COSTS AND RETURN ANALYSIS FOR SHORT PERIOD SMALL SCALE CATTLE FATTENING IN KANO STATE NIGERIA

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ABSTRACT

The study was conducted to assess the costs and return for short period cattle fattening enterprise for increase income in some selected Local Governments Areas, Kano State, Nigeria. A Multistage sampling techniques was adopted in selecting a total of 146 sampled of cattle fatteners. Data were analyzed using net farm income and multiple regression models. The costs and return to cattle fattening was conducted on Adamawa Gudali, Red Bororo, Sokoto Gudali, White Fulani breeds, and pooled result for easy assessment of costs and return. The result revealed that total cost of production amounted to ₦175, 369.2, ₦197, 479.5, ₦194, 548.1, ₦214, 614.4, ₦197, 635.8 for Adamawa Gudali, Red Bororo, Sokoto Gudali, White Fulani breeds, and pooled result respectively. However, the total cost of fattened cattle and its manure were ₦205, 051.3, ₦233, 058.7, ₦231, 156.9, ₦232, 181.7, ₦229, 521 for Adamawa Gudali, Red Bororo, Sokoto Gudali, White Fulani breeds, and pooled result respectively. The total net farm income was ₦29, 682.1, ₦35, 579.2, ₦36, 608.8, ₦17, 567.25, ₦31, 885.2 respectively; the return per naira invested was 0.169k, 0.180k, 0.188k, 0.081k, and 0.161 k respectively; the study recommended that cattle fatteners should be encouraged to fatten more than one cattle at a time so as to enjoy economies of scale in inputs use and ensure higher profit.

Key words: Cattle, Fattening, Returns, Production, Cost.

INTRODUCTION

Global demand for livestock products is growing rapidly and is projected to increase 70-80% by 2050 (Steinfeld, 2012). The demand is expected to increase mainly due to growing population, rising disposable income and progressive urbanization; livestock subsector needs special attention of governments of various countries, especially of developing countries due to the fact that globally its producers are the largest user of agricultural land and world food economy is shifting towards animal-based products (FAO, 2015). Further, livestock is a key livelihood and risk mitigation strategy for small and marginal farmers as well as for poor landless households in the developing countries (Ahmad *et al*, 2019). The Nigerian livestock sector has been a source of well-being for many citizens, particularly for the rural dwellers (Umar and Ben, 2014). Cattle fattening which is the preparation of the animal for marketing through intensive care leading to increased weight gain play a vital role in the economic development of Nigeria. Among the major contributions of the cattle fattening enterprise include provision of employment, income and animal protein (Fanatico and Rinehart, 2006). Despite the contributions, the sector is face with certain constraints that are hampering smooth growth of the system and the profitability. Modern cattle fattening practice reduce the cost of production and increase income of the cattle fatteners through efficient use of resources. This study is an attempt to identify the cost and returns as well as factors influencing profitability of small-scale cattle fattening in the study area.

METHODOLOGY

The study area covers some selected local government areas of Kano state, Nigeria. It has a population of 13,076,892 as Projected 2016 (NBS 2017). The area lies between latitude $10^0$33N' to $12^0$23'N of the equator and longitude $7^0$34'E and$10^0$33E with forest and grazing land of 11,898km^2 (Kano State Government 2013). Different livestock species such as camel, cattle, goats, sheep, rabbit, horse, donkey and poultry thrive well in the study area (Muhammad *et al.*, 2008). The area is free from tsetse fly infestation with abundance grassland for grazing animals. A Multi-stage sampling

technique was used in selecting cattle fatteners for this study. Two (2) Local Governments were purposively selected from each agricultural zone based on the presence of cattle fattening activities in the area, Gwarzo and Tudun wada local government from zone I, Makoda and Tofa local government from zone II, Ajingi and Garko local government from zone III were chosen through simple random sampling method using ballot box procedure. In the second stage, two (2) agricultural blocks were selected from each local government which makes the total of 12 blocks. In the third stage, purposive sampling was employed whereby three (3) villages were selected from each block based on the concentration of cattle fatteners giving a total of 36 villages. In the final stage, proportionate sampling was employed where 20% of the cattle fatteners from the villages were selected that gave a total of 146 samples used for the study. Net farm income and multiple regression analysis were used and achieved objectives of the study; the study was conducted based on the short period fattening category (1-3 month**).**

RESULTS AND DISCUSSION

The result of the Table 1 showed the average costs and return for the cattle categories in the study area. The table depicts that for Adamawa Gudali, Red Bororo, Sokoto Gudali, white Fulani breeds as well as pool result for cattle fattening indicted that the total cost of production was ₦175, 369.2, ₦197, 479.5, ₦194, 548.1, ₦214, 614.4, ₦197, 635.8. However, the gross profit amounted to ₦205, 051.3, ₦233, 058.7, ₦231, 156.9, ₦232, 181.7, ₦229, 521 the total net farm income was ₦29, 682.1, ₦35, 579.2, ₦36, 608.8, ₦17, 567.25,₦31, 885.2 and the return per naira invested was 0.169k, 0.180k, 0.188k, 0.081k, 0.161k respectively, while operation ratio was 0.85, 0.84, 0.83, 0.91, 0.85, and gross ratio was 0.86, 0.85, 0.84, 0.92, 0.86 respectively. The study depicts across the four (4) breeds of cattle that significant contribution of fattening activity as supplemental income source was obviously seen. The findings of the study discovered that among the breeds of cattle used in fattening in the study area, Red Bororo and Sokoto Gudali were more profitable than other breeds. This finding agrees with the finding of Madziga *et al.,* (2013) in his study where they reported the result of the economic analysis of feed cost per gain was higher in Bunaji (white Fulani) than the other breeds which were fed in three month. Income over feed cost was similar and better in Rahaji, (Red bororo) Sokoto Gudali and Azawak than Bunaji. In the same vein, value of gain appeared similar in Rahaji (₦36,247.00), Sokoto Gudali (₦36,148.00) and Azawak (₦35,735.00) but better than Bunaji (₦34,470.00).

The Table 2 of the study further depicted that R^2 was estimated at 0.505 which implies that about 50.5% of the variation in the profit from cattle fattening production was explained by the explanatory variables included in the model while the remaining 49.5% was attributed to the error term of random disturbance in the model and the F value was 17.505. The coefficient of household size was found to have positive effect on the profit of the cattle fatteners and significant at 10% level ($P<0.1$), the possible explanation for this finding is as the number of household increase, there is likely for the cattle fattener profit to increase as a result of reduction of the cost of hired labour by introducing family labour. The coefficient of income from other source of cattle fatteners was found to have negative effect on the profit of the cattle fatteners and it is significant at 10% level ($P<0.1$), this implies that an increase in the cattle fatteners income from other source may lead to the decrease in the total revenue of the cattle fattening, this may be due to the higher concentration given to other source of income to the detriment of fattening activities. The coefficient of cattle herd size use for fattening were found to be positive related to the level of output at 1% ($P<0.01$), this implies that as the number of cattle use for fattening increase, then it will lead to the increases in the level of profit of cattle fatteners.

Table 3: Cost and Return analysis for Categories of Cattle fattening of Major Breeds of Cattle (average per Cattle Head)

Variable cost	Adamawa(₦)	Red bororo(₦)	Sokoto(₦)	White(₦)	Pool(₦)
Feeder cattle	112, 038.5	126, 055.6	124, 908	135, 114.6	127, 329.9
Feeds	37, 435.9	44, 380.25	42, 565.76	41, 495.69	42, 092.74
Medicinal	1, 165.39	1, 619.14	1, 556.18	1, 357.01	1, 467.55
Salt	432.69	728.40	558.42	250.52	477.43
Potash	103.46	120.68	118.91	131.11	121.87
Water	2, 938.46	2, 489.50	2, 477.59	2, 661.74	2, 581.37
Sub-total Service inputs	**154, 114.4**	**175, 393.6**	**172, 184.9**	**181, 010.7**	**174, 070.9**
Veterinary care	508.97	686.42	675.86	507.85	607.72
Labour	14, 734.62	15, 233.33	15, 603.45	18, 034.38	16256.85
Handling	4, 397.44	4, 498.15	4, 464.11	12, 362.5	4, 982.09
Sub-total	**19, 641.03**	**20, 417.9**	**20, 743.42**	**30, 904.73**	**21, 846.66**
Total variable cost	**173, 755.4**	**195, 811.5**	**192, 928.3**	**211, 915.4**	**195, 917.6**
Fixed cost (depre. at 10%/year)					
Rent land	942.31	740.43	840.66	1, 046.88	898.97
Equipment	671.48	927.58	779.16	1652.11	819.20
Total fixed cost	**1, 613.78**	**1, 668.01**	**1, 619.82**	**2, 698.99**	**1, 718.17**
Total cost of production	**175, 369.2**	**197, 479.5**	**194, 548.1**	**214, 614.4**	**197, 635.8**
Sales after fattening					
Manure	7, 487.179	9, 231.48	8, 513.218	9, 546.25	8, 894.32
Cattle	197, 564.1	223, 827.2	222, 643.7	222, 635.4	220, 626.7
Total revenue	**205, 051.3**	**233, 058.7**	**231, 156.9**	**232, 181.7**	**229, 521**
Net farm income	**29, 682.1**	**35, 579.2**	**36, 608.8**	**17, 567.25**	**31, 885.2**
Return per naira invested	0.169	0.180	0.188	0.081	0.161
Operation ratio	0.85	0.84	0.83	0.91	0.85
Gross ratio	0.86	0.85	0.84	0.92	0.86

Source: (Field Survey 2017)

Table 2 .Socio-Economic Factors Influencing Profitability in Cattle Fattening

Variables	Coefficient	Significant
Constant	5.230	0.000***
Age	0.029	0.728
Gender	-0.039	0.693
Marital status	-0.003	0.967
Household size	0.155	0.039*
Education	-0.073	0.275
Cattle fattening. Experience	-0.024	0.762
Off fattening Income	-0.135	0.093*
Cattle herd size	0.694	0.000***
R^2	0.505	
R-adjusted	0.477	
F- value	17.505	

Source: (Field Survey 2017) Note. * = significant at 1% (P<0.01), ** = significant at 5% (P<0.05), * = significant at 10% (P<0.1)**

CONCLUSION AND RECOMMENDATIONS

On the basis of the findings of this study, the cost and returns analysis re-affirmed that cattle fattening business was relatively profitable and the result of analysis of influence of socio-economic variables on the profit of cattle fatteners concluded that household size and cattle herd size are the variables that

had positive effects while off-farm income had negative influence on the profit of fatteners in the study area. Therefore, the study recommended that there are needs to develop cheap system of producing calves for mass adoption by potential fatteners so as to increase their income. Cattle fatteners should be encouraged to fatten more than one cattle at a time so as to enjoy economies of scale in inputs use and ensure higher profit. However, strategy oriented toward an increase in herds size and intensification of processing (market orientation) may also lead to improve efficiency. The study also recommended that there is need to enlighten fatteners on the importance of cattle fattening as an additional source of income to the household family so that more emphasis should be put to their fattening enterprise to enhance their profit, hence household income will increase.

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