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Land Ownership Dimensions and Agricultural Commercialization among Farming Households in Nigeria

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ABSTRACT:- This study examined the role of land ownership dimensions on agricultural commercialization among farming households in Nigeria using secondary data sourced from 2018/2019 Nigeria Living Standard Survey. A sample of 2240 of which 2062 and 178 were headed by male and female were extracted and analyzed using descriptive statistics, tobit and ordered logit model. Tobit model was employed to examine the role of land documents on crops and livestock commercialization and ordered logit model was adopted to investigate the role of land documents on fish commercialization among the households. Crops were mainly produced by Nigerian farming households but on a medium level, while livestock and fishes were highly commercialized. Title deed was held by about 59.21% and 53.93% of male and female-headed households respectively and over 80% of the households possessed the right to bequeath land. Among Nigerian farming households, possession of title deed ($p<0.01$), rental contract ($p<0.01$) and lease documents ($p<0.01$) enhanced crops commercialization. Title deed ($p<0.01$) and customary certificate of occupancy ($p<0.01$) are essential in improving livestock commercialization. Rental contract ($p<0.05$) and lease registered ($p<0.01$) improved fish commercialization. Thus, land ownership dimensions play important roles in improving agricultural commercialization in Nigeria. The process and cost of obtaining and registering land documents, especially legal land documents should therefore be simplified.

Keywords: *Agricultural Commercialization, Farming Households, Land Ownership Dimensions, Land Right*

I. INTRODUCTION

Agricultural commercialization can be referred to as an increase in the proportion of production that is marketed or purchased as inputs per unit of output. It is the degree to which a farm home is connected to markets. Agricultural commercialization process occurs from both input and output side; when there is an increase in the percentage of output offered for sale, it occurs on the output side, while it occurs on the inputs side when there is an increase in the use of acquired inputs. From the output side, agricultural commercialization is the expansion of production from subsistence to the market level[1]. Thus, agricultural commercialization is characterized by an increase in output sales that boosts small-scale agricultural firms' cash revenues. The regions of the world where commercial agriculture is dominant include the Americas, Europe, and most of East Asia. One commercial agriculture dominant country is Canada. Canada's economy is dominated by the service and secondary sectors, with agriculture accounting for about 1.6% of its GDP[2]. Subsistence-dominant areas are primarily found in the developing world, where food insecurity is rampant. Parts of the world that are subsistence agriculture dominant include sub-Saharan Africa where about 75% of the farmers are smallholders and some parts of South Asia and South America[2]. There is a need for rapid transformation in subsistence agriculture practiced by about two-thirds of farmers in developing nations to meet the demand of ever increasing population[1].

Like other developing nations, Nigeria is mostly engaged in subsistence agriculture but commercialized agriculture is gradually replacing subsistence agriculture in Nigeria[3]. With the continual movements of farmers seeking better farming opportunities, different forms of strange tenure rights have emerged. These tenure forms are influenced by the particular customary norms of the nation, client–host relationship and crop type. Tenure forms may also arise from agricultural commercialization interests that influence demand for land. More so, commercialization of agriculture has accelerated in the twenty-first century, integrating farmers in the South ever more tightly into market economies, including global value chains, and driving forward the commodification of farmland and rural labor4. In Nigeria, reasonably egalitarian patterns of land distribution promote economic growth rate than the highly concentrated land distribution pattern. Land plays a major role in determining the wellbeing of individuals, households, and communities in the developing world, including Nigeria where land is essentially required for agricultural production and commercialization. Since it serves as the basis for the provision of housing, food, and economic activities, nearly every person is dependent on land for livelihood[5]. Thus, the ownership of land is crucial in dictating how land management practices including agricultural practice are carried out.

The idea of property rights and the laws governing land ownership established by the 1978 Land Use Act (LUA) have been the subject of debate in Nigeria. Therefore, the regulation of natural resources greatly depends on the existence of property rights to resources. As a result, the management of any successful endeavor depends heavily on land ownership, as defined by the prevailing Land Tenure Systems (LTS)[6]. Nigeria has a total land mass of 923,768km^2 out of which about 75%, amounting to 68.6 million hectares, has agricultural potential but only 34 million hectares are cultivated[7]. These land serve as households' factor of production and asset, but the level of access and title ownership are determined by the state[8].

Agriculture is mostly practiced in the rural Nigeria but most rural households have limited access to productive land, which is critically essential for the level of agricultural output, food security, and the reduction of poverty[7]. Commercialization has generally been considered an important means of enhancing food security in developing nations including Nigeria. However, flooding and the menace of herders' attack, especially in Northern Nigeria (where most of the food crops consumed by the citizens are produced) on crop farmland largely pose a threat to increased commercialization and food security in the affected zones and the nation at large. About 866 hectares of land was damaged through flooding in 2023[9]. The soils and weather conditions, at times are suitable and favorable for food crops production, unfortunately, the crops are produced in smaller quantities and seasonally. Hence, no enough food for all as about 25.3 million Nigerians are food insecure in 2023 between June to August and Nigeria ranked 107th of 113th world countries in the food security index[10].

Additionally, small-scale farmers make up the majority of the agricultural sector in Nigeria and they face significant challenges in acquiring arable land. These can be attributed to the problem of land fragmentation, land degradation, poor land use plan and undefined property right because most of the farmers inherited small parcel of land while many of them lease or rent and produce in small quantity. And because the Land Use Act (LUA) of 1978 adopted into Nigerian law presume the right of occupancy be granted by the government or local government chairman but does not clarify what right of occupancy means.

Despite significant government investments in agriculture over the years, the majority of farmers in Nigeria still endure land use restrictions that result in poor production and have a detrimental impact on agricultural commercialization[8]. Studies have been carried out on agricultural commercialization and land tenure as well across different states and zones in Nigeria. These studies suggested different types of measures including; certificate of occupancy, title deed, right of occupancy and lease registered on a piecemeal basis. There is a rising agreement amongst scholars and experts on measures of land ownership in Nigeria. However, limited studies have examined the relationships between the entire measures of land ownership and agricultural commercialization in terms of livestock commercialization, crop commercialization and fish commercialization as subsets of agricultural commercialization in Nigeria. It is against this background that the study aims to examine the relationship between land ownership dimensions and agricultural commercialization among farming households in Nigeria.

1.1. Aim and Objectives of the Study

This study mainly examined the role of land ownership dimensions on agricultural commercialization among farming households in Nigeria. Specifically, the study;

i. Investigated the extent of agricultural commercialization among farming households in Nigeria.
ii. Profiled various land documents and rights possessed by Nigerian farming households
iii. Examined the role of land ownership dimensions on agricultural commercialization among farming households in Nigeria.

II. LITERATURE REVIEW

1.2. Theoretical Review

Three theories that are important to the study's goals are the property theory, the evolutionary theory of land rights and the liberal economic theory.

1.2.1. The Property Theory

The property theory was proposed by John Locke in 1690[11]. According to this theory, when one combines their effort with nature, they develop a bond with that particular aspect of nature, with the caveat that there must be enough, and as good, left in common for others. Locke further described it as a natural law theory that contends that the creation of property is a result of human labor applied to natural resources. Locke argued that an individual possesses a unique property that only he or she has the right to claim.it can be claimed that the labor he puts into using his body and hands was rightfully his. Individual property rights were defended by Locke as being fundamental human rights. As a result of one's efforts, the reward is theirs as they earned[12].Ownership and possession are the subject of custom, regulation, and "law" where the term may be used meaningfully in each culture. Numerous tribal cultures strike a compromise between individual property rights and the norms of larger social structures like tribes, families, associations, and countries.

1.2.2. Evolutionary Theory of Land Rights

The evolutionary theory of land rights was proposed by Charles Darwin in 1859. To evaluate the state of land tenure in emerging nations and forecast its future evolution, conventional economists primarily utilize the evolutionary theory of land rights as their framework of analysis. This theory's fundamental premise is that land rights naturally evolve toward greater individualization as a result of the combined effects of growing population pressure and market integration[13]. This evolution eventually prompts right holders to demand the establishment of properly formalized private property rights, a demand to which the state will have an incentive to respond. According to the argument, people seek more secure land rights, and the government steps in to codify property rights as a result of rising land values brought on by population pressure and agricultural commercialization.

1.2.3. Liberal Economic Theory

Adam Smith advocated the liberal economic theory based on individualization and private ownership of production means in 1776[14]. Economic liberalism is a market-based system, which means that the majority of economic decisions are decided by people or households rather than by institutions or organizations as a whole. Economic liberalism is a political and economic philosophy that favors a market economy based on individualism and private ownership of the means of production[15]. According to this perspective, small farms are not much different from other types of businesses and are therefore more likely to prosper when economic conditions are favorable. Markets provide chances to sell goods and buy better supplies and technology. This theory promotes market linkages, multipliers, and the distribution of rewards and incentives.

1.3. Empirical Review

A study investigated cashew producers' marketing practices, harvesting schedules, and land tenure in Bono, Ghana[15]. Multinomial probit was used to analyze the primary data collected from 120 cashew farmers in order to determine the factors influencing cashew marketing outlets. It was discovered that leasehold, stool, family, state, and customary lands are the forms of land ownership (tenure system) for cashew cultivation in Ghana. Additionally, the grading of cashew nuts, contract agreements, the weekly harvest, and excellent road networks all have favorable impact on sales of cashew nuts to purchasing firms and/or exporters.

An analysis was done on how land acquisition for large-scale agricultural investments affected the income and ownership of assets of displaced families in Ethiopia[16.] In the districts of Adamitulu and Dugda, 255 farmers who had been forcibly displaced and 266 farmers who had not, were sampled. Data were evaluated using Propensity Score Matching (PSM) approach. It was shown that the relocated families' income and assets had significantly decreased. When compared to the income of the non-displaced families, the mean annual income of the displaced households fell by 72% or 97,000 Ethiopian Birr. Additionally, compared to non-displaced families, the livestock and productive asset holdings of the displaced smallholders decreased by 2.4 tropical livestock units and 69% (5,219.5 Ethiopian Birr), respectively. This suggests that families in Ethiopia that have been relocated as a result of large-scale agricultural investments have deteriorating income and asset conditions.

The relationship between agricultural productivity (rice production) and land tenure systems in Nigeria was examined using primary data sourced through a well-constructed questionnaire[17]. A total sample size of 349 rice farmers was chosen using a four-stage sampling process. Descriptive statistics, total factor productivity, and the stochastic production frontier model were used to examine the data. It was found that community land tenure systems were extensively practiced, and a significant amount of the land (over 94%) used for rice cultivation was obtained via inheritance. The overall factor productivity result showed that 62.18% of the rice producers were performing at a subpar level of production.

A study was carried out on household farm investment and large-scale land acquisition in northern Ghana, using a multistage sampling procedure[18]. A total of 690 exposed and non-exposed agricultural households in northern Ghana were selected from a target population of 240,238 agricultural households for the research. The research used CFA and ordered probit regression with endogenous treatment. It was found that home agricultural investments and large-scale land acquisition have a reciprocal connection. Some forms of farm investments are diminished by domestic and foreign entities' direct and indirect exposure to large-scale land acquisition (LSLA), the opposite causality is also possible, where some household farm investments are deterred by direct and indirect exposure to LSLA by domestic and foreign entities. The findings also showed that, even in the context of a strong impression of tenure security, large-scale land acquisition by local and foreign companies depletes investment at all levels of land- and yield-improving strategies. Therefore, giving farmers the ability to legally own their land may serve as insurance for their investments in all land-improving methods.

Investigating the connection between land acquisition and farmers' involvement in the crop market in peri-urban Ibadan, Oyo State, Nigeria[19]. Primary data were sourced from 200 respondents using a multistage selection approach and were analysed using descriptive statistics, Land Ownership Index (LOI), Crop Market Participation Index (CMPI), and Tobit regression model. Results showed that majority of the crop farmers were

men (77.5%), married (80.5%), had formal education (81.0%) and were indigene (71.0%), with an average years of experience and household size of 29 years and 7 respectively. The most prevalent method of acquiring a plot was inheritance (53.4%) which is majorly (95.4%) a common non-transactional methods of acquiring land. Most of the farmers (53.5%) had complete ownership of the land they farmed (LOI = 1), and the typical plot size was 2.1 hectares. Majority of the farmers used mixed cropping (79.0%) techniques. Also the average CMPI was 64.1% and maize was the main crop driving market participation with a CMPI of 84.7%. According to the Tobit regression findings, sex, years of schooling, farming experience, and the use of better planting material positively influenced agricultural market participation at p0.05. However, land ownership index (p 0.1) negatively impacted crop market participation at p<0.1, suggesting that crop market involvement was not correlated with land ownership.

Households' crop commercialization in Nigeria was assessed using secondary data obtained from the National Demographic and health Survey, 2018[20]. Household Crop Commercialization Index (HCCI) was used to assess the extent of crop commercialization. The level of crop commercialization was categorized into three groups: subsistence, semi-subsistence, and commercial. Results showed that 32.81% of the households belongs to the perfectly subsistence group with HCCI of 0, while only a low percentage (1.71%) were fully commercial with an HCCI value of 100. About 65.48% of the households were within semi-subsistence category with HCCI values between 0 and 100. This indicated that Nigeria relies heavily on the marketable surplus produced by semi-subsistence households to sustain its growing population. Additionally, majority of the households (58.25%) were classified as having a low level of crop commercialization, while approximately one-quarter (26.26%) were in the medium category, and 15.50% were in the high category.

III. METHODOLOGY

1.4. The Study Area

The study area is Nigeria. Nigeria is located on Africa's western coast and features a diverse environment that spans from humid to desert equatorial climates. Nigeria was chosen as the study area because small-scale farmers occupy approximately 70% of Nigeria's fertile land and produce 90% of the nation's food[21] and there are an estimated 34.5 million farmers occupying 70% of the labor force in Nigeria[22].

Figure 1: Map of Nigeria Showing the Six Geopolitical Zones[23]

1.5. Methods of Data Collection and Analysis

This study utilized secondary data obtained from the Nigeria Living Standards Survey (NLSS) 2018-2019, which was conducted by the National Bureau of Statistics (NBS) in Nigeria. A total of 22,110 households were sampled in the NLSS, 2240 households of which 2062 and 178 were headed by male and female respectively were extracted for analysis after data cleaning and were analysed using descriptive statistics, Household Commercialization Index (HCI), Tobit regression and ordered logit regression model.

1.5.1. Household Commercialization Index (HCI)

Household Commercialization Index (HCI), was generated from the gross quantities of agricultural produce by each household to capture the degree to which each household practice commercial agriculture as well as the extent to which households rely on subsistence farming. Household Commercialization Index (HCI) is given as:

$$HCI_h = \frac{\text{Gross quantity of all produce sold in year i}}{\text{Gross quantity of all produce produced in year i}} \times 100$$

HCI_h= Household commercialization index for all crops, livestock and fish sells by household h in year i

HCI_h ranges between 0 and 100

Where,

HCI_h= 100.0% if household sells all its produce – Full commercialization

HCI_h = 66.7% - 99.9% if household sells high proportion of its produce – High Commercialization.

HCI_h = 33.3% - 66.6% if household sells average proportion of its produce – Medium commercialization

HCI_h = 0.1% - 33.2% if household sells small proportion of its produce – Low commercialization

HCI_h = 0% if household sells none of its produce – No commercialization (subsistence crop production).

CCI is the average commercialization index by all households in Nigeria.

1.5.2. Tobit Regression Model

Tobit regression analysis was adopted to investigate the role of land ownership dimensions on crops and livestock commercialization among farming households. The Tobit model was suitable analytical tool for this study due to the presence of censoring in the dependent variable, taking into account both observed and unobserved factors that may influence the commercialization process[24].

The standard Tobit is defined as;

$Y_i = \beta_o + \beta_i X_i + \varepsilon_i$

Such that Y can be observed to be

$$Y_i = (Y_i \; if \; Y_i > 0)$$
$$(0 \; if \; Y_i \leq 0)$$

Y = dependent variable (level of crop commercialization; level of livestock commercialization)

Where HCI_h ranges between 0 and 100, X_i= vector of explanatory variables and ε_i= error term

The model is explicitly defined as:

$$Y = \beta_0+\beta_1X_1+ \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5+ \beta_6X_6 + \beta_7X_7 + \varepsilon_i \qquad (1)$$

Where,

Y = dependent variable (level of crop commercialization; level of livestock commercialization)

β_0 = Intercept, β_1 - β_7 = Parameters of the model, X_1- X_7 = Independent variables

X_1 = Title deed (yes =1, otherwise = 0), X_2 = Certificate of occupancy (yes =1, otherwise = 0)

X_3 = Customary certificate of occupancy (yes =1, otherwise = 0), X_4 = Right of occupancy (yes =1, otherwise = 0), X_5 = Survey plan (yes =1, otherwise = 0), X_6 = Rental contract registered (yes =1, otherwise = 0), X_7 = Leasing registered (yes =1, otherwise = 0)

3.2.3. Ordered Logit Regression Model

The study adopted ordered logistic regression model to examine the role of land ownership dimensions on fish commercialization in Nigeria because it can be used to predict the threshold limit which an ordinal exogenous variable fall, given one or more explanatory variables[25]. The model can be expressed as:

$$Logit[P(Y \leq j)] = Log\left[\frac{P(Y \leq j)}{P(Y > j)}\right] = \beta_0 - \sum[\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon_t$$

Where,

P = probability, Y = dependent variable (level of fish commercialization), J = threshold for categories of the dependent variable

$log[P(Y \leq j)]$ = log of believing that level of fish commercialization is no, low, medium, high, or full.

β_0= intercept, β_1- β_7 = parameters of the model, X_1- X_7 = Independent variables (land documents) and ε_t is the error term

j = 0, Y =0, no commercialization; j = 0.1-33.2, Y= 1, low commercialization; j = 33.3-66.6, Y= 2, medium commercialization; j = 66.7-99.9, Y = 3, high commercialization; j = 100, Y = 4, full commercialization

X_1 = Title deed (yes =1, otherwise = 0), X_2 = Certificate of occupancy (yes =1, otherwise = 0)

X_3 = Customary certificate of occupancy (yes =1, otherwise = 0), X_4 = Right of occupancy (yes =1, otherwise = 0), X_5 = Survey plan (yes =1, otherwise = 0), X_6 = Rental contract registered (yes =1, otherwise = 0), X_7 = Leasing registered (yes =1, otherwise = 0)

IV. RESULTS AND DISCUSSION

1.6. Socio-demographic Characteristics of Male and Female-headed Households

As indicated Table 1, that majority (70.61%) of the farmers from male-headed households were aged between 31 and 60 years, with a mean age of 48.67(±14.30) years. Also, majority of the respondents were married (93.79%), operated in the rural sector (70.76%), had no formal education (77.35%), and many reside in the Northwest geopolitical zone (35.69%).

For female-headed households, more than half (51.69) were aged between 31 and 60 years, with a mean age of 59.81 (±14.40) years. Majority (78.65%) were widowed and had no formal education (73.60%), most (69.10%) were in the rural sector and about 35.39% were in the Southwest geopolitical zone.

Table 1: Socio-demographic Characteristics of Male and Female-Headed Households in Nigeria

Socio-demographic variables	Male-headed household (n=2062)		Female-headed household (n=178)	
	Frequency	Percentage	Frequency	Percentage
Respondent age (years)				
<30	201	9.75	4	2.25
31-60	1456	70.61	92	51.69
>60	405	19.64	82	46.07
Mean	48.67±(14.30)		59.81±(14.40)	
Marital status				
Single	55	2.67	3	1.69
Married	1934	93.79	17	9.55
Divorced	34	1.65	18	10.11
Widowed	39	1.89	140	78.65
Level of education				
No formal education	1595	77.35	131	73.60
Primary education	186	9.02	18	10.11
Secondary education	83	4.03	6	3.37
Higher education	198	9.60	23	12.92
Sector				
Urban	603	29.24	55	30.90
Rural	1459	70.76	123	69.10
Geopolitical zone				
North central	269	13.05	17	9.55
Northeast	418	20.27	22	12.36
Northwest	736	35.69	16	8.99
Southeast	124	6.01	24	13.48
South-South	193	9.36	36	20.22
Southwest	322	15.62	63	35.39

Source: Computed from 2019 Nigeria Living Standards Survey (NLSS)

1.7. Extent of Agricultural Commercialization by Farming Households in Nigeria

The extent of agricultural commercialization by male and female-headed households are presented in Table 2.

Among the male-headed households, most (45.73%) produced crops on a medium level. Less than a quarter were into subsistence (22.89%) and high (19.98%) level of crops commercialization, while 8.54% and 2.86% were respectively into a low and fully commercial production. About 47.64% of the households reared livestock on a highly commercial level, while none were into a subsistence or fully commercial production. Fishery was highly commercialized by the majority (70.83%) of the households, about 25% and 4.17% respectively managed fishery on medium and low commercial level, while none practiced subsistence and fully commercial fish farming. .

Besides, about 52.25% of the female-headed households were into medium-scale crop commercialization, less than a quarter (22.47%) were highly commercial, 21.35% practiced subsistence, while 2.25% and 1.69% were respectively on a high and a low commercialization level. Further, less than half (48.00%) were highly commercial livestock farmers, about 32.00% and 20% were respectively on a medium and a low level of livestock commercialization, and none reared livestock on a subsistence or fully commercial level as well. Lastly, 100% of the fish producing households were highly commercial fish farmers. Therefore,

crops are produced on a medium level, while livestock and fish were highly commercialized by Nigerian farming households.

Table 2: Extent of Agricultural Commercialization by Male and Female-headed Households

Male-headed households			
Commercialization index (%)	Crop commercialization	Livestock commercialization	Fish commercialization
0 (no or subsistence)	472(22.89)	0(0.00)	0(0.00)
0.1-33.2 (low)	176(8.54)	59(8.70)	3(4.17)
33.3-66.6 (medium)	943(45.73)	296(43.66)	18(25.00)
66.7-99.9 (high)	412(19.98)	323(47.64)	51(70.83)
100 (full)	59(2.86)	0(0.00)	0(0.00)
Total	2062	678	72
Female-headed households			
0 (no or subsistence)	38(21.35)	0(0.00)	0(0.00)
0.1-33.2 (low)	3(1.69)	5(20.00)	0(0.00)
33.3-66.6(medium)	93(52.25)	8(32.00)	0(0.00)
66.7-99.9 (high)	40(22.47)	12(48.00)	2(100.00)
100 (full)	4(2.25)	0(0.00)	0(0.00)
Total	178	25	2

Source: Computed from 2019 Nigeria Living Standards Survey (NLSS)

Note: Figures in parentheses are percentages

1.8. Various Land Documents Held by Farming Households in Nigeria

Table 3a presents the various land documents held and the rights possessed and Table 3b describes the perception on the likelihood of losing land ownership rights by farming households in Nigeria.

1.8.1. Land documents and Rights Possessed by Male and Female-Headed Households

According to the results, more than half of the male-headed (59.21%) and female-headed (53.93%) households held title deed, a few of the male-headed (11.30%) and female-headed (10.67%) households held certificates of occupancy. About 11.59% and 6.18% of the male and female-headed households held customary certificate of occupancy respectively. Right of occupancy was respectively held by 14.65% and 11.24% of male and female-headed households and survey plan was held by 14.50% and 22.47% of the respective households.

With respect to temporary land documents, a few of the male-headed (3.98%) and female-headed (2.81%) households held registered rental contract, about 1.60% and 5.62% respectively held lease registered document. The right to sell and to bequeath were possessed by the majority of the male-headed (87.68%) and (91.03%) and the female-headed (71.35%) and (83.15%) households. Therefore, legal land documents especially tittle deed, as well as the right to sell and to bequeath were possessed by many farming household in Nigeria.

Table 3a: Land Documents and Rights Possessed by Male and Female-Headed Households in Nigeria.

Land document	**Male-headed household (n=2062)**		**Female-headed household (n=178)**	
	Yes (%)	No (%)	Yes (%)	No (%)
Legally Recognized Document				
Title deed	1221(59.21)	841(40.79)	96(53.93)	82(46.07)
Certificate of Occupancy	233(11.30)	1829(88.70)	19(10.67)	159(89.33)
Customary C of O	239(11.59)	1823(88.41)	11(6.18)	167(93.82)
Customarily Recognized Land Document				
Right of occupancy	302(14.65)	1760(85.35)	20(11.24)	158(88.76)
Survey plan	299(14.50)	1763(85.50)	40(22.47)	138(77.53)
Temporary Land Document				
Rental contract registered	82(3.98)	1980(96.02)	5(2.81)	173(97.19)
Lease registered	33(1.60)	2029(98.40)	10(5.62)	168(94.38)
Other forms of document	20(0.97)	2042(99.03)	2(1.12)	176(98.88)
Land Right				
Right to sell	1808(87.68)	254(12.32)	127(71.35)	51(28.65)
Right to bequeath	1877(91.03)	185(8.97)	148(83.15)	30(16.85)

Source: Computed from 2019 Nigeria Living Standards Survey (NLSS)

Note: Figures in parentheses are percentages

4.3.2. Land Use for Livelihood Activities by Farming Households in Nigeria

Land use for livelihood activities by male and female-headed households in Nigeria are presented in Table 3b. The main source of livelihood activity considered in this study was agriculture which has three sub-categories (crop, livestock and fish production). This was because the subjects of the study are Nigerian farming households.

All farming households were into crop production. About 32.88% and 3.49% were into livestock and fish management respectively among the male-headed household, while about 14.04% reared livestock and a very small proportion (1.12%) managed fishes among female-headed households. Thus, the main activity which Nigerian farming households use land for is crop production.

Table 3b: Land Use for Livelihood Activities by Farming Households in Nigeria

Livelihood activities	Male-headed household (%) (n=2062)	Female-headed household (%) (n=178)
Crop production	2062 (100)	178 (100)
Livestock rearing	678 (32.88)	25 (14.05)
Fish management	72 (3.49)	2 (1.12)

Source: Computed from 2019 Nigeria Living Standards Survey (NLSS)

Note: Figures in parentheses are percentages

1.9. Role of Land Ownership Dimensions on Agricultural Commercialization among Farming Households in Nigeria.

This section presents the analytical results of the Tobit and Ordered logit model used in examining the role of land ownership dimensions on crop, livestock and fish commercialization among farming households in Nigeria. The models utilized all observations and were significant at $p<0.01$.

1.9.1. Role of Land Ownership Dimensions on Crops Commercialization among Male-Headed Households

Tobit results show that title deed, customary certificate of occupancy, right of occupancy, rental contract, and lease document were statistically significant.

Title Deed: Title deed was positively significant at $p<0.01$ and was associated with 9.18units increase in the level of crop commercialization among the households. This could be true because title deed is one of the documents that confer legal right on landowners. As such, land owners are encouraged to expand their scale.

Customary Certificate of Occupancy: The customary certificate of occupancy was significant and positively influenced crops commercialization at $p<0.05$. Possession of customary certificate of occupancy is associated with 6.09 units increase in the level of crops commercialization. Right of Occupancy: Right of occupancy was positive and significant at $p<0.10$. This shows that holding the document would lead to 5.39 units increase in crop commercialization as against cultivating lands with no right of occupancy.

Rental Contract: Rental contract was significant at $p<0.01$, positive and contributed to an increase in crop commercialization by 14.09 units.

Lease Registered: Lease registered was positive and significant at $p<0.05$. Farming on leased land was associated with 15.17units increase in the level of crop commercialization.

Table 4: Role of Land Ownership Dimensions on Crops Commercialization among Male-headed Households

Independent variables	Coefficient	Standard error	T	P>/t/
Title deed	9.1788	2.4697	3.72	0.000***
Certificate of occupancy	0.5343	2.9170	0.18	0.855
Customary certificate of occupancy	6.0850	2.9156	2.09	0.037**
Right of occupancy	5.3949	2.8331	1.90	0.057*
Rental contract	14.0901	4.9487	2.85	0.004***
Lease registered	15.1787	6.8953	2.20	0.028**
Constant	61.7609	10.8962	5.67	0.000***
Number of observations = 2062 **Log-likelihood = -8443.6337** **p>chi2 = 0.000**	Observation summary: 472 left censored observations at index 1590 uncensored observations 0 right censored observations			

Source: Data Analysis, 2024

*Note: ***, ** and * Significant at 1%, 5% and 10% level respectively*

1.9.2. Role of Land Ownership Dimensions on Crop Commercialization among Female-Headed Households

Table 5 profiles the role of land ownership documents on crops commercialization by female-headed households in Nigeria. The two statistically significant variables (land documents) are customary certificate of occupancy and lease registered document.

Customary Certificate of Occupancy: Certificate of occupancy as a legal document was positively significant at $p<0.05$. Its possession was associated with 26.45units increase in the level of crops commercialization among female-headed household in Nigeria.

Lease Registered: The document was significant and positively influenced crops commercialization at $p<0.01$. Using leased land for agricultural activities increases the probability of crop commercialization by 36.45units. Therefore, the possession of land ownership documents play significant roles on crop commercialization among farming households in Nigeria.

Table 4.5: Role of Land Ownership Documents on Crop Commercialization by Female-Headed Households

Independent Variables	Coefficient	Standard error	T	P>/t/
Title deed	5.8021	8.5318	0.68	0.497
Certificate of occupancy	7.0344	9.4184	0.75	0.456
Customary certificate of occupancy	26.4560	12.9408	2.08	0.039**
Right of occupancy	-8.9699	10.2336	-0.88	0.382
Survey plan	1.8175	8.8664	0.20	0.838
Rental contract	5.5431	18.1397	0.31	0.760
Lease registered	36.4545	13.3839	2.72	0.007***
Constant	26.9397	32.7734	0.82	0.412
Number of observations = 178 **Log-likelihood = -718.3592** **p>chi2 = 0.0004**	Observation summary: 38 left censored observations at index = 0 140 uncensored observations 0 right censored observations			

Source: Computed from Nigeria Living Standards Survey (NLSS), 2019

Note: *** and ** Significant at 1% and 5% level respectively

1.9.3. Role of Land Ownership Dimensions on Livestock Commercialization among Farming Households in Nigeria

The role of land ownership dimensions on livestock commercialization among Nigerian farming households are provided in Table 6. Statistically significant variables are title deed, customary certificates of occupancy, rights of occupancy, and survey plan.

Title Deed: Title deed was significant and positively influenced livestock commercialization at $p<0.01$. Possession of title deed was associated with 18.38units increment in the level of livestock commercialization in Nigeria, as such, households that held title deed have a higher probability of livestock commercialization than households that do not have title deed.

Customary Certificate of Occupancy: Further customary certificate of occupancy was found to be positively significant at $p<0.01$ and was associated with 18.65units increase in the livestock commercialization by Nigerian farming households.

Right of Occupancy: Right of occupancy was positively significant at $p<0.05$ and it contributed to the level of livestock commercialization in Nigeria by 11.09 units.

Survey Plan: Results show that survey plan was positive and significant at $p<0.10$ level. This shows that holding the document would lead to 12.19 units increase in livestock commercialization. Therefore, the possession of land ownership documents, especially lease document and customary certificate of occupancy play important roles on livestock commercialization among farming households in Nigeria.

Table 6: Role of Land Ownership Dimensions on Livestock Commercialization among Farming Households in Nigeria

Independent variables	Coefficient	Standard error	T	P>/t/
Title deed	18.3824	4.5556	4.04	0.000***
Certificate of occupancy	4.1487	5.2689	0.79	0.431
Customary certificate of occupancy	18.6544	4.6183	4.04	0.000***
Right of occupancy	11.0987	4.9375	2.25	0.025**
Survey plan	12.1967	7.2890	1.67	0.095*
Rental contract	13.9318	9.2109	1.51	0.131
Lease registered	14.7563	16.0636	0.92	0.359
Constant	18.7237	27.2017	-0.51	0.491
Number of observations = 703 **Log-likelihood = -2841.3825** **p>chi2 = 0.0000**	Observation summary: 171 left censored observations at index = 0 532 uncensored observations 0 right censored observations			

Source: Computed from 2019 Nigeria Living Standards Survey (NLSS)
Note: ***, ** and * equals significant at 1%, 5% and 10% level respectively

1.9.4. Role of Land Ownership Dimensions on Fish Commercialization among Farming Households in Nigeria

Ordered logit results show that rental contract and lease registered were significant at $p<0.05$ and $p<0.01$ respectively.

Rental Contract: The possession of rental contract was significant at $p<0.05$ and positively influenced the level of fish commercialization by 3.282 units. Specifically, it decreased the likelihood of managing fishes on a low level by 0.022 unit and it was associated with 0.207 unit increase in high fish commercialization level.

Lease Registered: The possession of lease registered document was associated with 7.081 units increase in the likelihood of fish commercialization and it was significant at $p<0.01$. Lease registered document specifically decreased the likelihood of fishes been managed on a subsistence and a low level by 0.075 unit and 0.009 unit respectively, while it was associated with 0.006 unit increase in the likelihood of fishes been commercialized on a high level. Therefore, households that farm on rented and/or leased land are likely to engage in commercial fish production unlike households without any of the documents.

Table 7: Role of Land Ownership Documents among Nigerian Households on Fish Commercialization

Independent variables	Coefficient	p-value	$y = 0$	$y = 1$	$y = 2$	$y = 3$	$y = 4$
Title deed	-0.2740	0.770	0.773	0.769	-0.772	-0.770	-0.776
Certificate of occupancy	-0.4638	0.761	0.754	0.763	-0.764	-0.762	-0.769
Customary C of O	0.5724	0.489	-0.514	-0.486	0.522	0.490	0.560
Right of occupancy	-0.9546	0.270	0.333	0.252	0.317	0.287	0.437
Survey plan	-0.5174	0.621	0.634	0.618	-0.629	-0.623	-0.652
Rental contract	3.2826	0.016**	-0.104	-0.022	0.207	0.017	0.319
Lease registered	7.0807	0.004***	-0.075	-0.009	0.189	0.006	0.297
Number of observations = 74 **P>chi2 = 0.002** **Pseudo-R^2 = 0.2263**							

Source: Computed from 2019 Nigeria Living Standards Survey (NLSS)
Note: ***, ** and * equals significant at 1%, 5% and 10% level respectively.

V. CONCLUSION

The main objective of this study was to examine the role of land ownership dimensions on agricultural commercialization among farming households in Nigeria. It was made known by the study that agricultural commercialization is on a medium level among the households in Nigeria. Land is mainly used for crop production, especially by rural residents in the Northern and Southwestern part of Nigeria among the male and

female-headed households, respectively. Further, the possession of land ownership documents, especially lease registered documents and customary certificate of occupancy respectively play significant role on crops and livestock commercialization among farming households. Also, the possession of lease registered land documents greatly contributed to the level of fish commercialization among farming households in Nigeria. The study therefore concluded that land ownership documents have a positive impact on agricultural commercialization in Nigeria.

VI. RECOMMENDATIONS

Based on the findings of the research, the following recommendations are suggested to ensure steady shift of agricultural production to a highly commercial level in Nigeria:

i. Farmers and investors should be educated on the importance of land documentation and registration.
ii. The process and cost of obtaining and registering land documents should be simplified to encourage farmers to obtain desired documents, especially legal land documents.
iii. Encouragement of long-term leases to provide the investors with confidence to invest in agricultural projects.
iv. Customary land rights should be recognized and protected and the local community should be granted secured access to their ancestral land

VII. SUGGESTIONS FOR FURTHER STUDIES

This study examined the relationship between land ownership and agricultural commercialization among male and female headed households in Nigeria using data that were sourced from 2018-2019 Nigeria Living Standard Survey (NLSS). Other studies can investigate land ownership and agricultural commercialization among male and female headed households in a particular zone using primary data. Also, deeper assessment of this study can be done on the effects of land policy on land ownership in Nigeria. Further, future available NLSS data can be used to investigate the study.

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