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ORIGINAL ARTICLE

The Human Capital Input and Some Challenges of the Nigerian Cattle Industry

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ABSTRACT

This study was to gather first-hand information on the human capital input of the Nigerian cattle industry. A questionnaire was administered to 26 cattle farms across Nigeria of which we received a response from each farm. Most of the farm surveyed were owned solely by individuals 18(69.23%) and the male gender 24(92.31%). There were more farmers 25-50 years 22(84.62%) than those >50 years 4(15.38%). The majority of the farmers had tertiary education 18(69.24%), while 13(50.00%) and 11(42.31%) farmers had >10 years and 5 – 10 years of experience in cattle farming, respectively. Ten (38.46%) farmers each considered cattle farming out of interest and as their profession. Poor funding 13 (50.00%) was the major challenge to cattle farming. The predominant cattle breeds were indigenous mix 18(75.00%) and improved crossbreed 7(20.78%). Semi-intensive 15(57.69%) was the most common management system, however, the main farm sizes were small 13(50.00%) and medium-sized 12(46.15%), while boreholes 15(57.7%) and streams/well-water/rivers 11(42.3%)

were the major sources of water. Majority of the cattle farms sometimes 15(57.7%) experience food shortage but never 14(53.80%) water shortage. Nearby veterinary services were present in 22(84.62% farms but absent in 4(15.38%). The study shows that funding is a challenge to cattle farming in Nigeria. This is evident in the small-sized farms, semi-intensive management practices and the occasional shortage of food.

Key words: Cattle industry, Human capital input, Challenges, Nigeria.

INTRODUCTION Cattle are domestic ruminant animals that originated from the wild aurochs (*Bos primigenius*) (Ajmone-Marsan *et al*., 2010). Domestic cattle belong to either zebu (*Bos indicus*), taurine cattle (*Bos taurus*), domestic yak (*Bos grunniens*), gayal (*Bos frontalis*), gaur (*Bos gaurus*) or the banteng (*Bos javanicus*) (Mohamad *et al*., 2009). The zebu (*Bos indicus*) and taurine cattle (*Bos taurus*) are the only types of cattle that are abundant in Nigeria (Blench, 1999), with over 18.8 million spread across the country (NASS, 2011). The most common indigenous breeds of cattle found in Nigeria are the Bunaji, Gudali (Sokoto and Adamawa), Rahaji, Wadara, Azawak, Muturu, Kuri, N'dama and their crosses (Blench, 1999). In addition, other exotic breeds exist within the country but in small clusters. The distribution is affected by climate, culture, availability of natural pasture, and incidence of diseases (Blench, 1999). Cattle provide a significant amount of meat and milk consumed by man, while their blood and horn are used as animal feed (Bourn, 2010). Their hide and skin are also valuable for the local leather industry and as a foreign exchange earner (Uzonwanne, 2020). In addition, cattle are used in agriculture for harrowing, ploughing ridging, and lifting water from deep wells (Blench, 1999).

In Nigeria, the cattle industry is controlled by pastoralists, who move down south seeking pasture during the dry season (Emeali *et al*., 2020). This has led to clashes with farmers and tension among the communities in the central and southern parts of the country (Egbuta**,** 2018). These in addition to banditry and cattle rustling coupled with the struggling economy have drastically depleted the national herd (FAO, 2019). The pastoralists alone are unable to meet the growing demand for animal protein thereby opening opportunities for cattle business. This potential is capable of becoming the most crucial agricultural sector in Nigeria. Despite these numerous economic prospects, very little information is available on the human capital input of the Nigerian cattle industry. It is therefore essential to evaluate the human capital input of the Nigerian cattle industry. Information obtained will

guide policy makers in designing sustainable programs to meet the increasing demand for animal protein for which cattle play a very significant role. In addition, it will highlight the opportunities in the agricultural sector for employment and support for farmers in the food value chain, thereby strengthening societal development through food security. The aim of this study was therefore to determine the human capital input of the Nigerian cattle industry.

MATERIALS AND METHODS

Study Area

Nigeria covers a total area of 923,669 km² that lies between 4.27° to 16.88° North and between 2.64° to 14.68° East (Eniolorunda and Bello, 2012). The study was carried out in a total of 26 cattle farms covering 10 States (3 in the South and 7 in the North) which are located within 5 out of the 6 geopolitical zones of Nigeria (Figure I). These farms were selected based on convenience, owing to the insecurity in the country.

Figure 1: Map of Nigeria showing the 10 States where the cattle farms are located

Study Design

A structured questionnaire was designed to collect information on the characteristics of the farms and the farmers. The Open Data Kit (ODK) platform was used for the questionnaire which provided electronic data entry and management. After obtaining consent, the questionnaires were administered. These included farm type, gender and age of the owner/farmer, their level of education, farming experience and motivation for cattle farming. In addition, information on the management system obtained included the cattle breed, farm size, challenges of cattle farming and management system.

Data Analysis

Data obtained were analyzed using Statistical Package for Social Sciences (SPSS) version 21.0,

expressed in frequency distribution and presented in tables.

RESULTS

Table 1 shows the characteristics of cattle farms/farmers in the study. Farm ownership types were: government- 11.54%, institutional- 7.69%, partnership- 11.54% and sole- 69.23%. The gender distribution of the farmers/respondents was: females- 7.69%, males - 61.54% and 30.77% - not applicable. The age distribution of the respondents was: > 50 years- 11.54%, 25-50 years- 57.69% and not applicable – 30.77%. The respondent's level of education was: informal- 19.54%, secondary- 11.54%, tertiary- 38.46% and 30.77% - not applicable. The years of farming experience of the farmers were: < 5 years- 7.69%, 5 – 10 years- 26.92%, > 10 years- 34.62% and not applicable - 30.77%. Reasons why the farmers considered cattle farming were: accidental- 3.85%, interest- 30.77%, profession- 19.23%, others- 14.38% and not applicable -30.77% - not applicable.

Table 2 shows the responses of the farmers/respondents to queries about cattle farming and their cattle. According to them, scores for challenges to cattle farming were: insecurity- 15.38%, poor funding- 50.00%, poor techniques- 15.38%, and others- 19.23%. The proportions of cattle breeds on the farms were: Foreign-4.17%, improved crossbreeds- 20.83%, and indigenous mixed- 75%. The management systems adopted were: extensive 15.38%, intensive- 26.92% and semi-intensive- 57.69%. The categories of the farm sizes were: large (>150 adult cattle)- 3.85%, medium (50-150 adult cattle)- 46.15% and small (< 50 adult cattle)- 50.00%. The major sources of water for cattle on the farms were: boreholes- 57.7% and streams/well-water/rivers- 42.3%. The statuses of the farms/cattle regarding food shortage were: never- 26.9%, often- 15.4%, and sometimes- 57.7%. Similarly, the statuses of the farms/cattle regarding water shortage were: never- 53.8%, often- 7.7%, and sometimes- 38.5%. Availability or proximity of veterinary services were: No- 15.38% and Yes- 84.62%.

TABLE 1: Characteristics of cattle farms/farmers in Nigeria (n = 26)

Parameter (s)	Particulars	Frequency	Percentage (%)
Type of farm Ownership	Government	3	11.54
	Institutional	2	7.69
	Partnership	3	11.54
	Sole	18	69.23
Gender	Female	2	7.69
	Male	16	61.54
	NA	8	30.77
Age	> 50 years	3	11.54
	25-50 years	15	57.69
	NA	8	30.77
Level of Education	Informal	5	19.23
	Secondary	3	11.54

	Tertiary	10	38.46
	NA	8	30.77
Years of farming experience	< 5 years	2	7.69
	> 10 years	9	34.62
	5 - 10 years	7	26.92
	NA	8	30.77
Why did you consider cattle farming?	Accidental	1	3.85
	Interest	8	30.77
	Others	4	14.38
	Profession	5	19.23
	NA	8	30.77

NA – Not applicable

TABLE 2: Cattle particulars, management system and challenges of farming in Nigeria

	Level	Frequency	Percentage (%)
Breed of cattle	Foreign	1	4.17
	Improved Crossbreeds	7	20.83
	Indigenous	18	75.00
	Mixed		
Management system	Extensive	4	15.38
	Intensive	7	26.92
	Semi-intensive	15	57.69
Farm size	Large (>150 adult cattle)	1	3.85
	Medium (50-150 adult cattle)	12	46.15
	Small (< 50 adult cattle)	13	50
Major source of water for the animals	Borehole	15	57.7
	Streams, well-water or rivers	11	42.3
Food shortage	Never	7	26.9
	Often	4	15.4
	Sometimes	15	57.7
Water shortage	Never	14	53.8
	Often	2	7.7
	Sometimes	10	38.5
Greatest challenge to cattle farming	Insecurity	4	15.38
	Others	5	19.23
	Poor funding	13	50.00
	Poor Techniques	4	15.38
Availability of nearby Veterinary Services	No	4	15.38
	Yes	22	84.62

DISCUSSION

The cattle industry provides a source of income for many families in sub-Saharan Africa (Kubkomawa, 2017). The present study shows that most cattle farms in Nigeria are owned solely by individuals. This is similar to the report of Jabbar *et al*. (1995) in the Savannah region of southwest Nigeria. Although theirs was a regional report, it reflected the ownership pattern of cattle farms in the country. Individuals mostly establish cattle farms to show their affluence in society. In addition, they are inherited from parents who were farmers and passed to their children. There were more males than females in cattle farming, similar to the report of Girei *et al*. (2014) among cattle marketers in

Adamawa State, Nigeria. This finding is not unexpected since cattle are larger than sheep and goats, which are easy to manage. Cattle business is often regarded as an exclusive male venture due to the rigour involved in cattle husbandry. This gender is seen throughout the cattle value chain, from herding to selling beef (Delia *et al*., 2012). The present study revealed that most cattle farmers interviewed in Nigeria are 25 – 50 years of age. This is comparable to Girei *et al*. (2014) among cattle markets in Adamawa State. It is also comparable with the findings of Kalangi *et al*. (2014) in East Java, Indonesia, where cattle farming was most common among the age group 41 – 50 years. Although this age group was not specifically captured in the present study, the majority of the cattle farmers may be within this age group. The cattle business is capital-intensive and may often not be afforded by younger persons.

There were more cattle farmers with tertiary education than other levels of education in the present study, similar to the findings of Saleh (2018) among dairy farmers in northern Nigeria. However, this is contrary to what was reported in Indonesia (Kalangi *et al*., 2014), where elementary school, i.e., primary school was the highest. The variation may be attributed to the fact that over 90% of cattle farmers in Indonesia are in rural areas, mostly uneducated and unexposed. In Nigeria, however, most cattle farms are owned by politicians who are educated and exposed. The current findings also contradict previous reports among cattle marketers in Adamawa State (Girei *et al*., 2014), who observed that most cattle marketers had no formal education. The difference in the type of cattle business may be responsible for this. Marketing does not require formal education but the skill and presence of the individual, like farming, that could be contracted or leased out. The farmer could also employ other people while getting engaged in other forms of ventures. In recent Nigeria, there has been a dearth of opportunities to secure salary-based jobs in both public and private establishments due largely to the global economic meltdown, which has greatly affected the developing nations. Other researchers with a more divergent view have queried the employability of young Nigerian graduates whose training, according to them, is mostly bereft of entrepreneurial skills and exposure (Abiodun-Oyebanji, 2015). The vast, daily economic opportunities provided by the cattle value chain, coupled with the hunger pang as well as societal expectations from those in this age category are likely to have contributed to the attraction to carve a niche in the cattle industry.

In our study, majority of the respondents have been in cattle farming for over 10 years. This is similar to the findings of Kalangi *et al*. (2014) in Indonesia and Saleh (2018) in northern Nigeria. The relatively

long periods of reproductive performance of Nigerian cattle (Adeyeye *et al*., 2020) may account for this. Nigerian cattle attain puberty at about 2 years and require over 9 months for pregnancy (Voh Jr. and Otchere, 1989). A majority said they considered cattle farming out of interest. The high unemployment rate in the country and the absence of white-collar jobs may again be responsible for this (Innocent, 2014).

In the present study, poor funding was identified as Nigeria's greatest challenge to the cattle industry. The cattle business requires enormous funding for various aspects of the production chain, such as land acquisition, feeding, medication, and veterinary care, among others. In addition, the use of modern equipment and techniques to improve cattle productivity is expensive and out of the reach of most farmers. Leigh *et al.* (2018) also reported high costs and obvious non-availability of inputs such as required hormones for oestrus synchronization within the country, coupled with poor submission and success rates in treated cattle. Similarly, Agbugba *et al.* (2019) also discussed how investors' and employees' attitudes, myths, and beliefs militate against the potential outcomes of a few cattle upgrade attempts. There were more indigenous breeds than any other breed in the present study. This is expected due to the disease-resistance traits in most indigenous breeds (Kubkomawa, 2017). These breeds are capable of withstanding most of the endemic diseases in Nigeria. The semi-intensive system was the most common management system observed in the current study. This is contradictory to the reports of Adeyeye *et al*. (2020) in Sokoto where intensive system was the most common. The semi-intensive system involves occasional provision of feed, housing and medical care for the cattle (Blench, 1999). Although this system improves reproductive performance (Oyedipe *et al*., 1982), it could be capital intensive and may account for the challenges of poor funding earlier stated. The highest proportion in terms of the size of cattle farms in the present study was those with less than 50 animals. However, a highly substantial number of the farms also ranged between 50 and 150 animals in terms of size. Farm size may be associated with the pastoralist system of livestock production in Nigeria (Abdullahi *et al*., 2015). In this system, most cattle are in the hands of herders who move along the grazing routes with these animals (Blench, 1999). The ones that are in settled herds are few and are owned by individuals who may be unwilling to cater for large herd sizes, for various reasons.

The major source of water for cattle in this study was the borehole. Access to clean and wholesome water is important for animals to prevent water-borne diseases such as *E. coli* (LeJeune *et al*., 2001). Good quality water plays a significant role

in the performance of cattle (Willms *et al*., 2002; Lardner *et al*., 2005). While these may account for the choice of borehole water, it equally underpins the high investment required in the industry, considering the water requirement of cattle as well as the cost and logistics of drilling boreholes in many parts of the country with variable groundwater levels. The majority of the farms in the present study sometimes experienced food shortages. This may be associated with the seasonal lack of pasture observed during the dry season in most parts of Nigeria (Aruwayo *et al*., 2019). However, more farms never experienced water shortage in the current study. Water is the most vital nutrient for an animal's survival (Adekola *et al*., 2015). The owners may have understood this and taken proactive measures, as discussed earlier in this paper. Nearby veterinary service was available to most farms in this study. Veterinary services are critical for the health of the animal, enabling prompt diagnosis, treatment, and management of diseases thereby facilitating optimal performance.

CONCLUSION

Considering the high cost per kg of beef, milk, and hide, the instability in their prices, bordering probably on an economic downturn as well as the meagre resources available to the teeming populace, a lot still needs to be done for the Nigerian cattle industry. From the wealth of its human capital input, the potential of the cattle industry appears fertile for a willing, worthwhile investment.

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CONFLICT OF INTEREST

The authors wish to state that there is no conflict of interest.

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