (4.6)	11 (10.2)	16 (7.4)	
Total	108 (100.0)	108 (100.0)	216 (100.0)	
Mean	23	26	25	
Household size				
1-5	58 (53.7)	53 (49.1)	111 (51.4)	
6-10	47 (43.5)	52 (48.2)	99 (45.8)	-0.84
11-15	3 (2.7)	3 (2.7)	6 (2.8)	
Total	108 (100.0)	108 (100.0)	216 (100.0)	
Mean	5	6	6	
Farm size				
0.3- 2.3	94 (87)	91 (84.2)	185 (85.6)	
2.4 – 4.3	8 (7.4)	14 (13.0)	22 (10.2)	1.82*
4.4 – 6.3	4 (3.7)	2 (1.9)	6 (2.8)	
6.4 – 8.3	2 (1.9)	1 (0.9)	3 (1.4)	
Total	108 (100)	108 (100)	216 (100.0)	
Mean	2.62	2.26	2.44	

Source: Field survey, 2014

*,**, ***, significant at10%, 5% and 1% levels respectively.

Values outside and inside bracket are frequencies and percentages respectively

Age Distribution of Respondents

Results of the distribution of respondents according to age show that the mean age of total respondents is 55 years. The mean age of the non-adopter was the highest (58years) while adopter mean age was 51 years. The results indicate that the respondents sampled were in their productive age. This implies likelihood of an increase in the responsiveness to the adoption of improved maize varieties among youth as a means of poverty alleviation among the farmers. It indicates the progression of the business in the years ahead. Further analysis shows that there is mean difference between the age of adopters and non-adopters at 1% level of significance. This implied that age of farmers might have significant influences on adoption and non-adoption of improved maize varieties. This is in line with the findings of Bamire, *et al.,* (2010). Age is an important characteristic in any agricultural venture because of its effect on the productive ability of the farmers (Adesimi, 2008).

Gender of Respondents

The distribution of respondents according to gender is presented in Table 2. The results show that there were more male maize farmers (85.2%) than female (14.2%) in the study area. Gender distribution by adopters and non-adopters followed the same trend. The higher proportion of male to female maize farmers indicates that maize farming activities were gender biased. This signifies that maize farming in the study area is gender sensitive. It could be attributed to the limited access of rural women to land, as reported by Dauda, (2003) who described the major constraint to women's fully participation in agricultural activities and rural development as their limited access to land.

Household Size of Respondents

The results of the frequency distribution of respondents according to their household size are presented in table 2 The distribution of respondents based on the family size reveals that the mean household size for the pooled data was 5.51 while adopter and non-adopter have 5.36 and 5.66 as the mean household size respectively. Majority of the respondents (97.2%) had a family size of between 1 and 10 members and the distribution for both the adopters and non-adopters follows the same trend. This agreed with research findings conducted in both Ogun State and Southwestern Nigeria (Apantaku, 2008) that the family size of farming families in Southwestern, Nigeria ranged between 5 and 9 persons. A total of 97% of the adopters and non-adopters belong to the range. However, there is no significant difference between household size of adopters and non adopters. This indicated that the household size may not have significant influence on adoption and non-adoption of improve maize varieties.

Farm Size of Respondents

The area of farmland under cultivation by the respondents as shown in Table 2. Results reveal that the mean farm size for the were 2.44ha, 2.62ha and 2.26 ha for pooled adopters and non-adopters respectively. This denotes that majority of the respondents are typically smallholders. About 5% of the adopters cultivated more than 4.3 hectares of land while only 2.8% of non-adopters cultivated above 4.3 hacters. This could mean that farm size has a positive relationship with technology adoption as suggested by Paudel and Thapa, (2004).

The size of farmland cultivated is an indication of the potential of the farm business enterprise to meet the needs of the farm family. Sofoluwe *et al.,* (2013) argued that larger farm owners have more flexibility in their decision-making, greater access to discretionary resources, and more opportunity to use new practices on a trial basis with more ability to deal with risk. On this basis, he concluded that adoption of new technology afforded the farmer the opportunity to increase their yield (per hectare) thereby increase their income and consequently reduce their poverty. Mean test of significance showed a significant difference between farm size of adopters and non adopters. It implied that farm size might significantly determine the adoption and non-adoption of improve maize varieties among farmers in the study area.

Years of Experience of Respondents

The distribution of respondents according to years of experience is presented in Table.2 The results show that majority of the respondents (80%) have year of experience ranged between 16 –30 years while low percentage of respondents (7.4%) have farming experience between 46-60 years. The result of the findings implies that farmers in the study area are well experienced, thus they have adequate knowledge of the adoption of improve maize varieties to alleviate their poverty conditions. Years of respondents of adopters is found to be significantly different from that of non-adopters. Experience as a general concept comprises of skill in observation of some event gained through involvement or exposure to that thing or event. It is argued that as farmers gain more experiences he/she becomes acquainted with new technologies and hence is expected to have higher ability to use new technologies more efficiently (Feder *et al*., 1985 and Rahmeto, 2006).

Analysis of Poverty Status of Respondents

Table 3 presents the poverty status of the respondents based on the computed poverty lines. The respondents were classified into one exclusive group separated by the line either as non-poor, poor or core poor respectively. A non-poor poverty line was drawn from above 2/3rd of the mean expenditure per day, a poor poverty line equivalent of 2/3rd of the mean expenditure per day while core poor poverty line equivalent of 1/3rd of the mean expenditure per day.

Table 3: Poverty status of respondents based on poverty lines

	Non poor		Poor		Core poor	
	Freq	%	Freq	%	Freq	%
Adopters	80	74.07	23	21.30	5	4.63
Non adopters	67	62.04	36	33.33	5	4.63
Pooled	47	68.06	59	27.31	10	4.63

Source: Data Analysis, 2014.

The mean expenditures per day were ₦608.74, ₦736.94 and ₦480.75 for the pooled, adopter and non-adopter of IMV categories respectively. The percentage of adopters who were in the status of non-poor were 74.07% while that of non-adopters was 62.04%. This shows that adopters in non-poor categories are more than non-poor in non-adopter category. For the whole respondents, about 68.06% were in non-poor category. A total of twenty one percent (21.3%) of adopters were poor while about 33 percent (33%) of non-adopters were poor. This also shows that non-adopters were poorer than adopters. Also twenty seven percent (27.3%) of pooled respondents were in the poor category. The pictorial representation of poverty status by adoption status is presented in Figure 1.

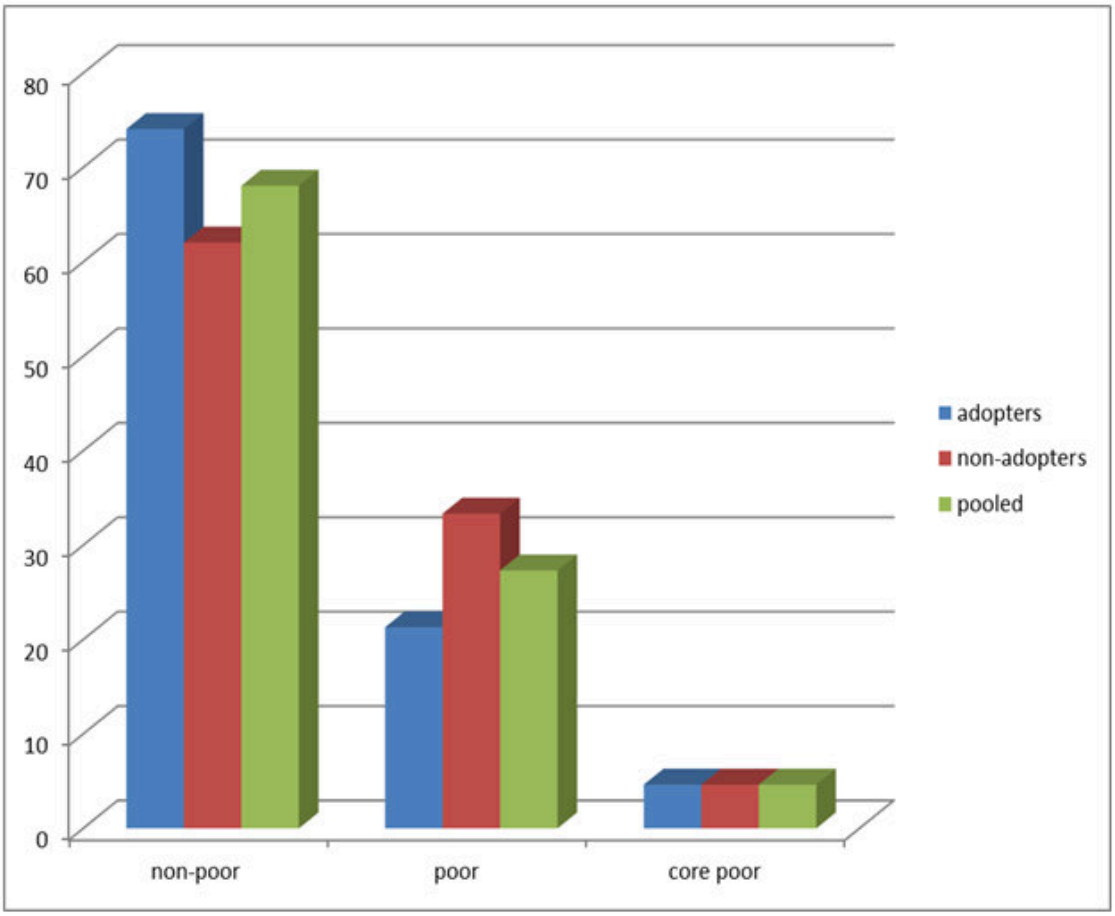

Figure 1: Pictorial Representation of Poverty Status by Adoption Status of Respondents

Measures of Poverty Indices

The results of respondents p-alpha measure of poverty are presented in Table 4. The respondents' p-alpha measure of poverty was analyzed by decomposing it using three indicators of poverty – incidence of poverty (P_0), poverty depth (P_1) and severity of poverty (P_2). The three indicators were based on a single formula but each index puts different weights on the degree to which a household or individual falls below the poverty line. The mathematical formulation of poverty measurements as derived using the Foster, Greer and Thorbecke (1984) formula.

Table 4: Incidence, depth and severity of poverty among respondents

	Poverty indices		
Categories	Incidence	Depth	Severity
Adopters	0.092	0.021	0.008
Non-adopters	0.231	0.067	0.028
Pooled	0.157	0.041	0.016

Sources: Data analysis, 2014

Table 4 shows these indicators and the results show that the incidence of poverty for adopters and non-adopters of IMVs were 9% and 23% respectively. The incidence of poverty was higher among the non-adopters than the adopters and the incidence of poverty for the pooled sample was 15.7%, which was lower than that of non-adopters. The implication of this is that the percentage of people that are poor (those living below poverty line) was higher among the non-adopters than the adopters, which could be as a result of the positive economic effect of adopting IMV on the adopters.

The depth of poverty, which provides information regarding how far off poor households or individual farmers are from the poverty line, reveals that, 2.1% and 6.7% of the adopters and non-adopters respectively sank deeper into poverty. This shows that non-adopters were far more poorer than adopters of IMVs. Similarly, the severity of poverty for adopters and non-adopters were 0.8% and 2.8% respectively. The severity of poverty takes into account not only the distance separating the poor from the poverty line, but also the inequality among the poor. The incidence, depth and severity of poverty by adoption status of respondents are presented in Figure 2.

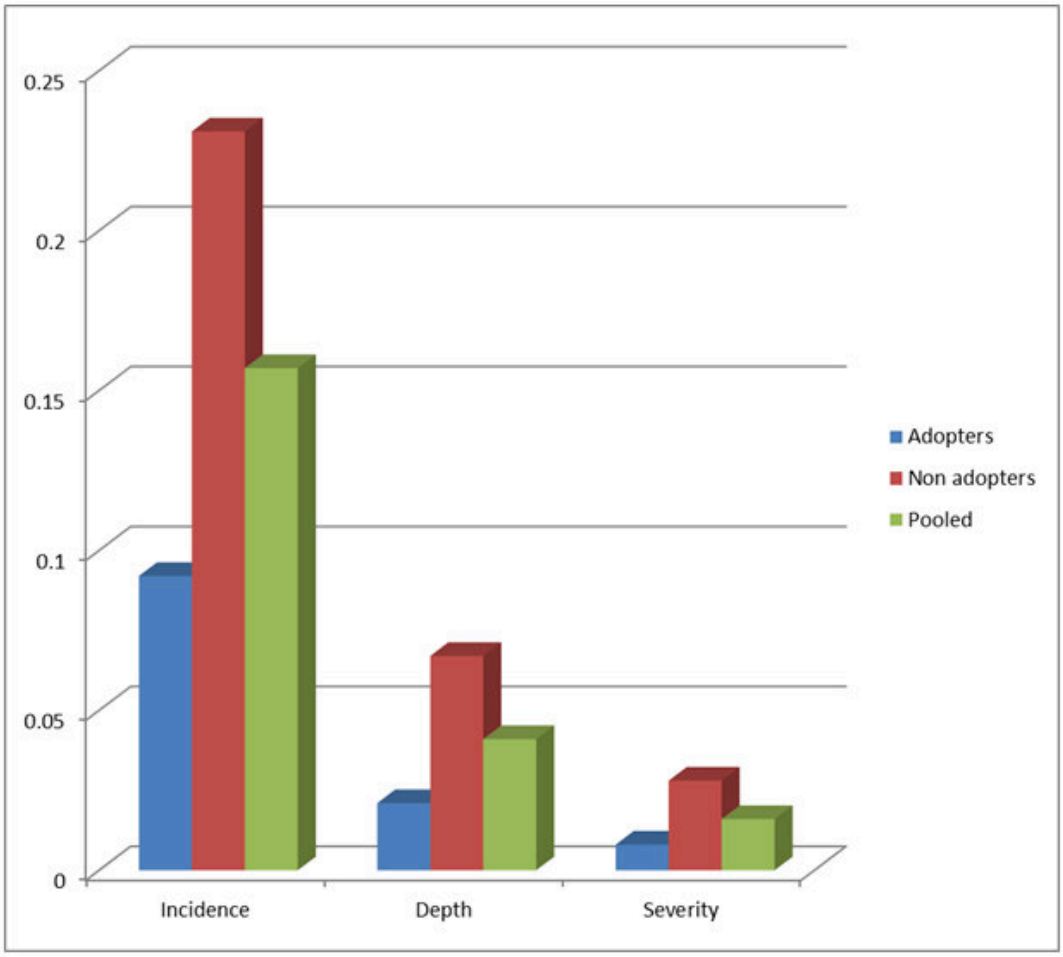

Figure 2: The incidence, depth and severity of poverty by adoption status of respondents

Conclusion and Recomendations

It can be concluded from the findings of this study that the maize farmers in the study area were in their productive ages with higher proportion of males than the females. The farmers are smallholders with sixteen to thirty years of farming experience. The percentage of non-poor maize farmers is greater among the adopters of improve maize varieties while the incidence, depth and severity of poverty are more pronounced among the non-adopters of improved maize varieties in the study area. Adoption of improved maize varieties by the maize farmers improves the wellbeing of adopters in the study area.

A critical look at findings from this study shows that adoption of improved maize varieties by maize farmers has a positive significant impact on the poverty statues of maize farmers in the study area, on this basis, government, policy makers and agro allied company should intensify their efforts to ensure sufficient availability and accessibility of essential and complementary inputs such as fertilizers, agrochemicals and capital inputs like tractors as well as labour to the practicing farmers without bureaucratic bottleneck This can be done by further strengthening the existing policies under Agricultural Transformation Agenda (ATA) such as the e-wallet and Growth Enhancement Scheme (GES). Also, the maize farmers should be encouraged to adopt improved maize varieties by increasing the sensitization campaigns by extension agents based on its positive effects of reducing poverty.

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