Determinants of Asset Ownership by Women in Rural Nigeria

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ABSTRACT
Asset ownership plays a key role in improving the welfare of women. Nonetheless, there is dearth of information on the factors influencing asset ownership by women in rural Nigeria. Therefore, this paper investigated the level and determinants of asset ownership of women in rural Nigeria. Information on 18,869 rural women from the Demographic and Health Survey 2013 were used. Information on physical and natural assets, educational level, household size and age were removed for analysis. Level of Asset Ownership (LAO) was classified into low-LAO (≤1), intermediate-LAO (2-6) and high-LAO (7-10). Analysis was done through the use of ordered probit regression at $\alpha_{0.05}$, composite analysis and descriptive statistics. In the study area the mean age and household size of the women were 36.0±9.2years and 6.5±1.5 persons, respectively. About fifty eight percent of the women had no formal education. Women in the study area owned physical assets [mobile phone (68.7%) and radio (63.5%)], whereas six percent owned land. Household size (β=0.23) and educational level (primary, β=0.37; secondary, β=0.70; tertiary, β=1.28) improved asset ownership while age (β=-0.02), marital status (divorced, β=-0.19), being employed in agriculture (β=-0.24) and female headed household (β=-0.52) reduced asset ownership. Probability of owning assets among women was significantly reduced in North-East (55.6%), North-West (44.8%) and South-West (7.9%), while it was improved in South-East (10.1%) and South-South (15.7%) relative to the North-Central. In rural Nigeria, ownership of assets by women is on the average. Interventions in the area of education are needed to improve LOA.
Keywords: Physical assets, Natural assets, Rural, Nigeria, Women

1.0 INTRODUCTION
Globally there is the apprehension about women's lack of ownership of asset such as land, house and other productive assets. Thus contributing to women's increasing poverty (Aluko, 2015; Paydar, 2012; Besley and Ghatak 2009). Blau et al. (2014) opined that, in our societies which are mostly patriarchal women get property rights mostly through their husbands. Women only use this assets but they do not own it (Steinzor, 2003). In many African societies there are cultural specificities among which are social and patriarchal which make women to suffer disadvantages in several aspects of life and are marginalised (Tuyizere, 2007; Ebila and Musiimenta, 2004).

In the last fifteen years, the economic growth of Nigeria on the average has been about 7.4% annually (African Economic Outlook, 2012) but this growth has not significantly reduced poverty and deprivations suffered by the populace. The overall growth rate can be misleading as it reveals little about growth in different sectors and its real effect on livelihood (Aliyu and Garba, 2012). Over 1 billion people in the world today live under unacceptable conditions of deprivation mostly in developing countries, and particularly in rural areas of low-income Asia, Pacific, Africa, Latin America and the Caribbean, and the least developed countries. In Nigeria, 70% of Nigerians living below the national poverty line are women (Pwanagba, 2013). Despite Nigeria's increased economic growth in recent years, many women are still struggling on the margins of survival. Women's ownership of assets is likely to prevent them from falling into poverty and deprivation, leading to better outcomes for their children, or resulting in better outcomes

in case of widowhood, divorce, separation or in violent situations (Deere and Doss, 2006) and may be welfare enhancing (Luke and Munshi, 2011; Doss, 2006; Duflo and Udry, 2004).

It is increasingly being recognised by researchers that access to and ownership of assets is critical for increasing productivity, especially agricultural productivity, and enabling people to move out of poverty (Doss, 2010). Most research works have used the household as the unit of analysis. However, households are not static but are formed and dissolved, in part, due to economic circumstances. Thus, it is important to look both beyond and within the household as the unit of analysis to understand asset ownership by individuals. In particular, because women's access to assets is often tied to their relationships within the household and community, they are particularly vulnerable to losing this access when the household dissolves, either through divorce, desertion or death. Household level analyses of asset ownership may not capture women's particular vulnerabilities (Doss, 2010; Deere and Doss, 2006).

Although great strides have been made in reducing gender inequality in Nigeria, women still face higher rates of poverty compared to their male counterparts (Adeoti and Akinwande, 2013). Over the years, successive governments in Nigeria at various levels have put in place measures and policies to drastically reduce the soaring rate of poverty and deprivation in the country, especially among women through several programs. Such programs and policy measures according to Ogwumike (2001), focused essentially on growth, basic needs, and rural development approaches, some of which were initiated before and after the independence. The period 2000 till date witnessed several poverty alleviation programs, some of which include: Poverty Eradication Program (PAP) (2000); National Poverty Eradication Programme (NAPEP) (2001), Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) (2003); National Economic Empowerment and Development Strategy NEEDS (2004); Seven Point Agenda (2009); Nigeria Vision 2020 (2009); Millennium Development Goals (2000-2015) and the Sustainable Development Goals (2015-2030).

Issues of corruption, political instability, policy inconsistencies, underfunding, duplication of roles of other agencies, policy reversals, and incompetence on the part of people appointed to serve as heads of programs were factors that militated against the successes of these initiatives. Although some of these programs were not targeted at asset ownership if effective could have indirectly helped women in owning assets. In fact, women condition is becoming worse and if drastic steps are not urgently taken towards effectively addressing poverty and deprivation in Nigeria, especially among women, this is likely to have a great effect on the country and perhaps the world. Without access to opportunities to further their education and accumulate productive assets in order to become self-reliant, women will continue to disproportionately experience welfare deprivation in Nigeria. Thus, this calls for urgent concern. Asset ownership among women in rural Nigeria is an important issue.

In Nigeria, statistics showed that 112million Nigerians are poor, 72% of whom are women live below the poverty line (World Bank, 2012; Adeoye, 2016). Asset ownership by women in Nigeria is usually discussed in the context of land (Hilliard *et al.*, 2016; Adeyemo *et al.*, 2015; Aluko, 2015; Emordi and Njoku, 2015), credit (George and Jacob, 2015) and livestock (Dillon and Quinones, 2009) with little written about women's level of asset ownership. Therefore this study disaggregated the household on an individual basis to examine the asset ownership of women in rural Nigeria. As a result, the study proffered answers to the following research questions; what is the level of asset ownership among women in rural Nigeria and what factors influence the level of asset ownership by women in rural Nigeria.

2.0 Literature Review

Oladokun et al. 2018 examined the level of asset ownership by women in rural North East and South East, Nigeria. Data from the Nigeria Demographic and Health Survey (NDHS) 2013 was used. Information from 5024 from North East (NE) and 1502 women from South East (SE) with adequate information were used for the analyses. Data on socio-economic characteristics {age, household size, marital status, educational level and assets (physical and natural)} were extracted. Data were analyzed using descriptive statistics, multiple correspondence analysis, composite score and ordered probit regression at $\alpha_{0.05}$. Mean age and household size in NE and SE were 28.77 ± 9.57, 29.62 ± 10.04 years;

7.51 ± 4.02, 5.59 ± 2.79 persons respectively. Highest number (66.94%) of women were married in North East and 63.38% were married in South East, while 66.94% had no formal education in North East and 3.79% in South East. Women owned physical assets such as mobile phone (60.41%, 82.69%), radio (50.94%, 73.77%) and natural assets such as land (5.39%) in North East and South East respectively. Women in the intermediate category of asset ownership constitute (76.02%, 63.58%) followed by the low and high categories with (11.48%, 17.11%) and (12.50%, 19.31%) in North East and South East, respectively. In the NE employment type (agriculture and allied, −0.23), gender of household head (female, −0.23), marital status (married, −0.08) reduced asset ownership. Employment type (skilled manual, 0.09; services, 0.16), household size (0.05) and educational level (primary, 0.27; secondary, 0.70; higher, 1.92) improved asset ownership. Also for the SE, employment type (agriculture and allied, −0.39), gender of household head (female, −0.64), reduced asset ownership while employment type (professional/managerial, 0.28), household size (0.03) and educational level (primary, 0.54; secondary, 0.90; higher, 1.16) improved asset ownership. Local and international agencies working with women should embark on enlightenment programs for communities on the need for women to increase the level of assets they own.
A study was conducted by Adeoye (2016) on asset ownership and poverty reduction among female-headed households in rural Nigeria. Data from 2013 General Household survey was used and information from 424 female headed households was utilized. Data were analysed using descriptive statistics, principal component analysis, Foster, Greer and Thorbecke and ordered probit model. Majority (80.77%) 0f the female headed households were widows. Age and household size were 58+14years and 6+3 persons per household,91.4%,70.9%, 84.2%, 57.8% and 80.9% did not have financial, physical, productive, human and social asset, respectively. Mean per capital expenditure was N30,258.6 while the poverty line was N20,172.4 per annum. Sixty-one percent of the female-headed households were core-poor, 17.5% were moderately poor and 21.9% were non poor. Asset ownership, educational level, age significantly reduced poverty while household size and farming increased poverty status. In conclusion most female-headed were living below poverty line in rural Nigeria.

3.0 METHODOLOGY
3.1 Scope of Study
The scope of study for this research was rural Nigeria. Nigeria lies on the west coast of Africa between latitudes 4º16' and 13º53' north and longitudes 2º40' and 14º41' east. It occupies approximately 923,768 square kilometers of land stretching from the Gulf of Guinea on the Atlantic coast in the south to the fringes of the Sahara Desert in the north. The territorial boundaries are defined by the republics of Niger and Chad in the north, the Republic of Cameroon on the east, and the Republic of Benin on the west. Nigeria is the most populous country in Africa and the 14th largest in land mass. The country's 2006 Population and Housing Census placed the country's population at 140,431,790. Nigeria became a republic on October 1, 1963, with different administrative structures. Within the boundaries of Nigeria are many social groups with distinct cultural traits; there are about 374 identifiable ethnic groups, with the Hausa, Yoruba, and Igbo as the major groups.
Presently, Nigeria is made up of 36 states and a Federal Capital Territory, grouped into six geopolitical zones: North Central, North East, North West, South East, South South, and South West. There are 774 constitutionally recognised local government areas (LGAs) in the country.

Source: DHS, 2013
Figure 1: Map of Nigeria showing the six geopolitical zone

3.2 Type and Sources of Data
Demographic and Health Survey (DHS, 2013) was used for this study**.** The sample for the 2013 NDHS was nationally representative and covered the entire population residing in non-institutional dwelling units in the country. The survey used as a sampling frame the list of enumeration areas (EAs) prepared for the 2006 Population Census of the Federal Republic of Nigeria, provided by the National Population Commission. The sample was designed to provide population and health indicator estimates at the national, zonal, and state levels. The sample design allowed for specific indicators to be calculated for each of the six zones, 36 states, and the Federal Capital Territory, Abuja. A total of 23,403 women data were available and 18,869 rural women data were used for this study.

3.3 Analytical Procedure
The analytical tools used for this paper are descriptive statistics, composite analysis, and ordered probit regression.

3.3.1 Descriptive Analysis
This was used to profile the assets owned by women in rural Nigeria and their socio-economic characteristics. Charts, frequency, percentages and the measure of central tendency such as mean, median and standard deviation were used.

3.3.2 Composite Score Analysis
This was used to measure the level of asset ownership by women. This was done based on the number of assets owned by each woman. The composite score was done by the categorisation into the high, intermediate and low level of asset ownership was achieved using a composite score as given below and as used by Salimonu (2007), Oladokun et al. 2018

High category = between 20 points to (Mean + S.D) points
Medium (intermediate) = between upper and lower categories
Low Category = Between (Mean – S.D) points to 0 points.

The assets considered include: Physical (Radio, Television, Refrigerator, Bicycle, motorcycle, mobile phone, house among others) and Natural capital (land)

3.3.3 Ordered Probit Model

The ordered probit model differs from a univariate probit one in that the dependent variable is no longer a dummy variable, but an ordered variable taking values 0, 1, 2 according to the level of asset ownership of the women. As in a univariate probit model, the model is built around a latent regression variable. An ordered probit model allows for multiple ordered values for the dependent variable and analyses the effect of each independent variable on the dependent variable. It measures the probability that this dependent variable (Y_i, for the ith woman) falls in one of the discrete categories conditioned on levels of the independent variables (X_j). Suppose the level of poverty of the sample household i (Y_i^*) is the unobserved variable (latent variable) and Y_i^* and Y_i^* is expressed in the following equation:

$$Y_i^{`*} = \beta_0 + \sum_{j=1}^{k} \beta_j\, x_{ij} + \mu_i \qquad\qquad 1$$

where x_{ij} are the aforementioned explanatory variables; u_i are the residuals or error term and the β and μ_i are parameters to be estimated (Greene, 2002).

The study assumes that u_i is normally distributed across observations. As mentioned previously, Y_i^* is unobserved and it can only be observed whether the woman under consideration falls in the category "0," "1," or "2". So, what was observed is the following actual placement in the discrete category:

$$Y_i = 0 \text{ if } Y_i^{`*} < \mu_1 \text{ (low)} \qquad\qquad 2$$
$$Y_i = 1 \text{ if } \mu_1 \le Y_i^{`*} < \mu_2 \text{ (intermediate)} \quad 3$$
$$Y_i = 2 \text{ if } \mu_2 \le Y_i^{`*} < \mu_3 \text{ (high)} \qquad 4$$

In this model, Y (the dependent variable) represents the level of asset ownership of a woman. Coefficients of the ordered probit model (β) give an indication of the positive or negative impact of an independent variable on the probability of the level of asset ownership, but do not relay information concerning the magnitude of the effect.

xij is the vector of independent variables..

μi is the vector of error term.

x_1 = Age (years), x_2 = Married (yes =1, 0 otherwise), x_3= Widowed (yes=1, 0 otherwise), x_4 = Divorced (yes =1, 0 otherwise), x_5 = Household size (number), x_6 = Sex of household head (male=1, 0 otherwise), x_7= Unemployed (yes =1, 0 otherwise), x_8 = Unskilled manual (yes =1, 0 otherwise), x_9 = Skilled manual (yes =1, 0 otherwise), x_{10} = Agriculture (yes =1, 0 otherwise), x_{11}= Services (yes =1, 0 otherwise), x_{12}= Professional/managerial (yes =1, 0 otherwise), x_{13} = No formal education(yes =1, 0 otherwise), x_{14} = Primary education (yes =1, 0 otherwise), x_{15}= Secondary education(yes =1, 0 otherwise), x_{16} = Tertiary education(yes =1, 0 otherwise), x_{17} = North Central, geopolitical zone (yes =1, 0 otherwise), x_{18}= North East geopolitical zone (yes =1, otherwise =0), x_{19} = North West geopolitical zone =(yes =1, otherwise =0), x_{20} = South East geopolitical zone =(yes=1, otherwise =0), x_{21}= South South geopolitical zone =(yes=1, otherwise =0), x_{22} = South West geopolitical zone = (yes=1, otherwise =0)

4.0 RESULTS AND DISCUSSIONS
4.1 Socio-Economic Characteristics

In table 1, 25.66% of rural women fall within the age category of 15-24years, 36.35% are within 25-34years while 37.99% are within 35-49years. In this study the youngest women is is 15 years while the oldest is 49 years. The overall mean age of the women is 36.03years $\pm$ 9.20. In this regard, lifelong experiences equip women to speak for their rights. This result implies that as women get older, they improve their knowledge and have more ability to run their daily activities that can help them to own more productive assets lifting them out of poverty. This is in line with the findings of Wiklander (2010) in India that as a woman gets older she gains more mobility and other productive assets. Table 1 further showed the marital status distribution of women in rural Nigeria. Most of the women were married (94.54%) while the others were widowed or divorced. This is a typical occurrence in the rural areas where every woman is expected to be married (Adeoti and Akinwande, 2013).

The educational level of women is an important tool in asset ownership. Therefore, higher levels of educational attainment can lead to high levels of welfare and reduced levels of deprivation. Table 1 reveals that women in rural Nigeria more than half (57.73%) do not have formal education. Only 20.84% have a basic primary education while 2.96% of rural women have higher education. Adeoti and Akinwande (2013) confirmed in their study that in rural Nigeria, women are less educated. Furthermore the study explained that low level of development in the rural areas

as compared to the urban areas affects the level of education and thus limits poverty alleviation. IFAD (2014) supports the fore-going that rural populations in the study area have extremely limited admittance to services such as schools. The poor educational level of the rural people is an indication that there may be the poor attitude towards adoption of modern technology, which is responsible for the high incidence of poverty. Ogunleye et al.(2008) opined that rural women who are smallholder farmers, vital producers, processors and marketers of agricultural products need to be educated to avoid their young ones migrating to cities for better- paying jobs. Furthermore in rural Nigeria, 49.21% of the households have between 6-10 members while 1.83% had members of households greater than 10. The mean household size is 6.51 with standard deviation 1.50. Household size is important especially in situations where family labour is a major source of labour for livelihood activities (Adenegan et al. 2013).

Table 1: Socio-Economic Characteristics of Women in rural Nigeria

Variable	Frequency(n=18869)	Percentage
Age		
15-24	4842	25.66
25-34	6858	36.35
35-49	7169	37.99
Mean	**36.03 ±9.20**	
Marital status		
Married	17838	94.54
Widowed	535	2.84
Divorced	496	2.63
Educational Level		
No formal education	10893	57.73
Primary education	3933	20.84
Secondary Education	3484	18.46
Tertiary Education	559	2.96
Household Size		
1-5	8153	43.21
6-10	8158	43.23
>10	2558	13.56
Mean 6.51 ±1.50		

Source: Author's computation, 2013 DHS data

4.2 Profile of Assets Owned by Women in Rural Nigeria
In table 2 a higher percentage (62.7%) of rural women owned radio. Women in rural Nigeria can access information over the radio since most of them probably cannot afford to buy newspapers. Twenty eight percent of women owned television. This could be as a result of the erratic power supply in Nigeria. Radios used battery in place of electricity and thus increase their ownership. A higher proportion of women have mobile phone (67.8%) and this could enhance their welfare status. Thus women own more mobile phone than they own radio. Majority (80%) of these women do not own generator, fan, refrigerator, car/truck. Awotide et al., 2011 opined that the ownership of physical assets could help in making life more comfortable before, during or after a hard day's labour. Also, productive assets play a significant function in improving women's welfare (Adeoye, 2016). Furthermore, ownership of more productive assets can enhance the efficiency of women in numerous activities and lead to higher income thus reducing poverty (Shambe, 2012).

Women own more of motorcycle (40.28%) as compared to car (5.09%), this is probably because government and non-governmental organisations have, over the years, encouraged ownership of motorcycles (popularly called okada) by granting them as loans to community members and politicians. Motorcycle ownership is also common in the rural areas because of poor road network (Oyekale, 2015). Rehabilitation of roads in rural areas is a major step in development that could encourage public and private transport investors.

Ownership of assets by women plays a key role in the provision of basic needs and enhancing investments in future generations through training, health care and education. Women who lack assets are more susceptible to poverty and may not be able recover from periodic shocks.

Six percent of women own land and four percent own house. This is in support of Africa culture where land ownership is not supported for women (Aluko, 2015). World Bank, 2007 opined that land ownership translates to higher incomes. Men traditionally own more land compared to women. In Latin American countries for example the male share of owners of farm land ranges between 70 and 90 percent when compared to women (Deere and Leon 2003). King et al., 2007 opined that the underlying factors causing this inequality include inheritance and land titling laws that favor men. House and Land Ownership could help women in obtaining loans and credit from banks. Traditionally women rights have been marginalized in Nigeria because they tend to have subordinate roles in relation to land ownership (Adeyemo et al., 2015).

Table 2: Distribution of Women by Asset Ownership in rural Nigeria

GPZs	Frequency(n=18869)	Percentage
Radio	11832	62.71
Television	5202	27.57
Bicycle	4649	24.64
Motorcycle/scooter	7600	40.28
Mobile telephone	12789	67.78
Watch	10619	56.28
Fan	3727	19.75
Electric iron	2642	14.00
Animal drawn cart	1438	7.62
Boat with a motor	223	1.18
Generator	3157	16.73
Canoe	753	3.99
Computer	202	1.07
Air conditioner	104	0.55
Cable Television	800	4.24
Telephone line	370	1.96
Car or truck	960	5.09
Refrigerator	1406	7.45
House	806	4.27
Land	1123	5.95

Source: Author's computations, 2013 DHS data

4.3 Level of Asset Ownership

Figure 1 revealed the distribution of women by their levels of asset ownership in rural Nigeria. The Mean (M) score of asset ownership is 4 with a standard deviation of 3. The levels were categorized into three based on the women's responses

High level = 20 to (M + SD) = 20 to 7
Medium level = Between Upper and Lower Category Limit = 6 to 2
Low level = (M – SD) to 0 = 1 to 0

The medium level is 63.8%, then the low level (20.3%) and the high level (15.9%). In the study area majority of the women are in the medium level of asset ownership. The mean value of 4 revealed that an average woman had about four assets out of a total of 20. In the study area women have a minimum of 0 and maximum of 17 assets.

In this paper physical and natural asset dimensions were considered. Asset is one of the major concern of Sustainable development Goal (SDG) 1 is which is to eradicate extreme poverty and hunger. OECD (2010) suggests asset ownership as regards supporting the gender equality perspectives addressed by the fifth SDG. The ownership of assets can reduce the likelihood of being monetarily poor (Sackey, 2005). Assets are helpful for smoothing consumption given the fact that the poor in developing countries often experience income volatility (Brandolini *et al*., 2010). Thus lack of asset ownership could be considered to be a good proxy for chronic poverty (McKay, 2009). Analysing asset ownership could be an important way to explore gender inequality issues among household members. Also, Deere *et al*., (2010) is of the opinion that the extent of women's bargaining power within the household may be as a result of the assets they own.
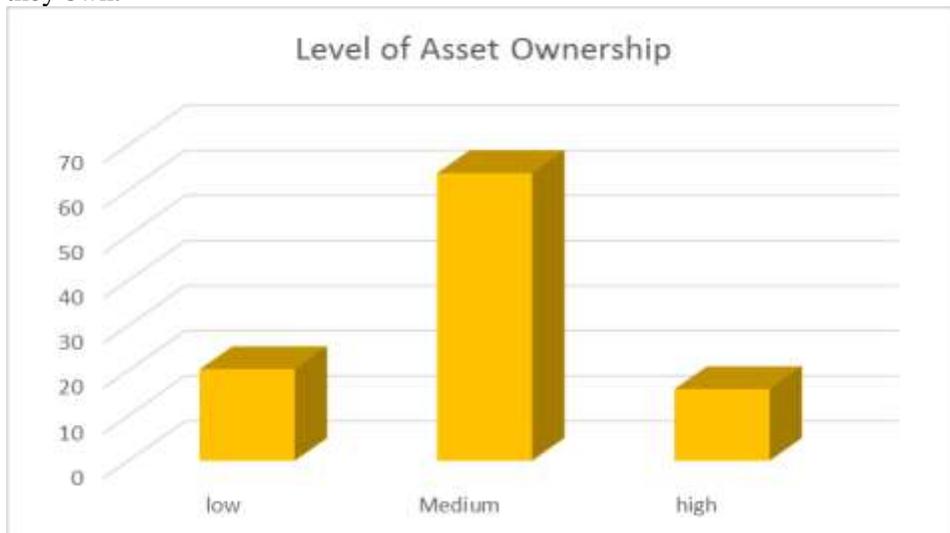
Source: Author's computations, 2013 DHS data

Figure 2: Distribution of Level of Asset Ownership

4.4 Decomposition of the Level of Asset Ownership Across Socio-Economic groups
Figures 3-8 showed the decomposition of the level of asset ownership across socio-economic groups.
4.4.1 Decomposition of the Level of Asset Ownership by Age groups, Household Size, Marital Status, Educational Level, Employment Types, and Sex of Household Head
Figure 3 showed the decomposition of the level of asset ownership according to age groups. More women that were aged 15-24 were in the lower category. This is probably because they are young, still in school or learning a trade so they cannot own assets as compared to older women who are working and earning an income. In the medium level, there are younger women (15-24years) in this category compared to other age groups. For the high level, there were older women compared to the other age categories. Older women over the ages could have accumulated assets and thus give them an advantage over the other age groups.
Figure 4 showed the decomposition of the level of asset ownership across household size. Women in small households constitute the majority of women in the low category, this might be because they have more dependants in their households. Thus the little money they earn is used to take care of their

household members. Most of the women in large households fall in the intermediate and high category. This might be because they have fewer dependants and family members that bring in money into the household. This could enable them to have little money left with which they could acquire assets.

Figure 5 showed the decomposition of the level of asset ownership across marital status. More women that were divorced and widowed were in the low category. This might be because these women are heads of their households and the responsibility of their households' falls on them thus this might hinder them from owning assets. Also, most of the women that are in the high category were married and widowed. Married women can get support from their husbands and women that are widowed could get assets from their late husbands. Widows that are heads of households tend to have less productive assets and fewer savings than widowers, who are less likely to have pension income, and often depend heavily on the economic support of their sons (Chen, 1998).

Figure 6 also showed the decomposition of the level of asset ownership across educational groups. The majority of women that had no formal education were in the medium level. Most of these women would probably be involved with the unskilled manual job and as found in table 3 they had a higher probability of owning more assets. Also majority of women with higher educational level were found in the higher category. This could probably be because education could lead to better opportunities for these women by getting better-paid jobs and thus better opportunity to acquire assets.

Figure 7 showed the decomposition of the level of asset ownership by employment types. The majority of women that were unemployed falls in the medium level of asset ownership. This is as against a priori expectation where these set of women are expected to be in a low category. This might be because they get support from their husbands and family members. For women who are professionals or managers, the majority of them were in the high category.

Figure 8 showed the decomposition of the level of asset ownership by sex of household head. The majority of women in the low category were heads of household this might be because women that are heads of households have greater responsibility in taking care of their families compared to women in the male headed households who probably get support from their husbands. There are also more women in female-headed households who are in the high category. They make their own decisions on which assets they want to acquire compared to women in male headed households who have to wait for their husbands who make final decisions. Relative to men, women are less likely to have control over valuable household or productive assets, a disparity that limits their intra-household bargaining position and constrains their productivity and access to a range of opportunities and services (Njuki *et al*., 2013).

Figure 9 showed the decomposition of the level of asset ownership across geopolitical zones. Across the zones more women from the North East are in the low category, more women from the South East are in the high category while more women in the North West are in the intermediate category. Njuki and Mburu, 2013 and Kumar and Quisumbing (2014) also revealed that in Northern part of Nigeria, women's ability to accumulate assets was governed by norms that historically have favoured men, and these legal systems limit the extent of women's control over assets.
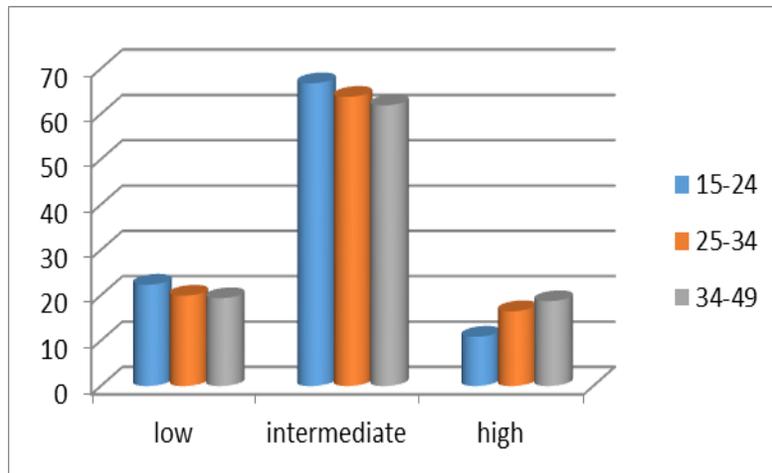
Figure 3: Decomposition of Level of Asset Ownership by Age groups
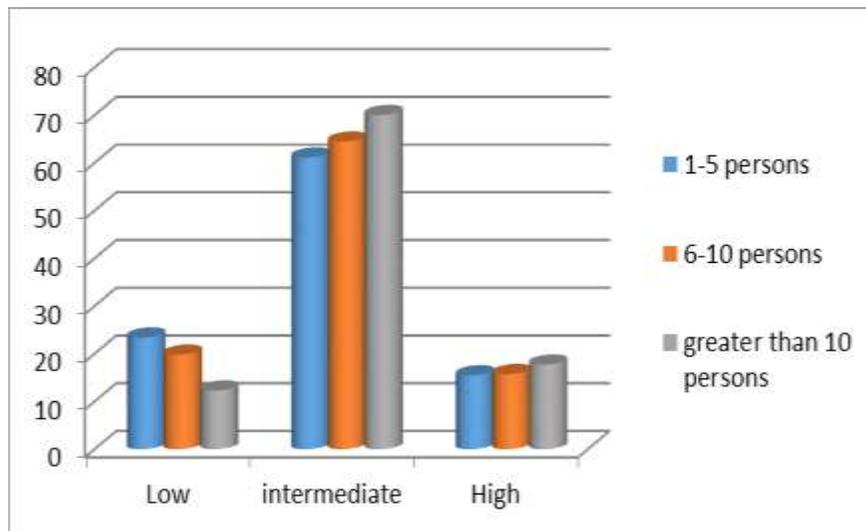**Source: Author's computations, 2013 DHS data**

Figure 4: Decomposition of Level of Asset Ownership by Household Size
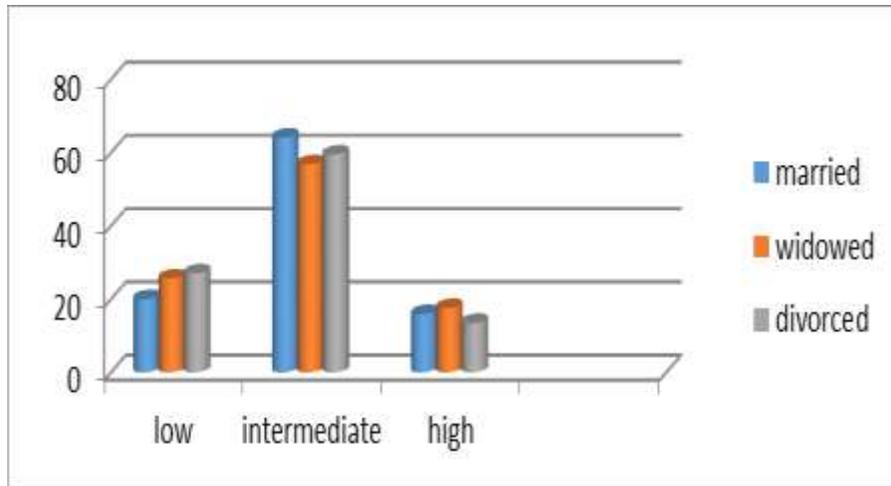**Source: Author's computations, 2013 DHS data**

Figure 5: Decomposition of Level of Asset Ownership by Marital Status
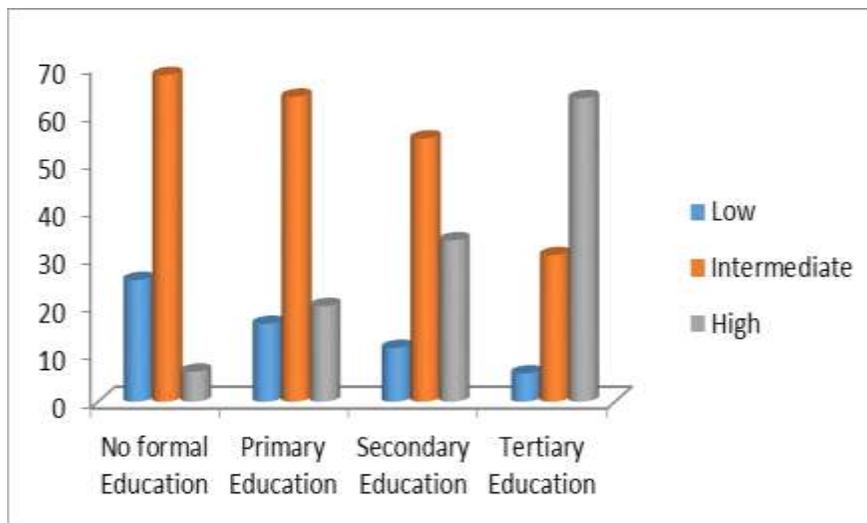**Source: Author's computations, 2013 DHS data**

Figure 6: Decomposition of Level of Asset Ownership by Educational Level
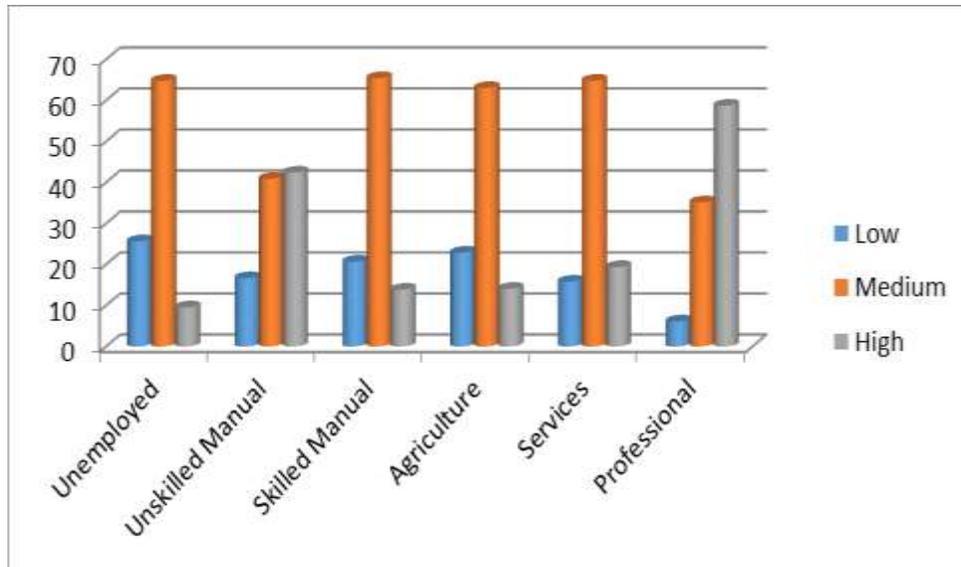**Source: Author's computations, 2013 DHS data**

Figure 7: Decomposition of Level of Asset Ownership by Employment Type
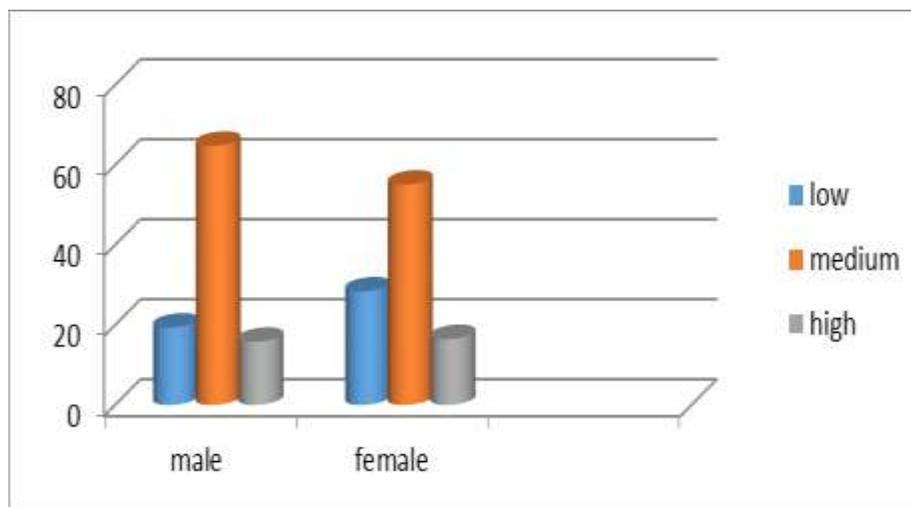**Source: Author's computations, 2013 DHS data**

Figure 8:Decomposition of Level of Asset Ownership by Sex of Household Head
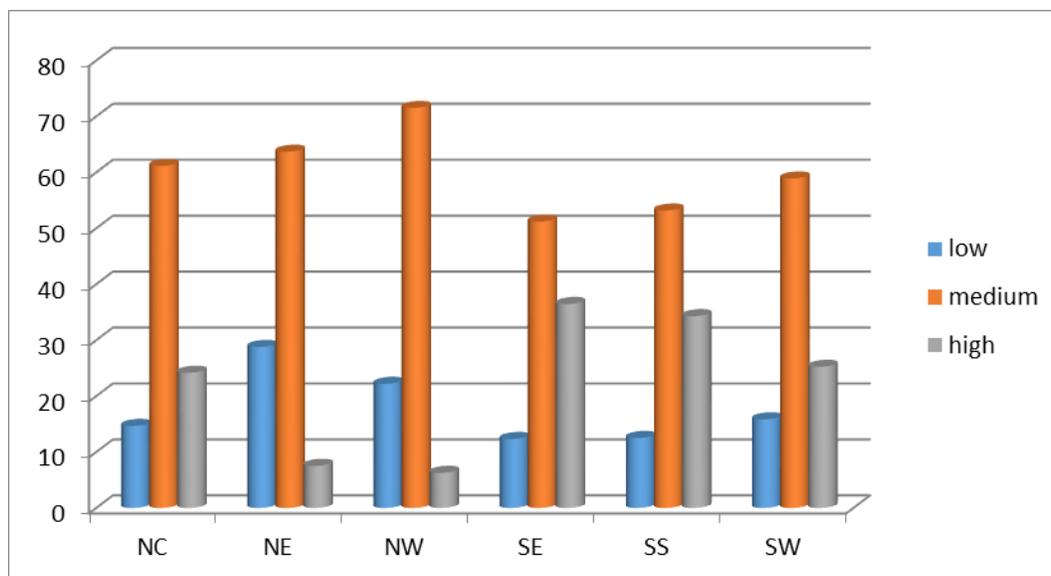**Source: Author's computations, 2013 DHS data**

Figure 9: Decomposition of level of asset ownership by Geo-Political Zones
Source: Author's computations, 2013 DHS data

4.4 Marginal effect result of the ordered probit for levels of asset ownership
The marginal effects of the factors influencing the level of asset ownership was used to assess the impact of explanatory variables of women on the levels of asset ownership, which, to some extent would reflect the effect of a unit change in any explanatory variable on the probability of a woman being in low, intermediate and high level of asset ownership. Variables considered were age, employment type, educational levels, sex of household head, household size, Geo-Political Zone.
Table 3 below presented the marginal effects of the explanatory variables on the level of asset ownership.

Age of women: Age is expected to be associated with skill enhancement (experience), accumulation of resources, extensive social capital and others that ought to contribute positively to well-being (Bashaasha *et al.,* 2006). The results seem also to confirm the statement: where the age of the women is found to be negative and statistically significant ($p < 0.05$). More specifically, an increase in age of a woman by one year would increase the likelihood that a woman would be in a low category by 0.5% whereas it lowers the likelihood that a woman will fall under the intermediate and high levels by 0.1% and 0.4%, respectively. This result is also in line with the life cycle hypothesis because as the women get older, they become inactive both economically and physically which in turn affects their income and subsequently leading to low level of asset ownership.
Employment type: The marginal effect of unskilled employment type was negative and significant at 5% ($p < 0.05$) while for high level it was positive and significant at 10% ($p < 0.1$) Engaging in unskilled manual activities will decrease the likelihood of being at the low level by 7.4%, while it increases the likelihood that a woman will fall under the high level by 6.8% respectively as against women that are unemployed. This might be because these women in this employment type are paid daily and they also have their own farms where they get food crops and firewood, thus they could save their money and use it to acquire assets. Also, the marginal effect for skilled manual employment type at a low level of asset ownership was significant at 1% ($p < 0.01$) and for intermediate and high levels it was positive and significant at 1% ($P < 0.01$). Engaging in skilled manual activities will decrease the likelihood of being in a low category by 4%, while it increases the likelihood that a woman would be in the intermediate and high category by 0.7% and 3.5%, respectively as against women that are unemployed. Women in this category have skills

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like tailoring and hairdressing and so they have businesses of their own and the assets (sewing machine, embroidery machine, generator and hair dryer) that they use for their businesses could help to improve their welfare and they could also earn more money to acquire more assets.

For women that are engaged in agricultural activities their marginal effect for low level of asset ownership was positive and significant at 1% (p< 0.01) and for intermediate and high it was negative and significant at 1% (P<0.01). Engaging in agricultural activities will increase the likelihood of being at the low level by 7.1%, while it lowers the likelihood that a woman would be in the intermediate and high level by 2.9% and 4.2%, respectively as against women that are unemployed. Women in this category have lower likelihood of being at the intermediate and high level of asset ownership compared to women engaged in unskilled and skilled activities because according to Awotide *et al*., 2011) and Olawuyi and Adetunji (2013), poverty incidence, depth and severity are highest among households that had farming as the main occupation. Also, Lawal *et al*., (2011) also reported that the poor households participated more in agriculture than non-agriculture. This might be because these women do not have access to inputs (fertiliser) and improved seeds from Agricultural Development Programme (ADP) centres where they are available men have more access to it. Also, these women do not own land on which they can farm as confirmed in Table 2 where 5.95% of women own land in rural Nigeria. These women rent land and in cases where they have access to family land, they do not have control over it. This could limit their activities on the farm as their family can request for the land anytime. Thus all this have a negative effect on women in agriculture and thus they are poor and thus their ownership of assets is limited.

For women in the service sector their marginal effect for low level of asset ownership was negative and significant at 1% (p<0.01) and for the intermediate and high levels, it was positive and significant at 1% (P<0.01). Engaging in service activities would decrease the probability of being at the low level by 5.3% while it increases the likelihood that a woman would be in the intermediate and high category by 0.7% and 4.6%, respectively as against women that are unemployed.

Also, for women involved with professional activities their marginal effects for low and intermediate level of asset ownership was negative and significant at 1% (p<0.01) and for the high level, it was positive and significant at 1% (P<0.01). Engaging in professional activities will decrease the likelihood of being in the low and intermediate category by 9.9% and 0.3% while it increases the likelihood that a woman would be at the high level by 10.3%, respectively. Women involved with professional activities have a higher probability of being in the high category as compared to the other employment types.

Table 3: Marginal Effect result of the ordered probit for the Level of Asset Ownership

Predictor variables	Coefficients	Standard error	Marginal effects(y=0)	Marginal effects(y=1)	Marginal effects(y=2)
Individual level factors					
Age of women	-0.0178	0.0071	0.0045***	-0.0009**	-0.0037***
Employment(unemployed)					
Unskilled manual	0.3074**	0.1482	-0.0736**	0.0049	0.0687*
Skilled manual	0.1669***	0.0306	-0.0422***	0.0071***	0.0351***
Agriculture	-0.2444***	0.0292	0.0707***	-0.0285***	-0.0422***
Services	0.2145***	0.0221	-0.0533***	0.0072***	0.0461***
Professional/managerial	0.4373***	0.0714	-0.0992***	-0.0037	0.1028***
Educational Level(b: no education) Primary	0.3748***	0.0249	-0.0992***	0.0245***	0.0748***
Secondary	0.6956***	0.0283	-0.1607***	-0.0017	0.1624***
Higher	1.2826***	0.0668	-0.2239***	-0.1424***	0.3664***
Household level factors					
Gender of household head (b: Male) Female	-0.5228***	0.0324	0.1513***	-0.0621***	-0.0892***
Household size	0.2344***	0.0137	-0.0598***	0.0114***	0.0484***
Marital Status(b: married)					
Widowed	0.0773	0.0573	-0.0191	0.0026**	0.0165
Divorced	-0.1896***	0.0555	0.0515***	-0.0155**	-0.0360***
Regional factors					
Region(North central) North East	-0.5561***	0.0299	0.1419***	-0.0263***	-0.1157***
North West	-0.4484***	0.0291	0.1097***	-0.0115***	-0.0981***
South East	0.1008**	0.0457	-0.0189**	-0.0088**	0.0277**
South South	0.1574***	0.0330	-0.0286***	-0.0154***	0.0441***
South West	-0.0798**	0.0413	0.0164*	0.0040**	-0.0205**
Cut 1	-0.7898	0.1093			
Cut 2	1.2918	0.1096			
Chi-square	3626.95				
Probability	0.0000				
Pseudo R-square	0.1064				

*** P<0.01 significant at 1%, ** P<0.05 significant at 5%, * P<0.1 significant at 10%

Source: Author's computation, 2013 DHS data   b: base category

Educational level: The marginal effects for primary education were negative and significant at 1% (p<0.01) and for the intermediate and high levels it was positive and significant at 1% (p<0.01). For primary education, an additional year/level of education gained by the woman would decrease the likelihood of being at the low level by 9.92%, while it increases the likelihood that a woman would be in the intermediate and high categories by 2.5% and 7.5%. The marginal effects for secondary education were negative and significant at 1% (p<0.01) for the low level and for the high level it was positive and significant at 1% (p<0.01). For secondary education, an additional year/level of education gained by the woman would decrease the likelihood of being in the low category by 16.1%, while it increases the likelihood that a woman would be in the high category by 16.2%. The marginal effects for higher educational level were negative and significant at 1% (p<0.01) and for the low and intermediate levels while for the high level it was positive and significant at 1% (p<0.01). For higher education, an additional year/level of education gained by the woman would decrease the likelihood of being in the low and

intermediate category by 22.4% and 14.2%, while it increases the likelihood that a woman would be in the high category by 36.6%. Women with higher education have a higher likelihood of being in the high level of asset ownership. This is similar to the findings of Akerele and Adewuyi (2011), Awotide et al., (2011, Bogale, (2013) and Adekoya (2014). Education has been described as an effective tool in reducing or cushioning the effect of poverty faced by rural dwellers. Adekoya (2014) observes that education is vital for boosting the productivity of the human factor and making people more aware of opportunities for earning a living. Awotide et al., (2011) agree that there is a link between educational attainment, the income earning potential of the household and poverty. The higher educational level of household members seems to prevent rural households from chronic poverty (Glauben et al., 2006). Educational attainment enhances human capital and participation in the labour market and has been widely accepted as a veritable tool for poverty reduction and improving peoples' welfare (Akerele and Adewuyi, 2011).

Sex of household head: The marginal effects for female-headed households was positive and significant at 1% (p<0.01) for the low level of asset ownership while it was negative and significant at 1% (p<0.01) for the intermediate and high level of asset ownership. For women in female-headed households, the likelihood of being in the low level would increase by 15.1% while it decreases the likelihood that a woman would be in the intermediate and high level by 6.2% and 8.9%, respectively.

Household size: Table 4.9 also shows that the marginal effect of household size was negative and significant at 1% level (P< 0.01) for the low level of asset and was positive and significant at 1% (p<0.01) for intermediate and high levels. This means that increase in household size by one adult would decrease the likelihood of being in a low category by 5.98% and increase the likelihood of being in the intermediate and high category of asset ownership by 1.1% and 4.8%, respectively.

Marital status: The marginal effects of women that are widowed was positive and significant at 5% (p<0.05) for the intermediate category while for women that are divorced their marginal effect was positive and significant at 1% (p<0.01) and negative and significant at 1% (p<0.01) for intermediate and high levels of asset ownership. For women that are widowed the likelihood of being in the intermediate category would increase by 0.26% while for the divorced the likelihood of being in the low level would increase by 5.2% and the likelihood of being in the intermediate and high category would decrease by 1.6% and 3.6% as against women that are married.

Geopolitical zone: The marginal effects for North-East was positive and significant at 1% (p<0.01) for the low level of asset ownership while it was negative and significant at 1% (p<0.01) for intermediate and high levels. For women in the North-East, the likelihood of being in the low level would increase by 14.2% while the likelihood of being in the intermediate and high category would decrease by 2.6% and 11.6%. This is as against women in the North-Central region. Women in the North-East are the most deprived followed by women in the North-West (Table 4.13a and 4.13b) thus this explains the reason why they are more likely to be in the low level.

The marginal effects for women in the North-West were positive and significant at 1% (p<0.01) for the low level of asset ownership while it was negative and significant at 1% (p<0.01) for intermediate and high levels as against women in the North-Central. For women in the North-West, the likelihood of being in the low level would increase by 10.9% while the likelihood of being in the intermediate and high category would decrease by 1.2% and 9.8%. This is as against women in the North-Central region.

The marginal effects for South-East were negative and significant at 5% (p<0.05) for low and intermediate levels of asset ownership while it was positive and significant at 5% (p<0.05) for high level. For women in the South-East, the likelihood of being in the low and intermediate levels would decrease by 18.90% and 0.88% while the likelihood of being in the high category would increase by 2.77%. This is as against women in the North-Central region.

The marginal effects for South-South were negative and significant at 1% (p<0.01) for low and intermediate levels of asset ownership while it was positive and significant at 1% (p<0.01) for high level. For women in the South-South, the likelihood of being in the low and intermediate levels would decrease by 2.86% and 1.54% while the likelihood of being in the high category would increase by 4.41%. This is as against women in the North-Central region.

The marginal effects for South-West were positive and significant at 10% (p<0.1) and 5% (p<0.05) for low and intermediate levels of asset ownership while it was negative and significant at 5% (p<0.05) for high level. For women in the South-West, the likelihood of being in the low and intermediate levels would increase by 1.64% and 0.40% while the likelihood of being in the high category would decrease by 2.05% as against women in the North-Central region.

CONCLUSION
In the study, women-owned physical assets such as radio (62.71%) while 27.57% own television. Women have mobile phone (67.78%) and more than 80% of these women do not have productive assets like generator, refrigerator and car/truck. The percentage of women that have mobile phones is 67.78 meaning that these women have mobile phones than they have a radio. The percentage of women that own fan is 19.75 and 14% own electric iron. Age, employment type, educational level, the gender of household head, household size, marital status and geopolitical zone are factors that influenced asset ownership by women. Finally, this conclusion confirms the earlier findings that asset ownership has a significant and positive influence on women's deprivation status and is a key input in achieving a higher welfare of women in rural Nigeria.
Local and international agencies working with women should embark on enlightenment programs for communities on the need for women to have control of the assets they own.

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