



FACTORS INFLUENCING THE INTENSITY OF MARKET PARTICIPATION AMONG THE CATTLE FARMERS IN ADAMAWA STATE, NIGERIA.

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Abstract

The study examined Factors influencing the intensity of market participation among the cattle farmers in Adamawa state, Nigeria. Multistage

Keywords: *cattle, factors, farmers, intensity, market, participation*

sampling procedure was employed to sample the

INTRODUCTION

Agricultural marketing plays a significant role in the development of Agricultural and industrial sectors in both developed and developing countries in the world. The demand for livestock and livestock products in Africa is increasing as a result of rapid human population growth. Cattle are one of the major sources of animal protein in the world. Nigeria had a population of about 13.9 million cattle in 1990 (Lawal, 2012, Umar et al. 2008, Blench 1999). By the year 2014 the population raised to 19 million (Federal ministry of agriculture and rural development, 2014). Similarly, worldwide, the cattle population

respondents. Structured questionnaires were used to collect data from 400 respondents in the study area. Descriptive statistic was used to analysed the socioeconomic characteristics of the respondents and truncated regression analysis was employed to estimate the determinants of intensity of market participation among the market participants. The result of the findings shows that cattle market participants were averagely aged 43 years, they are predominantly male (95.04%), (83.48%) were married, while (77.96%), (57.02%) had formal education and are full-time cattle farmers respectively. The result of truncated regression analysis revealed that age and gender of the household head, distance to market, herd size and seasonality were the explanatory variable that influenced the intensity of cattle market participation. Recommendations were made such as to encourage more formal education among the farmers, the more the participant is educated, the better the chance of participation in the cattle market and also to encourage female and those that are unmarried to participate in cattle marketing activities, and to provide adequate pasture land and water supply so as to curb the problems of exposure to avarice of weather, creates more additional sales point at farming communities and road rehabilitation is paramount important in the intensity of cattle market participation and improving the income of the farmers as well as revenue generation to the government.

reached 1.39 billion in 2005 and however, increased to 1.47 and 1.49 billion in 2010 and 2012, respectively (Zijpp et al. 2010; statista, 2015). Moreover, in Nigeria, the greater proportion of the livestock populations is concentrated in the northern region of the country. However, about 90 percent of the country's cattle population and 70 percent of the sheep and goat populations are concentrated in the northern part of the country. The concentration of Nigeria's livestock-based in the northern region is most

likely to have been influenced by the ecological condition of the region which is characterized by low rainfall, lighter sandy soils and longer dry season (Lawal, 2012). While in Adamawa state, the population of livestock in the year 2012 was about 2.426 million goats with growth rate of 1.5% per annum, 2.036 million of sheep with growth rate of 1.2% per annum and 3.062 million of cattle with growth rate of 1% per annum (Aliyara and Yakubu, 2005).

Similarly, Adamawa constitute about 22% of the cattle produce in the country, which indicates that, the state has enormous contributions in terms of protein supply in the country. Most of the farmers in the state are net sellers (Girei et al., 2010). Since it is indicated that Adamawa state is a cattle producing area, then markets and marketing activities are very essential for the distribution of the livestock and livestock products from producing area to the other part of the country. Cattle have wider economic usage thus, production of beef, hide and skin, agricultural manure as well as source of transport for the movement of agricultural products from one location to the other. Similarly, it helps to provide power for the tilling of soil. Cattle are also fattened and sold, cross-breed to improved carcass weight, it also serves as a source of milk and cheese. The bones and blood are also used as part of ingredients needed for the production of chicken feeds among others (Girei et al., 2013). Moreover, Cattle marketing also play a crucial role to the economic well-being of the individual, society and the nation at large; however, the cattle farmers pay taxes and dues to the local, state and federal government, which is assessed on every individual animal. The availability and distribution of meat and milk products depend on efficient marketing system, because good marketing enhance productivity (Girei and Omonona, 2009).

Objective of the study are to;

- i. identify the socio-economic characteristics of cattle farmers in the study area;
- ii. identify the determinants of intensity of market participation among cattle farmers in the study area;

Materials and Methods

Sample and sampling Techniques

A Multi-stage, random sampling and purposive sampling techniques were employed in the selection of the respondents. In the first stage, two Local Government Areas (LGAs) were purposively selected from each zone of the four zones of Adamawa State Agricultural Development Programme (ADADP), the selection was based on their relative importance in cattle farming.

In the second stage, twenty-six (26) districts were randomly selected from forty five (45) districts of the eight (8) selected LGAs proportionately.

The third stage, involves the random selection of 400 cattle farmers proportionately from the selected districts. Information on the sampling frame was obtained from the Ministry of Livestock Productivity and Nomadic Settlement, Yola. The selection of the four hundred respondents will be based on the proportionality factor presented in equation 2, as adopted from Giroh et al. (2012).

$$S = r/R \times N/1 \quad (2)$$

Where:

S = total number of respondents sampled in each district

r = number of cattle farmers in a particular district

R = Total number of farmers in all the selected districts

N = Sample size

The sample size of 400 cattle farmers with a total population of 6,170 respondents was obtained when use 5% margin error (confidence interval) and with 95% confidence level (MarCorr 2014, creative research systems 2012, and Didier 2013). Moreover, the Sample size will also be determined by using Taro Yamane formula as shown below: (Polonia, 2013).

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = Sample size

N = Population size

e = Limit of tolerance error

With a significance level of 95% the degree of tolerance level will be 5% (i.e. 0.05).

$$n = \frac{6170}{1 + 6170(.05)^2}$$

$$n = \frac{6170}{1 + 6170 * .0025}$$

$$n = \frac{6170}{16.425}$$

n = 376 to nearest hundred = 400 Sample size.

Data analysis techniques

Descriptive statistics was used to analysed the socioeconomics characteristics of cattle farmers and truncated regression analysis was used to analysed factors influencing the intensity of market participation in the study area.

Model Specification

Truncated Regression model

Most studies on market participation have typically adopted a two-step analytical approach involving the unobservable decision to participate and the observed degree or intensity of participation in the markets (Vance & Geoghegan, 2004; Alene et al., 2008). However, this study purposively analyzed the intensity of market participation, and identified factors that influence the degree of participation among the cattle farmers. The observed percentage of cattle that is actually sold in the market was used as a proxy for intensity of market participation (equation 5)

$$Y_i^* = \beta_i X_i + \mu_i \quad (5)$$

where Y_i^* is the percentage of cattle that is sold, β_i is the vector of parameters to be estimated, X_i is the set of explanatory variables and μ_i is the error term. The specific variables to be estimated in the model are described in Table 1.

Table 1. Definition of hypothetical effects of explanatory variables on market participation

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Variable	Description	Measurement	Expected sign
Age	Age of the respondents	In years	±
Gender	Sex of the respondents	Binary variable (1=male, 0=female)	±
Education	Level of educational attainment	Number of years spent in school	+
Family size	Number of persons in a household	Number	±
Distance to market	Distance from home to market	Kilometers	+
Market information	Information about cattle marketing	Binary variable (1=Access to information, 0= no access)	±
Security	Theft in the market	Binary variable (1=yes, 0=No)	+
Seasonality	Growing season	In time	+
Road type	State of the road network	Binary variable (1= good, 0=bad)	+
Farm size	Total number of cattle in the herd	In number	+

Result and discussions

Socio-economic characteristics of the respondents

Result in Table 2 showed that the cattle market participants were averagely aged 43 years had a family size of average 10 persons, has 19 years' experience in cattle marketing and had average herd size of 49 cattle. They are predominantly male (95.04%), married (83.48, %) while (77.96%) of the households had one form of formal education or the other and (57.02%) are full-time cattle farmers.

The result shows that (95.04%), of the cattle farmers were male. It is however male-headed households are more likely to participate in the market as a cattle farming is considered a patriarchal activity. Female-

headed households are therefore expected to have lower probability of market participation compared to their male counterparts.

The result in table 3 also indicated that more than 83% of the sampled respondents were married. It can be inferred that since majority of the respondents were married, they have social obligations to cater for at the household level and this may cause them to take their participation in cattle marketing activities very seriously in order to generate income and to meet their financial obligations.

Education level of the household head could lead to increase in the household's ability to access and utilize market information. From the findings about 78% of the households had one form of formal education or the other. This implies that they could be able to utilize information more efficiently and consequently improve their managerial skills. This finding conforms to the findings of Randela et al. (2008) and Enete and Igbokwe (2009) who reported that education provides households with better production and managerial skills which could translate to increased market participation.

Table 2: Socioeconomics factors of the sampled cattle farmers

Attribute	Frequency	%
Age		
<20	12	3.31
20 to 34	57	15.70
35 to 49	217	59.78
50+	77	21.21
Family size		
<5	56	15.43
5 to 9	94	25.90
10 to 14	186	51.24
15+	27	7.44
Years of market experience		
<5	21	5.79
5 to 14	91	25.07
15 to 24	209	57.58
25+	42	11.57

Herd size		
<50	183	50.41
50 – 99	65	17.91
100 – 149	68	18.73
150+	47	12.95
Gender		
Male	345	95.04
Female	18	4.96
Marital status		
Single	50	13.77
Married	303	83.48
Widowed	5	1.38
Divorced	5	1.38
Education		
No formal education	80	22.04
Adult/Primary Education	83	22.87
Secondary	108	29.75
Post-secondary	92	25.34
Major occupation		
Cattle farming	207	57.02
Civil servant	92	25.34
Trading	57	15.7
Farming	7	1.93

Source: Field survey, 2016

The results in Table 3 indicate that age and gender of the household head, distance to market, herd size and seasonality influenced the intensity of cattle market participation. The truncated regression results shows that age of the household head, gender and seasonality are significant at 5%, while distance to market and herd size are significant at 1%.

Table 3, revealed that market participation decreases with age since the coefficient of the variable carried a negative sign. The result suggests that as age increases by one year, the intensity of market participation decreases by 0.317. This could be that older farmers may be more risk averse, and would therefore choose to retain their livestock for security

rather than participate in the market. This conforms to the findings of Musah et al. (2014) who reported that younger farmers are expected to be fully engaged in the market so as to enhance their quality of life. The study by Oparinde and Daramola (2014) observed that age of the farmer have significance influence on intensity of market participation in Ondo state, Nigeria. However, the findings from study by Maiangwa (2013) indicated that age and years of experiences, significantly related with their market participation. The similar result was also revealed from the studies conducted by Endris and Negussie (2011); Mubi et al. (2013), and Yali et al. (2014), that farmers' ages and their experiences in farming significantly influence their market participation.

The result indicated further that intensity of the participation increases with gender. This could be as results of the fact that in the study area, males are the heads of families, thereby shouldered much of household responsibilities that likely derive them to participate more in the marketing activities. Generally, a cattle farming in the study area is considered patriarchal activity, as results that men are expected to take-up rigorous or tasking jobs such as cattle marketing, taking long journey to market and spending enough time outside home, which married women are not allow to do. Market distance was negative and significantly related to the intensity of participating in the cattle markets. This implies that each unit increase in market distance decreases the intensity of participation by 0.227. Logically if the cattle market is far from the point of production, households will participate less because of high transport cost which reduces profit margin. This situation becomes complicated if prices are not favorable and the cattle have to be transported back to the rural areas. This concurs with the findings of Uchezuba et al. (2009) who indicates that market distance have a negative impact on the probability of the small-scale farmers marketing their animals to formal markets in south Africa. Total herd size has a negative and significant relationship with the intensity of participating in the cattle markets; this implies that the intensity of participating decreases with an increase in the herd size. A unit increase in the herd size will decrease the intensity to sell cattle by 0.278. This is contrary to the findings of Girei and Omonona (2009) and Hangara et al. (2011) who stated that present number of cattle positively influenced

farmer's participation in the cattle market. This finding may not be unconnected with fact that majority of the cattle farmers are Fulani herdsmen and the number of cattle one has elevate their social status with its attendant negative consequences on intensity of market participation. Seasonality (dry season) affect grazing, water and other related resources due to the absence of rainfall. Dry season is characterized by very low rainfall and the lack of natural grazing which leads to the use of alternative methods of feeding cattle during dry season. The coefficient for season which was measured as a dummy variable was positive and significant at 5% level. This suggests that as the season change from rainy ($X=0$) to dry ($X=1$), increases the intensity of participation in cattle markets which is being orchestrated by increased supply. This implies that cattle farmers are grapples with inadequate feed and water during the dry season and need to cut the herd size to ease the stress.

Table 3: Result of truncated regression analysis for the intensity of cattle market participation

Variables	Coefficients (β)	Standard error	Z	Significance
Age	-0.317	0.152	-2.09	0.037**
Gender	8.445	3.638	2.32	0.020**
Education	1.951	3.677	0.52	0.596
Family size	-0.079	0.270	-0.29	0.770
Distance to market	-0.227	0.073	-3.13	0.002***
Prior market information	1.207	3.304	0.06	0.950
Road type	2.450	2.585	0.95	0.343
Herd size	-0.278	0.063	-4.37	0.000***
Season	5.988	2.803	2.14	0.030**
Theft at market	-0.235	2.439	-0.10	0.923
Constant	41.843	7.419	5.64	0.000
Wald Chi2	62.26***			
Log likelihood	-1325.8984			

Number of 351
observations

Source: Field survey, 2016

*** Significant at 1%

** Significant at 5%

Conclusion and Recommendations

The following conclusions were drawn from this study:

- i. This finding concluded that cattle farmers have good chances of driving market advantage, because majority of farmers are at their productive age.
- ii. Those in cattle business were predominantly male, married. Therefore good market participation will help in raising household income.
- iii. Since majority of the respondents are literate they can be able to utilize information more efficiently and consequently improve their managerial skills.
- iv. Variables like proximity to market and market information decrease farmers' participation in the market while gender, education, and seasonality promote market participation in the area.
- v. The variable herd size reduced the intensity of cattle market participation, while household head, gender and seasonality promote the intensity of market participation in the area.
- vi. Inadequate feed is the cause of severe constraint on cattle business in the study area, followed by inadequate water and the least problem is theft. These observed constraints may force the cattle farmers to dispose of their cattle and hence affect the productivity of their business and market commercialization.

Policy Recommendations

The following policy recommendations are made based on the findings from the study:

- i. Since majority of the respondents were of moderate age, youths should be encouraged to participate in marketing activities to

- expand the current marketing system and to address the challenges facing agriculture in term of food insecurity and revenue generation.
- ii. Cattle-marketing is male-dominated. Therefore, there is need to encourage women to participate actively in the cattle market; and also, the unmarried should be encouraged to participate as most of the participants are married.
 - iii. The study also recommends that efforts should be made to upgrade road networks in the study area so as to reduce the transaction cost and encourage cattle market participation.
 - iv. Since the major problems encountered by cattle farmers were inadequate feed and water during dry season and problem of insecurity, there is need to provide adequate pasture land, water supply for the animals.

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