

Analysis of Women Entrepreneur Involvement in Livestock Farming in North West Nigeria

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Abstract

This study investigates the level of women participation in livestock production in Northwest Nigeria. A cross-sectional survey research design is adopted for the study. The research collected primary data across the study states using a structured questionnaire and interview. The target population for the study comprises women farmers in livestock production in Northwest Nigeria. However, three out of the seven states in the region are further selected for the study because of the homogeneity characteristics among the states i.e. Katsina, Zamfara and Jigawa states. The sample size for the three states is computed using sample size technique for unknown population size developed by Charan and Biswas (2013). This is followed by stratified sampling technique that was used to select 326 women farmers across the study states. Descriptive and inferential statistics were used for data analyses which include Pearson correlation and logistics regression. Findings of the study indicate that women participation in income generating activities is low due to limited access of the women to productive resources like education, health and training. The women farmers were denied the right to own land, to own livestock or having access to improved pasture and the control over livestock resources. It is also highlighted in the study that low social-cultural background of the women farmers has strong tendency to hinder contributions to participation to livestock production activities. Therefore, the study recommends among others that government should provide; women with productive resources, women farmers access to the right to own land, livestock or having access to improved pasture and the control over livestock resources in order to improve contribution of women farmers to household food security and national security, and socio-cultural activities of the women should be improved.

Background to the Study

The attitudes and perception of people on the fact of being a female in the society and how this influences the social interactions and economic wellbeing of females necessitate this research study. Today, woman entrepreneurs regardless of their impact and contributions to national or global business still face gender challenges as owning a business is a non-traditional occupation for women in many cultures particularly in the Northwest Nigeria. Nigeria with a fast-growing business opportunity is still considered to hold conservative values and traditional customs in doing business and not allowing women take important role in business or entrepreneurship such as agropreneurship which implies agricultural entrepreneurship (i.e. Livestock farming for the purpose of this study).

Livestock farming is mostly for self-consumption, and productivity is low. Livestock keeping seems to be associated with poverty, and particularly female poverty (Ministry of Agriculture Livestock and Fisheries, 2016). Women manage herds that are, on average, two thirds the size of those managed by men, they control fewer valuable species (mostly poultry while men control cattle), are more commercially oriented but earn less than men, and are less likely to use key inputs, such as labour, fodder, and vaccinations (Covarrubias et al., 2012). Women farmers play a vital role in advancing agricultural development particularly in the area of livestock farming across the world, Nigerian in particular. They form the major actors in poultry, small ruminant and micro livestock production, as well as in dairying, including the processing and marketing of milk and milk products. Nigerian women form an active and reserve labour force, but they rarely own the means of productions (Rahman, 2004).

According to FAO (2020), women occupy a central place in subsistence agricultural production and are accountable for 80% of agricultural production. They are majorly involved in food production, processing, preparation and marketing. Despite these activities, women's contributions to food and agricultural production are still largely undervalued. In many developing countries, women often face a range of obstacles to achieving their full potential, ranging from constricting cultural practices to biased laws and highly fragmented labour markets (Quisumbing & Pandolfelli, 2010). Gender discrepancies in access to agricultural resources and services adversely influence their productivity and, subsequently, the food and nutrition security of their households (Ali, Bowen, Deininger & Duponchel, 2016).

In many parts of the world, women's roles in agriculture differ significantly between and within regions owing to economic and social forces transforming the agricultural sector. In rural communities of Nigeria, specifically in the northern states, women play significant roles in both livestock activities and household management aside from crop farming activities. According to the 2006 census, almost 50% of the total populations of Nigerian population are women and 70% of this population according to the Federal Office of Statistics (2006) reside and work in the rural areas, where they are playing major roles in food production and processing including livestock production.

Livestock production offers a unique opportunity for the empowerment of rural women, who are more likely to access and control livestock and their products than other productive resources such as land and machinery (Galièet al. 2015; Njuki and Sanginga, 2013). However, despite high involvement of women in livestock production they still lack control over livestock assets and income and equally not included in household decision making regarding the disposal of animals and its products spite of the importance of livestock.

It is in the light of the above, and since there is dearth of study to the best of our knowledge on the women involvement in livestock farming in Northwest Nigeria, particularly the one that focuses the three study states i.e. Katsina, Zamfara and Jigawa hence, the need for this empirical study to fill the gap. Therefore, this study investigates the level of women participation in livestock production in Northwest Nigeria with a view to examine their economic condition and their family welfare as a result of their participation.

Research Questions

The following questions were raised to effectively achieve the objective of the study:

- i. What is the level of livestock participation and ownership by women?
- ii. How do these levels of women participation in livestock influence their income management?
- iii. What livestock, livestock products and markets have the greatest benefits to women?
- iv. What is the contribution of livestock production by women to their socio-economic characteristics?
- v. What is the contribution of livestock production by women to sustainable national and household food security?
- vi. What are the factors affecting women participation in livestock production?
- vii. How best to reach and support women participation in livestock production through interventions and policies.

Objectives of the Study

The main objective of the study is to investigate women involvement in livestock production in North West Nigeria. The specific objectives are to:

- i. Determine the level of livestock participation and ownership by women.
- ii. Investigate how the levels of women participation in livestock influence their income management.
- iii. Determine which of the livestock, livestock products and markets have the greatest benefits to women.
- iv. Examine the contribution of livestock production by women to their socio-economic characteristics.
- v. Determine the contribution of livestock production by women to sustainable national and household food security.
- vi. Find out the factors affecting women participation in livestock production.

- vii. Determine how best to reach and support women participation in livestock through interventions and policies.

Hypotheses of the Study

The following hypotheses are set to actualize the objective of the study.

- i. There is no significant influence of levels of women participation in livestock to their income management.
- ii. There is no significant contribution of livestock production by women to their socio-economic characteristics.
- iii. There is no significant contribution of livestock production by women to sustainable national and household food security.

In order to effectively ascertain the level of women involvement and contributions to livestock production in the study zone, the research focuses only women that participate in livestock as a means of generating income in selected states in the Northwest of Nigeria. The study is limited to Katsina, Zamfara and Jigawa States for the purpose of even coverage of the states that were considered having similar features with others in the zone and could serve as good representations.

The study creates awareness about the importance of women involvement in livestock production in the study zone and also facilitates policies aimed at making modern agricultural inputs accessible to farmers are directed towards women. It aids the evaluation of the economic contribution of women in livestock farm sector, and as well provides information that will aid design of programmes and policies to create enabling environment for profitable and sustainable livestock production in the study area and Nigeria in general.

A State-of-the-Art Literature Review

This section undertakes a review of the study concepts, provides accounts of earlier empirical studies in order to identify the gap and develops conceptual framework to guide the study.

Conceptualizing Women in Livestock Farming

Livestock refers to animals domesticated for cultivation. Livestock has a wider definition. Livestock are the domesticated animals raised in an agricultural setting in order to provide labour and produce diversified products for consumption. The term is sometimes used to refer solely to animals who are raised for consumption, and sometimes used to refer solely to farmed ruminants, such as cattle, sheep, goats, horses, chickens and pigs (Ali & Khan, 2013). Consequently, women livestock farmers are conceptualized as those whose principal operator, the individual most responsible for the day-to-day decisions of the farm (or ranch), is a woman.

Women's Participation in Livestock Management Activities

Women's participation in livestock, in this section, is defined as the ability of women to have an input in the decision-making process of livestock management activities and to

play a key role in measures aimed at improving their quality of life (Ataneh, 2012). Both men and women are engaged in livestock operations. Nevertheless, each of the two genders contributes in their own ways. Men have assumed greater responsibilities outside the house, while women are confined within the house. In addition to house responsibilities, women actively participate in livestock activities (Andaleeb, Khan & Shah, 2017). They make significant contribution to food production sector particularly in horticulture and small ruminants' production (FAO, 1997; Arshad et al., 2010). In fact, animal husbandry is getting feminized, and dairying is mainly look after by female as they have great command over this enterprise (Jadav et al., 2014).

Participation of women in multiple livestock activities generally adds to households earning, rural economies and poverty reduction in all developing countries. Their activities typically include collection and bringing of fodder, chaffing of fodder, watering of animals, milking, processing, caring for newborn lambs/kids and sick animals, and marketing of dairy products to generate incomes. Women participation is closely linked with economic empowerment by increasing decision-making power, and the social well-being of women folk (Galiè, et al., 2019).

Determinants of Women's Participation

Women's participation in livestock activities can be determined by many factors. Considerably, there are variations among the factors in many parts of the world. The factors are the determinants that can increase or decrease the probability of women's participation in livestock management or affect women's participation either positively or negatively. Among the basic determinants of women farmers' participation in livestock activities are household food security, household income generating activities, socio-cultural factors, economically active population and demographic characteristics.

Empirical Review

Analysis of Women's Participation in Livestock Farming and their Contributions

In recent years, there has been an increasing amount of literature on the link between livestock farming and women's participation in livestock management activities. Research evidence suggests that livestock farming and women's participation are significantly related. For instance,

Ali, Jibril, and Bose (2022) evaluated the determinants of women participation in livestock production in central zone of Bauchi State. Multi-stage sampling procedure was used in selecting 190 respondents, data were collected using structured questionnaire and analysed using both descriptive and inferential statistics. Result reveals that place of keeping livestock was negative and significant in influencing women participation in livestock production ($P < 0.01$), household size, farming experience, cooperatives membership were negative and significant ($P < 0.05$). The result further indicates that the major constraints to participation in livestock production were inadequate media information, lack of confidence and social conflicts ranked 1st, 2nd and 3rd, respectively. The study concluded that, women farmers play a significant role in livestock production.

Christy and Thirunavukkarasu (2002) analysed the association between the socio-economic characteristics of farm women and the extent of their participation in livestock farming. Using multistage random sampling technique, 30 women respondents from the categories of landless, marginal, small, and large farmers are selected from 4 villages of Villupuram district in Tamil Nadu, India pertaining to the year 1999-2000. Linear regression model is fitted to assess the factors influencing the extent of female participation in livestock farming. The results of the study indicate that the farm women performed most of the tasks related to livestock keeping. Farm women had developed close associations with livestock farming in the state.

Huma (2016) analyzed the participation of rural women in livestock farming and inquired whether level of education affects the participation of rural women in livestock farming and its effect on household's income in Charsadda District, Pakistan. The study found that women participation was significantly high in livestock farming. The level of education was one of the determinants of women participation in livestock farming. High level of education reduces women participation in livestock farming. Hence, the study concluded that women farmers required education up to some level and modern methods of farming so as to increase their productivity in the livestock farming.

Josephine (2014) investigated the contribution of women dairy cattle keeping to household food security in Arumeru District. The study sample was 50 women who were randomly selected in two villages (Ndatu and Nshupu) from dairy cattle keeping households that received dairy cattle from development projects such as Tanzania Social Action Fund (TASAF). Data were collected by structured questionnaires and checklists. The research found that, women dairy keeping cattle have a significant contribution in household food security since more than 50% of women farmers (respondents) were able to milk, sale milk and milk products at reasonable prices.

Okali (2011), a Tanzania scholar, reported that women comprise about (52%) of the total population and account for (75%) of the labor force engaged in agricultural production. They are mostly cash crops and in the livestock sector they are mainly engaged in small stock production. In addition to this, to a large extent, they are solely responsible for feeding their families. Women produce 60 - 70% of all food that is consumed by rural households and generates about (35%) or more of all household income mainly through small-scale production business. Women responsibilities vary according to the different regions, and also their social and economic status within the household setting.

Elizabeth. (2006) assessed the impact of women in agriculture program of Borno state in Nigeria. The main aim of study was to assess the impact of agriculture program (WIA) in Brono state. Data collected from Brono state by using multistage sampling technique. Data analyzed by using simple descriptive statistics and inferential statistics. Correlation was used to find the relationship between socio-economic characteristics of Brono women and production from crops and livestock. Results showed that there was a weak correlation between socio-economic variables like age, marital status, education, family

size and experience of women and income and production level of livestock and crops, before and after participation in WIA program. Marital status of women had a significant negative relationship with the crop and livestock production of these women. Constraints were found as inadequacy of inputs and high costs of inputs.

Anita et al. (2001) examined women's participation in various behavioural processes relating to household and crop-livestock practices in West Bengal, India. The study revealed that age, education, family size, family income, land holding, average lactation yield, herd size, social participation, mass media exposure, and faith had significant impact on women's involvement in various behavioural aspects like decision making, planning, perceptual process and participatory process concerning household and crop-livestock farming practices.

Naher (2000) reported that time utilization of rural women in agricultural activities was highest in poultry raising (0.82 hour/person/day) followed by cattle rearing (0.75 hour/person/day) and goat (0.62 hour/person/day). The role of women in livestock rearing is very significant in the rural families through which rural women are able to contribute meaningfully to the cash needs for her and their family members.

Munyau (1995) explored the extent to which multiple roles affect rural women's participation in agricultural extension activities in Kenya. A sample size of 200 women farmers was collected by using simple random sampling technique. Data was collected using survey method through an interview schedule. Descriptive and inferential statistics were used to analyze the data and chi square tests of independence were also used for data analysis. Results of the study revealed that participation of rural women farmers in agricultural extension activities in the two divisions was significantly related to farm size in Naivasha but not in Bahati division. It was recommended that extension services should be improved for rural women.

Conceptual Framework

Independent Variable

Women Involvement in livestock

Dependent Variables

Socio-economic
Income management
Household food security

Source: Researchers 2023

Research Methodology

A cross-sectional survey research design is adopted for the study. The research collected primary data across the study states using a structured questionnaire and interview. The target population for the study comprises women farmers in livestock productions in Kaduna, Kano, Katsina, Kebbi, Jigawa, Sokoto and Zamfara state. However, three out of the seven states in the region are further selected for the study because of the homogeneity characteristics among the states i.e. Katsina, Zamfara and Jigawa states.

The sample size for the three states is computed using sample size technique for unknown population size developed by Charan and Biswas (2013). This is followed by stratified sampling technique that was used to select 326 women farmers across the study states.

Charan and Biswas (2013) model is expressed as:

$$n = \frac{z^2 \alpha / 2 \times p \times q}{e^2}$$

Where,

p = An estimated proportion of the study variables or constructs of 70%

q = Complement of p

n = Sample size

e = Acceptable margin of error or the precision or the estimation error

$Z\alpha/2$ = The value of the standard variate at a given confidence level at 95%

Descriptive and inferential statistics were used for data analysis. Descriptive tools include frequency table, percentage, minimum, maximum, mean, standard deviation and Pearson correlation while inferential statistics was logistic regression to analyse women farmers' participation in livestock production activities. Binary logistic regression is incorporated as this study attempts to predicts probability of women farmers' level of participation in various livestock production activities from a combination of each predictor variable multiplied by its respective regression coefficient:

Data Presentation and Analysis

This section presents and analyses the data collected in this research. Report from the field survey revealed that large percentage of women farmers come from a low social-cultural background. For instance, 81.9% of the women livestock farmers were illiterates, 72.5% practice purdah, 76.5% lack the ability of decision-making, 84.6% had little freedom to decide on livestock matter, 39.1% had average annual income bracket of ₹151,000 - ₹200,000 while extended family size ranges between 16 - 20 children. Consequently, these social-cultural factors have strong tendency to hinder contributions to participation to livestock production activities. Similarly, about economically active population in livestock production activities, livestock registered the main economic activity with 80.26% while estimates of the time contribution of women to livestock activities range from 40-60 percentages. Despite, many women farmers encounter economical constraints in management of livestock activities. 49.4% of women farmers reported poor family welfare, 59.1% lack access to land ownership while 38.1% of the women have access to small landholding size.

Descriptive Statistics of the Primary Variables

Descriptive statistics of the primary variables depicts the minimum, maximum, mean, standard deviation and Pearson correlation among the study variables. The total validly sample selected from the population of this study consists of two hundred and ninety-

nine (299) women farmers. Women farmers' level of participation is the dependent variable while determinants of the level of participation are the independent variables. The minimum observation ranges from 0 to 106 score while maximum observation was 275. In addition, all variables standard deviation shows low variability to the mean of all variables. For instance, economically active population of women had the most variability standard deviation (10.67) which was six times variability to the economically active population mean score. What this implies is that all variables mean are good representation of sample data.

Demographic characteristics (Demogra) had a mean score of 63.85 signifying a fairly high increase in women farmers' characteristics. However, household food security (HH food) indicates a relatively low extent of women' contribution to household food security with a mean score of 2.71. Household income generating activities (HHIncGA) recorded the highest mean of 190.81 with a standard deviation of 43.78 while social-cultural factors (SoCultura) had a mean of 166.98 with a standard deviation of 46.42. This reflects a slightly high increase in farmers' contribution to social-cultural activities. The results further indicate that during the period of study, women farmers constitute an economically active population (Economic). Finally, women farmers' level of participation in livestock activities (WFLPLS) recorded a mean score of 0.71 implies that they actively participate in livestock production and management activities.

Second descriptive table further provides a matrix of the correlation coefficients for the study variables. Each variable is perfectly correlated with itself and so $r = 1$ along diagonal of the table and imperfectly correlated to other variables. Some correlations were positive while some were negative and are significant and insignificant at 0.01 and 0.05 levels. For instance, all dependent variables except household food security are positively and significant correlated to women farmers' level of participation in livestock production and management activities.

Table 1a: Minimum, Maximum, Mean, Standard Deviation and Pearson correlation of Study Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Demogra	299	34	84	63.85	15.381
HH Food	299	2	4	2.71	.850
HHIncGA	299	106	275	190.80	43.788
SoCultura	299	94	235	166.98	46.427
Economic	299	36	79	67.81	10.678
WFLPLS	299	0	1	.71	.456
Valid N (listwise)	299				

Table 1b: Correlations

		Demogra	HH Food	HHIncG A	SoCultura	Economic	WFLPLS
Demogra	Pearson Correlation	1	.757**	-.167**	.790**	-.011	.507**
	Sig. (2-tailed)		.000	.004	.000	.855	.000
	N	299	299	299	299	299	299
HH Food	Pearson Correlation	.757**	1	-.485**	.606**	-.026	-.807**
	Sig. (2-tailed)	.000		.000	.000	.653	.000
	N	299	299	299	299	299	299
HHIncGA	Pearson Correlation	-.167**	-.485**	1	-.328**	.414**	.420**
	Sig. (2-tailed)	.004	.000		.000	.000	.000
	N	299	299	299	299	299	299
SoCultura	Pearson Correlation	.790**	.606**	-.328**	1	-.104	.655**
	Sig. (2-tailed)	.000	.000	.000		.072	.000
	N	299	299	299	299	299	299
Economic	Pearson Correlation	-.011	-.026	.414**	-.104	1	.143*
	Sig. (2-tailed)	.855	.653	.000	.072		.013
	N	299	299	299	299	299	299
WFLPLS	Pearson Correlation	.507**	-.807**	.420**	.655**	.143*	1
	Sig. (2-tailed)	.000	.000	.000	.000	.013	
	N	299	299	299	299	299	299

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Test of Hypotheses

H01: Women farmers' level of participation in livestock activities is not significantly related to household food security, social-cultural factors and population of economically active women.

For inferential statistical analysis, binary logistic regression model was incorporated to predict probability of women farmers' level of participation in various livestock production activities. Logistic regression analysis consists of Pseudo R2, LR chi2, Wald statistic and Odds ratio. The result revealed that the model had PseudoR2 = 0.7105 indicating that 71.05% of the variations in women farmers' level of participation in livestock activities. Similarly, the likelihood ratio chi-square equals 235.12, with a p-value equal to 0.000. The likelihood ratio finding showed that the overall model is a significant predictor of the women farmers' level of participation in livestock activities. The results further indicate individual contribution of each predictor to the Wald statistics. The odds ratio shows the relationship between dependent variable and each predictor. For these data all the five predictors have positive odds ratios signifying positive prediction except

household food security. So, as demographic characteristics, household income generating activities, social-cultural factors, economically active population of women farmers increases by one unit, women level of participation increases by 0.431, 0.313, 0.426 and 0.669 respectively. For this model, demographic characteristics, household income generating activities, social-cultural factors, economically active population of women farmers were statistically significant predictors of women level of participation in livestock management activities. Demographic characteristics, $b = .368$, Wald (χ^2) = 29.44, $p < 0.01$; household income generating activities, $b = .286$, Wald (χ^2) = .694, $p < 0.05$; social-cultural factors, $b = .312$, Wald (χ^2) = .825, $p < 0.05$; economically active population of women farmers, $b = .531$, Wald (χ^2) = 3.962, $p < 0.10$. The result showed that household food security is not statistically significant to women farmers' level of participation in livestock activities at household food security, $b = -1.249$, Wald (χ^2) = -3.558, $p < 0.01$, 0.05, 0.10 respectively. Therefore, for a unit rise in household food security, women level of participation decreases by 1.348. Consequently, alternative hypothesis is upheld that women farmers' level of participation in livestock activities is significantly related to household income generating activities, social-cultural factors and population of economically active women but not significantly related to household food security.

Table 2: Logistic Regression Estimate of the Analysis of Women Farmers' level of Participation in Livestock Production Activities

Binary Logistic Regression						Number Obs = 299
						LR χ^2 (5) = 235.12
						Prob> χ^2 = .000
Log likelihood = -2.7034			Pseudo R ² = .7105			
WFLPLS	B	Std. Error	Z	P> Z	Odds Ratio	
Demogra	.368***	.0125	29.440	.0063	.431	
HH food	-1.249	.351	-3.558	.717	-1.348	
HHIncGA	.286**	.412	.694	.0128	.313	
SoCultura	.312**	.378	.825	.0274	.426	
Economic	.531*	.134	3.962	.0643	.669	
_Con	-2.865	.1696	-16.892	.000		

Note: *** $P < 0.01$, ** $P < 0.05$, * $P < 0.10$ and NS Not Significant

Discussion of Findings

The results of this study are consistent with previous research findings (Abera, Tesfaye & Akililu, 2022; Ali, Jibril, & Bose, 2022; Christy & Thirunavukkarasu, 2002; Tijani & Tijani, 2019; Huma, 2016; Josephine, 2014; Okali, 2011; Afridi, et al, 2009; Elizabeth, 2006; Anita et al., 2001; Naher, 2000; Islam et al., 1996; Munyaua, 1995). The results provide evidence that demographic characteristics, household income generating activities, social-cultural factors and economically active population of the women farmers have a significant influence on the level of women participation in the production and management of livestock activities except household food security. The findings indicate that age and livestock rearing experience are demographic characteristics that determine level of women participation in the livestock businesses. This study indicates that women

participation in income generating activities is low due to limited access of the women to productive resources like education, health, training and employment opportunities. The women farmers were denied the right to own land, to own livestock or having access to improved pasture and the control over livestock resources. The implication is that contribution of women farmers to household food security is at a slow rate. It is also highlighted in the study that low social-cultural background of the women farmers has strong tendency to hinder contributions to participation to livestock production activities whereas the main economic activity engaged in promote contribution to livestock activities.

Conclusion and Recommendations

This study was designed to analyze women participation in the livestock production and management activities. Based on the study findings, it is safe to conclude that that women farmers' level of participation in livestock production and management activities is significantly related to demographic characteristics, household income generating activities, social-cultural factors and population of economically active women but not significantly related to household food security. Therefore, this study recommends that:

- i. Government should provide women with productive resources like education, health and training in order to improve income generating activities of the women participating in livestock,
- ii. Government should provide women farmers access to the right to own land, to own livestock or having access to improved pasture and the control over livestock resources in order to improve contribution of women farmers to household food security and national security.
- iii. Socio-cultural activities of the women should be improved i.e .the women in pudah should also be encouraged to interact with people and be allowed to have basic education. This will increase women participation and contribution to livestock production activities.
- iv. Government should ensure women access to different animal breeds and subsidize animal feeds and vaccination through policy and intervention to enhance more livestock production.
- v. Government should encourage women participation in cooperative society in order to leverage the opportunity of access to farm resources.

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