SOCIO-ECONOMIC FACTORS INFLUENCING PASTORALISTS SEDENTARY/NOMADIC SETTLEMENT PATTERNS IN NASARAWA STATE, NIGERIA

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Abstract:

The study examined the socio-economic factors influencing pastoralist nomadic or sedentary settlement pattern in Nasarawa State, Nigeria. The specific objectives were to describe *the socio-economic characteristics of pastoralists, analyse socio-economic factors influencing pastoralists' nomadic / sedentary settlement pattern in the study area and identify the common diseases / pest and prevention methods adopted by the respondent. A survey design was adopted for the study. A preliminary survey was conducted in the Area to identify the major water points where pastoralists are found. In each Local District, one water point was randomly selected. Thirty percent (30%) of the sampling frame of nomadic pastorialist compile during the preliminary survey where and used for the study. Primary data were collected with the aid of structured questionnaire. Descriptive (mean, frequency and percentages) and inferential (Logit regression) statistics to achieve the research objectives. The study revealed that all (100%) of the respondents were male, majority (74.4%) were married with mean household size of 5.83 persons, majority (67.8%) were living a sedentary life, the average years of experience of the respondents was estimated at 23.44 years, the mean number of cattle, sheep and goat owned by the respondents were estimated at 168.60, 57.86 and 31.28 respectively while the mean annual income of the respondents was estimated at N294,388.89. Logistic regression analysis revealed an R^2 value of 0.246 and F-value of 96.114. The study revealed that years of experience, household size and marital status significantly influenced system of living of the nomadic pastoralists in the study area.*

Majority (97.8%) indicated Foot and Mouth Disease (FMD) as a major disease affecting their livestock and all the respondents utilized the natural grassland. The study recommended that rangeland should be made available and accessible to nomadic pastoralists in the study area. Also, government and NGOs should design environmental initiatives that will address the issues of pest and disease in the study area and ensure a friendly environment that will support pastoralist activities.

Key words**:** *Pastoralist, Determinants Nomadic, Socio-Economic, Sedentary, Life*

INTRODUCTION

Pastoralists are people who derive more than 50 per cent of their incomes from livestock and livestock products, while agro pastoralists are people who derive less than 50 per cent of their incomes from livestock and livestock products, and most of the remaining income from cultivation of different types of crops (International Fund for Agricultural Development (IFAD), 2012). Nomadic pastoralists are generally defined as people, whose primary dependence is on animal husbandry in arid and semi-arid lands, requiring them to find adequate grazing and water. Technically this is called utilizing the resource of spatial mobility (Hunter, 2015).There are 120 million pastoralists worldwide, 50 million of these in sub-Saharan Africa where they constitute 12% of the rural population (Majekodunmi *et al.,* 2014). The Nigerian pastoralists are made up of various ethnic groups such as Kenembu, Buduma, Bodawi, Shuwa-Arab, Koyo, Manga, Fulbe, Bororo among others. The largest group of pastoralists is the Fulbe or Fulani that constitute about 95 per cent of the nomadic herders in Nigeria. Bearing at least thirteen names in West Africa, and found in more than twenty countries, the Fulani make up the continent's most diffuse ethno-cultural group (Islam, 2001).

Pastoralists are typically known for drawing their livelihoods from livestock herding. The nomadic pastoralists rely on mobile livestock rearing as a livelihood strategy for human survival, risk aversion, fortune development and socio-economic development. Their production system, pastoralism, is based on unrestricted grazing and movement of ruminant livestock (mainly cattle) in response to variation in the availability of water, grazing pasture and the limitation imposed on cattle production by flies and livestock diseases. Pastoralism has

been blamed, over the years, for the low productivity of the livestock sub-sector of the Nigerian economy (Manu, 2014). However, it provides the best strategy to manage low net productivity, unpredictability and risk. As rainfall and temperature patterns result in marked spatial and temporal variations in livestock grazing resources, seasonal movements are essential for pastoralists (Nori, 2006). Pastoral societies often represent complex but poorly analyzed systems, tending to be denigrated by policy-makers and romanticized by novelists (Nori, 2006). In contrast to sedentary pastoralists, nomadic pastoralists move through places and seasons, and their livestock forage is mainly natural as opposed to cultivated fodders and pastures. Pastoral resource management is based on a complex set of temporary or semi-permanent claims on pasture, water and other resources, as well as on the underlying principles of flexibility and reciprocity. Land, which is the resource base of pastoralists, is therefore not a fixed individually owned capital, but rather a flexible asset with specific use and access mechanisms (Nori *et al.*, 2005).

In Nigeria, the contribution of the pastoralists to the local food chain and national food security cannot be over emphasized. They hold over 90 per cent of the nation's livestock population, the contribution of the livestock industry to the Nigeria's GDP rose from 37.38 in 2002 to 43.72% in 2012 (CBN, 2012). They are the major producers of cattle, which is the main source of meat in Nigerian markets. Despite their contribution, however, pastoralists are untouched by modernity and controlling little of their economic and political destinies, the pastoralists wander ceaselessly with their animals in treacherous weather conditions especially in the tropical rain, heat, and harmattan.

Pastoralists depend heavily on their herds as means of livelihood which necessitate them to migrate from one location to another in search for feeds and water for their livestock. However, human induced climate change and desertification make grazing difficult. As most animal grazing is carried out in dry lands, pastoralists' livelihoods are usually affected by harsh weather conditions such as droughts which have serious ecological and economic effects on range land (Vetter, 2009).

In the past, Government had laid down grazing reserves for pastoralists but encroachment by farmers, human activities such as constructions of houses occasioned by increase in population have taken over

the lands that were contained in the government gazette as grazing reserves and this has caused a lot of conflicts between farmers and herdsmen. Therefore, pastoralists who have over 5000 cattle have relocated to other African countries with adequate grazing reserves. In addition to this, Nigerian government has now tilted its attention to crop production and placing much emphasis on fertilizer distribution and other farming implements without putting cattle rearing into consideration. If government in the near future doesn't carter for the two enterprises equally by giving each the priority it deserves, it will cost the country so much in terms of milk and beef production, hides and skin development, which will have health and other related economic implications in-terms of protein supply, development of leather industry for revenue generation and employment creation among others. In Nasarawa state, as pastoral conflict is on the increase, the prospect of food security is endangered except urgent and sustainable interventions and mechanisms are strengthened. Against the foregoing background, the study seeks to answer the following research questions:

- What are the socio-economic characteristics of the pastoralists?
- What were the socio-economic factors influencing the pastoralists to live a nomadic / sedentary life in the study area?
- What are the common diseases / pest and prevention methods adopted by the respondents?

Objectives of the study: The general objective of the study was to examine the socioeconomic factors influencing pastoralists nomadic / sedentary settlement pattern in Nasarawa state. The specific objective were to:

- Describe the socio-economic characteristics of the pastoralists;
- To analyse socio-economic factors influencing pastoralists nomadic / sedentary lifestyle in the study area;
- Identify the common diseases / pest and prevention methods adopted by the respondent.

MATERIALS AND METHODS

The study was conducted in the Southern Agricultural zone of Nasarawa state, North central Nigeria. It lies between latitudes 08°32´ and 8°18´and longitudes 06°15´and 08°50´. It occupies an area of about 27,117 square kilometers (Wikipedia, 2015). Nasarawa state is bounded in the north by Kaduna state, in the west by the

Federal Capital territory, in the south by Kogi and Benue states and in the east by Taraba and Plateau states. The population of Nasarawa state is multi-ethnic and based on the 2006 census is about 1.86 million (NPC, 2006) and a projected population of 2,384,792 million people applying a 2.8 percent growth rate for 2015 (NPC, 2006). Agriculture is the dominant occupation of the inhabitants of Nasarawa state. The southern agricultural zone covers five Local government areas (LGAs) namely: Awe, Doma, Keana, Lafia and Obi.

Nasarawa State is characterized by a tropical sub-humid climate with two distinct seasons. The wet season lasts from about the beginning of May and ends in October. The dry season is experienced between November and April. Annual rainfall figures range from 1100 mm to about 2000mm.The area falls within the southern guinea savanna zone. The major soil units of the area belong to the category of oxisols or tropical ferruginous soils (Nyagba, 1995).The major tribes are Alago, Eggon, Kanuri, Migili, and Gwandara. Others include Tiv, Hausa-Fulani, Igbo, Yoruba and Ngas. Most of the people are farmers who engage in trading and artisan work as part time commercial activities. The average annual rainfall is approximately 107.3mm and annual temperature ranging from 22.7^{o}C-36.8^{o}C (Meteorological department, NSG, 2008).

Primary and secondary information were used for this study. The required primary data was collected by the use of questionnaire whereas, the secondary information were sourced through journals, textbooks, internet, among others.

A preliminary survey was conducted in the Area to identify the major water points where pastoralists are found. Therefore, in each Local District, one water point was selected randomly. Estimate from preliminary survey revealed the average number of nomadic pastoralists, out of which 30% was targeted and included in the study to give a fair representation of the nomadic pastoralists for the study.

Logit Regression Analysis

The Model is Explicitly Stated As:

$$Y_i = \alpha+\beta_1X_{i1}+\beta_2X_{i2}+\beta_3X_{i3}+\beta_4X_{i4}+\beta_nX_n+e_1$$

Y = Status of the pastoralist (Sedentary = 1, Nomadic pastoralist = 0)

X_1 = Years of experience (Years)

X_2 = House hold size (Number of household members)

X_3 = Number of cattle manage (Number of cattle in the herd)

X_4 = Number of sheep manage (Number of sheep in the herd)

X_5 = Number of goat manage (Number of goat in the herd)

X_6 = Marital status (1= married, 0 = single)

e = Error term for the i^{th} term

RESULT AND DISCUSSION

Socio-Economic Characteristics of Respondents: Table 1 indicated that in terms of age, most (45.5%) of the respondents were within the age range of 21-40 years. This implies that agro-pastoralists in the study area are still in their active age. This finding is in agreement with that of Ismaila *et al* (2010) who reported that farmers at old age are incapable of handling tedious farming activities such as covering long distances to graze the animals. In addition, majority of (90%) of the respondents were male, therefore this indicates that men participate more in livestock production activities of the nomadic pastoralists because of labour intensive nature of livestock farming.

On the marital status, the result shows in Table 1 that majority (74.4%) of the respondents were married, while 25.6% were single. This implies that most of the respondents marry in order to bear children so as to increase the number of labour force in the family. The study also indicate majority 88.9% of the respondents have above 10 persons. This implies the number of household determines the level at which pastoralist provide effective management of their livestock to improve livestock products. The result also shows that the average years of experience of the respondents were estimated at 23.44 years. This implies that agro-pastoralists in the study area are quite experienced in livestock production activities. The study further revealed that majority (51.1%) of the respondents had above 100 cattle, about 25.6% had between 51-100 cattle while 23.3% had less than 50 cattle. This implies that large herds guarantee subsistence and income, confer status and it is regarded to provide insurance against impact of drought. On the annual income from the sales of livestock (cattle, sheep and goat) in the study area, the result shows that about 36.7% of the respondents earned between 101,000-200,0000 per year, about 26.7% earned between 201,000-300,000, about 20% earned between 301,000-400,000, about 12.2% earned less than 100,000 while 4.4% earned above 400,000 annually. The mean annual income of the respondents was estimated at 294,388.89. According to

McKay (2012), low income earners who dominate the animal industry are not able to cope with the demands of the industry especially when production is not at its optimum level.

Table 1: Distribution of Respondents according their socioeconomic characteristics

Variable	Frequency	Percentage
Age:		
< 20	7	7.8
21-40	42	45.5
41-60	34	37.8
61 and above	8	8.9
Total	90	100
$\bar{x}$ = 41.3		
Gender:		
Male	90	100
Marital Status:		
Married	67	74.4
Single	23	25.6
Total	90	100
Household Size:		
< 10	10	11.1
11-20	79	87.8
21-30	1	1.1
Total	90	100
$\bar{x}$ = 5.83		
System of Leaving:		
Nomadic	29	32.2
Sedentary	61	67.8
Total	90	100
Years of Experience:		
< 10	14	15.6
11-20	36	40.0
21-30	36	40.0

31-40	2	2.2
41 and above	2	2.2
Total	90	100
$\bar{x}$ = 23.44		
Number of Cattle:		
<50	21	23.3
51-100	23	25.6
>100	46	51.1
Total	90	100
$\bar{x}$ = 168.60		
Number of Sheep:		
<50	49	54.4
51-100	26	28.9
>100	15	16.7
Total	90	100
$\bar{x}$ = 57.86		
Number of Goats:		
<50	77	85.6
51-100	12	13.3
>100	1	1.1
Total	90	100
$\bar{x}$ = 31.28		
Annual Income from Livestock:		
<100,000	11	12.2
101,000-200,000	33	36.7
201,000-300,000	24	26.7
301,000-400,000	18	20.0
>400,000	4	4.4
Total	90	100
$\bar{x}$ = 294,388.89		

$\bar{x}$ = Mean

Source: Field survey, 2016

socio-economic factors influencing the pastoralists nomadic / sedentary lifestyles : the logit regression results of the socio-economic factors influencing the pastoralists to live a nomadic / sedentary life were presented in Table 2. The coefficient of determination indicated that 24.6 percent of the total variation in system of living of pastoralists was explained by the estimated variables. Among all the explanatory variables, years of experience, household size and marital status were significant implying that these variables would greatly influence the system of living of the pastoralists in the study area. While experience would influence system of living negatively, implying that the older the pastoralists the less vigour for livestock production activities. Other variables such as

number of sheep, number of goats and household size influence the system of living of the pastoralists positively implying that the chances of living a nomadic life could be increased by increasing the variable inputs such as household size, number of sheep and number of goats. The result shows that years of experience, household size and marital status were significant at 5% while number of cattle, number of sheep and number of goats kept by the respondents were not significant. The result also revealed an R^2 value of 0.246 which implies that about 24.6% of the dependent variable (system of living of the nomadic pastoralists) was explained by the independent variables (years of experience, number of cattle, number of sheep, number of goats, household size and marital status) and F-value of 96.114 indicating the join effect of the variables included in the model and it was found to be significant at 1%. Among the variables included in model the result revealed that years of experience, household size and marital status significantly influenced system of living of the nomadic pastoralists' in the study area. Positive signs in B indicate an increase while negative signs indicate a decrease in chances of living a nomadic or sedentary life. From the result, it implies that for a unit increase in the years of experience (i.e. one more year of experience) the chances of the living a nomadic life increases by 7.4% while for a unit increase in the size of the household i.e. when a person in added to the household the chances of living a nomadic life increase by 21.1% and the results were significant at 5%. From the result also it implies that if the number of cattle increase by one, the chances of living a nomadic life increases by 3%, if the number of sheep increase by one the chances of living a nomadic life decrease by 0.1% and if the number goats is increased by one unit (1 goat) the chances decrease by 0.11% and these results were not significant.

Table 2:Logit (Logistic Regression)

Variable	B	S.E.	Wald	Df	Sig.	Exp(B)
Years of Experience	-0.077	0.32	5.711	1	0.017**	0.926
No. of cattle	-0.003	0.003	1.165	1	0.280^{NS}	0.997
No. of sheep	0.001	0.10	0.008	1	0.928^{NS}	1.001
No. of goats	0.011	0.13	0.660	1	0.417^{NS}	1.011

Household Size	0.191	0.074	6.590	1	0.010*	1.211
Marital Status	-1.330	0.670	3.945	1	0.047**	0.265
Constant	0.912	0.630	2.096	1	0.148^{NS}	2.488
R^2 = 0.246,						
F = 96.114						
R^2 = 0.246, F = 96.114						

Source: Field survey, (2016) ** = Significant at 5% * = Significant at 1% ^{NS} = Not significant

Distribution based on common diseases / pest and prevention methods adopted by the respondents: The distribution of the respondents according to common pests/disease and control measures adopted in treatment is presented in Table 3. The result are in multiple responses and shows that majority (72.2%) of the respondents considered ticks as the major pests affecting their livestock while 48.9% indicated tsetse-fly as one of the major pests affecting their livestock. On the diseases affecting livestock in the study area, majority (97.8%) indicated Foot and Mouth Disease (FMD) as a major disease affecting their livestock. According to Dipeolu (2010), livestock farmers may experience total loss of stock in death, or partial losses in which the productivity of the animals becomes greatly reduced. About 20.0% considered rinderpest as one of the diseases affecting livestock while about 12.2% indicated trypanosomiasis as a disease affecting their livestock. According to Swallow (2000) tryanosomiasis has direct impact on livestock productivity, reducing meat and milk off-take by 20 %, calving rate by 2 0% increase, calf mortality by 20%, decreases both lamping and kidding rates in sheep and goat and livestock management especially the number of livestock kept by farmers, the breed and species composition of the livestock herd, the way the livestock are grazed, cost of trypanocidal drugs and cost of insecticides. Table 3 also presents the distribution of respondents according to prevention/control measures used by the respondents in treating their animals. It shows that 72.2% of the respondents call for veterinary assistance when their animal is sick, 42.2% of the respondents buy veterinary drugs and treat their animals themselves, while 6.7% of the respondents employ traditional methods in treating their animals.

Table 3: Distribution of Respondents according to common pest/diseases and prevention/control measures

Variable	Frequency	Percentage
Pests:		
Tsetse-fly	44	48.9
Tick	65	72.2
Diseases:		
Trypanosomiasis	11	12.2
Foot and Mouth Disease (FMD)	88	97.8
Rinderpest	18	20.0
Control Measures:		
Call for veterinary assistance	65	72.2
Employ traditional method of treatment	6	6.7
Buy veterinary drug and treat animal	38	42.2

Source: Field survey, (2016)

CONCLUSION

The study indicated that most of the respondents in the study area were pastoralists who live a nomadic / sedentary life in Nassarawa state. Among all the explanatory variables, years of experience, household size and marital status were significant implying that these variables would greatly influence the system of living of the nomadic pastoralist in the study area. The study further revealed that common pests / diseases and control measure adopted in the study area were tick and call for veterinary assistance respectively.

Recommendations: based on the findings of the study, the following recommendations were made;-

- Rangeland should be made available and accessible to sedentary pastoralist to sustain their pattern of settlement and provide same nomadic pastoralists in order to serve as incentive to possibly migrate to sedentary pattern of life style in the study area.
- Government and NGOs should design environmental initiatives that will address the issues of pest and disease in the study area and ensure a friendly environment that will support pastoralist activities.

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