Influence of small ruminant production to well-being of rural households in southwestern Nigeria

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Abstract

Production of small ruminants is of great concern among developing countries like Nigeria, therefore this study examined the effects of small ruminant production on rural household well-being in Southwestern, Nigeria. Multistage sampling technique was used to select 210 respondents. Data collected were analyzed using both descriptive and inferential statistical tools. The outcomes of the study indicated that the majority of the respondents had an average age of 56±14 years. More than half (57.6%) were female as majority (72.9%) were married. Majority (54.3%) had formal education, and most (65.7%) were Christians. The average household size was 5±2 persons, and 89.5% of the respondents were involved in farming and commerce. The mean income of the farmers was ₦62,000±60,000 . A percentage of 52.4% had a better-off material wellbeing, better-off economic wellbeing (56.7%), worse-off social wellbeing (60.0%) and better-off subjective well-being (64.3%). A significant relationship (p<0.05) existed between sex (χ^2=11.091, p=0.001), educational status (χ^2=89.792, p=0.013), religion (χ^2=17.025, p=0.003), primary occupation (χ^2=104.967, p=0.000), age (r=-0.309, p=0.000), household size (r=-0.267, p=0.027), benefits derived (r=0.788, p=0.007) and well-being status. A significant difference (F=66.553, p=0.029) exists in the well-being status of respondents across selected states. The study therefore concluded that half of the respondents had a better-off (50.5%) wellbeing status from small ruminant production in the study area. It is recommended that small ruminant production among rural households should be encouraged using a more improved and modern production technology system.

Keywords: Influence; Production; Rural household; Small ruminants; Well-being

INTRODUCTION

Nigeria's agricultural industry, which employs 36.5 percent of the country's workforce

and contributes 21.2 percent of its GDP, remains a key engine of economic activity (World Bank, 2018). Agriculture is still essential to Nigeria's socioeconomic stability in contrast to the industrial and service sectors, which account for 18% and 60% of GDP and employ 12% and 52% of the labor force, respectively. In the past, more than 70% of the nation's working population has found employment in this industry.

In response to sectoral challenges, the government has introduced multiple reform initiatives, such as Vision 20:2020, the Agricultural Transformation Agenda (ATA), and the Agriculture Promotion Policy (APP), also known as the Green Alternative. However, despite these initiatives, significant limitations persist in tracking agricultural performance through reliable data and research-based assessments, thereby weakening evidence-based policy formulation and implementation.

Livestock production is a vital component of Nigeria's agricultural framework, with global and national relevance. Globally, the livestock industry is estimated to be worth over $1.4 trillion, employing 1.3 billion people, including approximately 600 million smallholder farmers in developing countries (Thrinton et al., 2006). In Nigeria, livestock contributes over 5 percent to national GDP and about 20 percent of agricultural GDP (Owoade, 2014). According to Singh and Rodricks (2025a), animals such as cattle, sheep, goats, camels, and poultry serve as crucial sources of income for rural households. With rising domestic demand for livestock products, there is potential for job creation, enhanced nutrition through protein supply, and broader rural economic development, especially through smallholder involvement in animal husbandry.

Among livestock, small ruminants— primarily sheep and goats are integral to farming systems across Nigerian households. These animals are reared in both household and commercial settings and serve multiple socio-economic functions. Nigeria, with a population of approximately 218 million and a growth rate of 2.41 percent (United Nations, 2022), remains largely rural despite increasing urbanization (Corral, Molini, & Oseni, 2019). Within these rural communities, small ruminants are often the most accessible form of livestock, contributing significantly to household sustenance and national livestock output. Their resilience in harsh climatic conditions makes them particularly valuable in drought-prone or ecologically vulnerable areas (Aruwayo et al., 2015), thereby reinforcing their strategic importance in smallholder systems.

The advantages of small ruminants are manifold include minimal feed requirements, and adaptability to various agro-ecological zones that make them well-suited for poor farmers with small piece of land (Adane & Girma, 2015). Beyond providing meat, milk, and manure, they serve critical roles in income generation, food security, and wealth retention. They also enhance social capital, as they are used in cultural exchanges and as a source of emergency funds (Midau et al., 2010). Estimates suggest that small ruminants contribute about 40 percent of cash income and nearly 19 percent of the total value from livestock among rural households (source). These attributes highlight their potential as a pathway to poverty alleviation and improved household resilience in rural Nigeria.

Well-being is defined as the holistic experience of physical, emotional, and social fulfillment, is increasingly recognized as a critical development indicator. The National Account of Wellbeing (2016) describes it as a process influenced by behavior, environment, and psychological capital. This conceptual framework implies that livestock, particularly small ruminants, can influence well-being by enhancing access to resources and promoting socio-economic stability. Despite these benefits, a substantial proportion of Nigeria's population continues to live in poverty 63 percent in rural areas and 42 percent in urban settings (Ocheme et al., 2018). Key constraints include limited access to improved animal breeds, veterinary services, feed, and technologies (, 2013; Yusuf et al., 2018). Given this context, this study investigates the role of small ruminant farming in improving the well-being of rural households in southwest Nigeria. It assesses socioeconomic factors, the benefits of small ruminant production, and the extent to which these elements correlate with household well-being, while also exploring regional disparities across selected states.

METHODOLOGY

The research was conducted in southwestern Nigeria, comprising Oyo, Ogun, Osun, Ondo, Ekiti, and Lagos states, covering approximately 114,271 square kilometers and accounting for about 12% of Nigeria's landmass. Ogun State, established in 1976 and bordered by Oyo, Ondo, and Lagos, was among the study locations. With a 2006 population of 4,054,272, the state is rich in natural resources such as phosphate, gravel, and forest reserves and is predominantly inhabited by Yoruba people. Agriculture is the major livelihood activity in its rural communities. A multi-stage sampling procedure was employed, with Ogun, Osun, and Ekiti states randomly selected from the region. Ogun, Osun, and Ekiti States are all located in the southern region of Nigeria and are predominantly inhabited by the Yoruba ethnic group, each with distinct subgroups. Ogun State, created in 1976, shares borders with Lagos, Ondo, and Oyo States. It covers a land area of about 1,640,926 square kilometers and had a population of over four million in 2006. Known for its diverse vegetation, including savannah and rainforest, Ogun is rich in natural resources such as phosphate, gravel, chalk, and mineral deposits, with agriculture—particularly the cultivation of vegetables, rice, cocoyam, maize, and cassava—being the primary occupation. Osun State, located in the southwest, is bordered by Kwara, Ekiti, Ondo, Ogun, and Oyo States, with a population of over 3.4 million and a land area of approximately 14,875 square kilometers. Its economy is mainly driven by agriculture, especially the production of cocoa, cassava, millet, maize, potatoes, and yams, along with services, artisanal mining, and animal husbandry. Ekiti State, covering about 5,888 square kilometers, consists of 16 Local Government Areas and had a 2006 population of nearly 2.4 million. It experiences alternating rainy and dry seasons, with tropical rainforests in the south and guinea savanna in other areas. Agriculture is the mainstay, involving the cultivation of crops such as sweet potatoes, yams, cocoa, kola nuts, oranges, oil palm, maize, rice, and cassava.

The sampling distribution across Ogun, Osun, and Ekiti States shows a structured approach to data collection on small ruminant farmers. Out of 61 extension blocks across the three states, 10% (6 blocks) were sampled—2 each per state. From these, 454 extension cells were identified, with 46 (10%) sampled. Within the sampled cells, 62 small ruminant farming communities were identified, hosting a total of 3,751 small ruminant farmers. A sample size of 210 farmers (5.6%) was drawn from this population, with Ogun contributing 73 respondents, Osun 65, and Ekiti 72. In total, 210 respondents formed the final study sample, reflecting a well-distributed representation across the selected states. The study focused on evaluating the wellbeing of rural households engaged in small ruminant production, using both objective and subjective measures. Data were analyzed using descriptive statistics (mean, standard deviation, frequencies, and percentages) and inferential tools, including Chi-square, Pearson Product Moment Correlation (PPMC), ANOVA, and multiple regression analysis to test the study's hypotheses.

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

Based on Table 1's findings, the majority of respondents (53.8%) were between the ages of 34 and 61, with a mean age of 56±14 years. This suggests that they were in their productive years, which probably increased their involvement in raising small ruminants. The fact that women made up 57.6% of the respondents suggests that women are more involved in this field, maybe as a result of the ease with which small animals can be managed in addition to home duties.

Table 1. Socio-economic characteristics of the respondents (n=210).

Variables	Frequency	Percentage	Mean	SD
Age			56	14
20-33	16	7.6		
34-47	37	17.6		
48-61	76	36.2		
62-75	66	31.4		
76-89	15	7.1		
Sex				
Male	89	42.4		
Female	121	57.6		
Marital status				
Single	13	6.2		
Married	153	72.9		
Divorced	20	9.5		
Widow	23	11.4		
Educational level				
No formal education	96	45.7		
Primary education	42	20.0		
Secondary education	45	21.4		
Tertiary education	27	12.9		
Religion				
Christianity	138	65.7		
Islam	51	24.3		
Traditional	21	10.0		
Household size			5	2
1-2	24	11.4		
3-4	71	33.8		
5-6	67	31.8		
7-8	44	21.0		
9-11	4	1.9		
Primary occupation				
Farming	103	49.0		
Trading	64	30.5		
Civil servant	23	11.0		
Artisans	20	9.5		
Income from small ruminants			62,000	60,000
1,000,61,000	123	58.6		
61,001-121,001	72	34.3		
Above 121,001	15	7.1		
Income from other occupation			52,000	50,000
2,000-52,000	190	90.5		
52,001-102,001	18	8.6		
Above 102,001	2	1.0		

Source: Field survey, 2021

Most respondents (72.9%) were married, reflecting a stable family structure that may support consistent engagement in livestock activities. Additionally, 54.3% had some formal education, potentially enabling them to adopt improved livestock management practices, while religious distribution showed broad cultural acceptance, with 65.7% Christians, 24.3% Muslims, and 10.0% practicing traditional religions. Furthermore, 65.6% of households had 3–6 members, with a mean size of 5±2, indicating the availability of family labour. In terms of livelihood, 49.0% were farmers and

30.5% traders, civil servant 22.0 and artisan 9,5 reflecting the agrarian nature of the area and a trend toward income diversification. The study also revealed that small ruminant production was a vital income source, with mean income of ₦62,000, which surpassed income from other occupations with mean income of ₦52,000, highlighting its economic importance to households.

Benefits derived from small ruminants' production

The majority of respondents benefited greatly from increases in family income, with the greatest mean of 1.90 from small ruminant production in the research area, according to the results of the benefits received from small ruminant production in Table 2. This suggests that the household greatly benefited from the financial income received from the marketing of small animals that ruminate and their products,

which may also reflect improved household wellbeing in the research area. Meeting family needs comes next (1.82), followed by better savings (1.80), higher self-esteem (1.70), market accessibility (1.54), and employment source (1.52).

This shows that small ruminant production have helped the respondents in diverse ways among which is as a source of employment which means adding a skill of small ruminants production to the respondents. However, the least benefits respondents derived from small ruminants' production were improved housing infrastructure (1.05) and improved social participation (1.02). This may be because of the respondents were only rearing the small ruminant on a small scale and are not getting a large sum of income from its sales to meet up with living big in terms of housing infrastructure and social activities.

Table 2. Benefits derived from small ruminants' production (n=210).

Benefits derived	Highly beneficial	Beneficial	No benefit	Mean
Meeting daily family needs	173 (82.4)	37 (17.6)	-	1.82
Increased family income	191 (91.0)	19 (9.0)	-	1.90
Improved skills	99 (47.1)	111 (52.9)	-	1.47
Improved savings	171 (81.4)	38 (18.1)	1 (0.5)	1.80
Accessibility to market	134 (63.8)	57 (27.1)	19 (9.0)	1.54
Improved housing infrastructure	80 (38.1)	61 (29.0)	69 (32.9)	1.05
Improved nutrition	92 (43.8)	101 (48.1)	17 (8.1)	1.35
Source of employment	139 (66.2)	42 (20.0)	29 (13.8)	1.52
Improved food security	85 (40.5)	112 (53.3)	13 (6.2)	1.34
Improved social participation	80 (38.1)	55 (26.2)	75 (35.7)	1.02
Improved animal food consumption	97 (46.2)	62 (29.5)	51 (24.3)	1.21
Improved standard of living	89 (42.4)	45 (21.4)	76 (36.2)	1.06
Improved self confidence	102 (48.6)	48 (22.9)	60 (28.6)	1.20
Provision of better education to children	114 (54.3)	33 (15.7)	63 (30.0)	1.24
Improved self-esteem	151 (71.9)	56 (26.7)	3 (1.4)	1.70

Source: Field survey, 2021.

Wellbeing status of the rural dwellers

Table 3 shows that majority (85.7%) of the respondents had poor material wellbeing status in Ogun while 84.3% and 58.6% of them had better-off material wellbeing in Ekiti and Osun states respectively. On the overall, majority (52.4%) of the respondents had a better-off material wellbeing in the study area. This implies that most of the respondents were in the category of better-off material possession in the

study area. This is further explained by the fact that the respondents' material possessions in the research region were influenced by their small ruminant production. This is consistent with the findings of a similar study conducted by Ekong (2010), which found that rural households classed as economically disadvantaged had somewhat greater than anticipated rates.

Material wellbeing of the respondents

Table 3. Categorization of material wellbeing of the respondents (n=210).

Material wellbeing level	Ogun		Ekiti		Osun		Overall	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Poor (14-21.5)	60	85.7	11	15.7	29	41.4	100	47.6
Better-off (21.6-35)	10	14.3	59	84.3	41	58.6	110	52.4
Minimum	14.00		17.00		15.00		15	
Maximum	33.00		32.00		35.00		35	
Mean±SD	17.11±3.95		25.27±3.60		22.70±6.03		21.6±5.7	

Source: Field survey, 2021

Economic wellbeing of the respondents

Table 4 shows that majority (58.6%) of the respondents had poor economic wellbeing status in Ogun while 68.6% and 60.0% of the respondents had better-off material wellbeing in Ekiti and Osun states respectively. On the overall, majority (56.7%) of the respondents had a better-off economic wellbeing in the study area using 50% as the bench mark for drawing conclusion. This shows that most of the respondents had better-off economic wellbeing.

The result may be a result of their economic activity and influence, as well as the fact that they have enough access to socioeconomic services like infrastructure, healthcare, and educational opportunities. This is consistent with the findings of Ohly et al. (2016), who found that small-scale ruminant production and farming by rural households support their welfare and financial needs.

Table 4. Categorization of economic wellbeing of the respondents (n=210).

Economic wellbeing level	Ogun		Ekiti		Osun		Overall	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Poor	41	58.6	22	31.4	28	40.0	91	43.3
Better-off	29	41.4	48	68.6	42	60.0	119	56.7
Minimum	8.00		10.00		8.00		8	
Maximum	19.00		20.00		20.00		20	
Mean±SD	12.82±3.88		16.32±2.74		15.08±3.79		14.7±3.7	

Source: Field survey, 2021.

Categorization of social wellbeing of the respondents

According to Table 5's classification of social wellbeing, the majority of respondents in Ogun and Osun (82.9% and 70.0%), respectively, had poor social wellbeing, whereas the majority of respondents in Ekiti (72.9%) had superior social wellbeing. Overall, the results also show that the majority of respondents (60.0%) experienced low levels of social wellbeing in the research area. This demonstrates that the majority of responders fall into the research area's worst social wellbeing category. This can have an impact on the respondents' degree of social wellbeing in the research area. This contradicts the National Economic Foundation's (2016) report, which recognized that social factors are important markers of a flourishing life, or a high degree of wellbeing.

Table 5. Categorization of social wellbeing of the respondents (n=210).

Social wellbeing level	Ogun		Ekiti		Osun		Overall	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Poor	58	82.9	19	27.1	49	70.0	126	60.0
Better-off	12	17.1	51	72.9	21	30.0	84	40.0
Minimum	12.00		12.00		6.00		6	
Maximum	15.00		16.00		16.00		16	
Mean±SD	12.51±0.91		14.10±1.15		12.62±2.03		13.1±1.6	

Source: Field survey, 2021.

Subjective wellbeing of the respondents

The majority of respondents (88.6%) in Ekiti and Osun, respectively, had superior subjective wellbeing, according to the results of the subjective wellbeing classification in Table 6, but 51.4% of respondents in Ogun had poor subjective wellbeing. Overall, the results also demonstrate that the majority of respondents (64.3%) reported higher subjective wellbeing in the research area. This demonstrates that the majority of respondents reported feeling more subjectively well in the research area. This may have an impact on the respondents' well-being and enable them to lead more comfortable lives. This is in line with the National Economic Foundation's (2016) research, which recognized that subjective factors are important markers of a fulfilling existence, or a high degree of wellbeing.

Table 6. Categorization of subjective wellbeing of the respondents (n=210).

Subjective wellbeing level	Ogun		Ekiti		Osun		Overall	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Poor	36	51.4	8	11.4	31	44.3	75	35.7
Better-off	34	48.6	62	88.6	39	55.7	135	64.3
Minimum	30.00		31.00		25.00		25	
Maximum	38.00		40.00		40.00		40	
Mean±SD	34.97±1.99		37.61±2.31		35.27±3.31		35.9±2.8	

Source: Field survey, 2021.

Overall wellbeing status of the respondents

The majority of respondents (91.4%) in Ekiti State had a better-off wellbeing status, while the majority (87.1%) and 55.0% of respondents in Ogun and Osun States, respectively, had a poorer wellbeing status, according to the results of the respondents' overall wellbeing status classification, which is displayed in Table 7. The results also showed that, on average, half (50.5%) of the respondents had a higher level of wellbeing in the research area. This suggests that a higher level of wellbeing was experienced by the majority of the respondents in the research area. This indicates that the way of life of the people in the research area was positively impacted by small-scale ruminant production.

Table 7. Categorization of overall wellbeing status of the respondents (n=210).

Wellbeing status level	Ogun		Ekiti		Osun		Overall	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Poor	61	87.1	6	8.6	39	44.3	106	49.5
Better-off	9	12.9	64	91.4	31	55.7	104	50.5
Minimum	6.96		10.55		3.25		3.25	
Maximum	14.84		16.01		18.27		18.27	
Mean±SD	9.34±1.80		13.59±1.39		11.09±3.03		11.30±3.25	

Source: Field survey, 2021.

Results of hypotheses testing

Hypothesis 1: Chi-square analysis between selected socio-economic characteristics of respondents and respondents' wellbeing status.

The results in Table 8 depicts the existence of significant association between respondent' sex (χ^2=11.091, p=0.001), educational status (χ^2=89.792, p=0.013), religion (χ^2=17.025, p=0.003), primary occupation (χ^2=104.967, p=0.000) and respondents wellbeing status in the research area. This suggests that the respondents' wellbeing status in the course of the research area was influenced by their sex, education, religion, and principal occupation. A substantial correlation between sex and the number of females rearing small ruminants in the research region is indicated. This suggests that women are more likely to keep tiny ruminants, which may be sold readily to help finance the household's domestic expenses. Additionally, Table 8's results indicate that there is no significant correlation between respondents' wellbeing status in the research area and their married status ($\chi2$=0.431, p=0.934). This suggests that respondents' welfare status in the research area is unaffected by their marital status.

Table 8. Result of chi-square analysis between selected socio-economic characteristics of respondents and respondents' wellbeing status.

Variables	χ^2	df	P-value	Decision
Sex	11.091	1	0.001	S
Marital status	0.431	3	0.934	NS
Educational status	89.792	3	0.013	S
Religion	17.025	2	0.003	S
Primary Occupation	104.967	3	0.000	S

Source: Field survey, 2021.

Pearson correlation result between selected socio-economic characteristics of respondent and respondents' wellbeing status

According to the Pearson result in Table 9, there is a strong correlation between the respondents' household size (r=-0.267, p=0.027), age (r=-0.309, p=0.000), and wellbeing level in the research area. This suggests that the respondents' household size and age had an impact on their level of wellbeing in the research area. This indicates that the respondents' level of wellbeing status increases with their age and household size. This is because when the family's size and maturity level steady, household well-being improves.

Table 9. Pearson correlation result between selected socio-economic characteristics of respondents and respondents' wellbeing status.

Variables	r value	p value	Decision
Age	-0.309	0.000	S
Household size	-0.267	0.027	S

Source: Field survey, 2021

Hypothesis 2: Pearson correlation result between benefit derived from small ruminants and respondents' wellbeing status.

Among the benefit derived from keeping small ruminants are meeting some daily needs, food security, increased income, generation of employment and livelihood, provision of savings and access to market. These benefits constitute a positive impact on wellbeing status of respondents in the study area. Table 10 shows that a significant association exists between benefits derived from small ruminants (r=0.788, p=0.007) and respondents' wellbeing status in the study area. This implies that the benefits

respondents derived from rearing of small ruminants influenced their wellbeing status in the study area. This means that the higher the benefits respondents derived from rearing of small ruminants, the better their wellbeing status would be and vice-versa in the study area. This is in line with the findings of Singh et al (2025) who found that livestock provides animal food consumption and that most rural community rely on small ruminant to boost their household income and food security.

Table 10. Pearson correlation result between benefit derived from small ruminants and respondents' wellbeing status.

Variables	r value	p value	Decision
Benefits derived	0.788	0.007	S

Source: Field survey, 2021.

Hypothesis 3: Analysis of variance result showing significance difference in the wellbeing status of respondents across selected states in the study area.

The production of small ruminants varies across the states in southwest Nigeria that were chosen, and the type of small ruminant that is owned, raised, and the product that is produced also determines the production strategy used. According to Table 11's analysis of the test of variance, there is a significant difference (F=66.553, p=0.029) in the respondents' wellbeing status among the chosen states in the research region. This suggests that respondents' levels of wellbeing in the chosen states differ

from one another. This is consistent with the findings of Mulubrhan et al. (2021), who documented differences in the wellbeing level of households engaged in cattle production, particularly in the southwestern region of Nigeria during the COVID-19 pandemic.

According to Table 12's additional results, respondents in Ekiti had a higher wellbeing level (13.5993) on average, followed by those in Osun (11.0911) and Ogun states (9.3487), in that order. According to Table 7, Ekiti State had better wellbeing and higher income from small ruminant production than Ogun and Osun states, which may be the source of the state's higher mean wellbeing.

Table 11. Analysis of variance result showing significance difference in the wellbeing status of respondents across selected states.

	Sum of squares	df	Mean square	F	P-value	Decision
Between groups	639.213	2	319.607	66.553	0.029	S
Within groups	994.074	207	4.802			
Total	1633.287	209				

Source: Field survey, 2021.

Table 12. Mean summary table.

States	Mean
Ogun	9.3487
Osun	11.0911
Ekiti	13.5993

Source: Field survey, 2021.

CONCLUSION AND RECOMMENDATIONS

The study came to the conclusion that small ruminant production in the study area contributed to the greater wellbeing level of half of the respondents (50.5%). Additionally, the majority of responders were married, female, adults, Christians, educated, and had a moderate family size. Their principal occupations were farming and trading. The majority of respondents reported that raising tiny ruminants increased their family's income. More significantly, the majority of respondents reported higher subjective, material, and economic well-being but lower social wellbeing in the research location. A number of suggestions were made in light of the study's findings in order to boost small ruminant production and, consequently, the welfare of the rural communities in the research region.

In order to reduce social vices and rural-urban migration, young people should be actively encouraged to engage in small-scale ruminant farming as a source of income and employment. Women's greater participation in this field necessitates their financial and technical empowerment in order to increase their household income, productivity, and social inclusion. It is also important to raise awareness and encourage men, especially those in charge of the home, to take in small-scale ruminant farming. Furthermore, encouraging dairy farming in rural regions can greatly improve food security and revenue generation. Lastly, to guarantee improved access to animal treatment and raise general production, veterinary services must be reinforced at all governmental levels.

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