Original Research Article

ANIMAL WELFARE CONDITIONS: A CASE STUDY OF OGBOMOSO NORTH LOCAL GOVERNMENT AREA, OYO STATE, NIGERIA

Abstract:

This study aims to determine the level of understanding of the respondents on animal welfare, animal welfare practices as well as identify factors that affect animal welfare especially on transit. Animals are known to play a crucial role in the general wellbeing of man; hence their welfare is paramount. Adherence to animal welfare standards in all areas of husbandry operations translates to improved farmer's income. The study was carried out in Government-controlled facilities responsible for routine animal inspection and slaughter services to the various livestock markets and the local butcher/meat shops within Ogbomoso town. The level of awareness amongst dealers of livestock in arears of animal welfare and its related issues in the town of Ogbomoso is 64.0% as revealed by the survey; ~~with~~ majority of the respondents (89.2%) claim~~ing~~ to be taught at the abattoir by animal health care professionals. The Chi-Square distribution demonstrates that the prevalence of these factors during transport among the respondents is accounted for by 28.48%, 20.25%, 17.72%, 9.5%, and 9.5% of animal mortality during transport, injuries to animals during transport, disposal of carcasses during transport, treatment of sick and injured animals, slaughtering of debilitating animals, and sales of slaughtered debilitating animals during transport. The study is important because it sheds light on the suffering that slaughter animals go through while being handled by handlers from various locations and transported to the markets and slaughterhouses in Ogbomoso.

Keywords: livestock, animal welfare, slaughter services, h~~H~~uman-animal interactions

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1.0. INTRODUCTION

The term 'livestock' is generally used to describe animals domesticated primarily for food; and are also known as "food animals". In Nigeria, poultry, cattle, small ruminants, pigs and rabbits are the most prevalent livestock species from this category, in addition to donkeys, camels, and horses in the Northern region [1]. However, chicken, cattle, goats, and sheep are the most frequently raised animal globally [2]. According to the Federal Ministry of Agriculture and Rural Development (FMARD) Nigeria's national herd consists of 465 million chickens, 36.4 million ducks, 3.8 million turkeys, 5.5 million rabbits, 50.3 million sheep, 88.2 million goats, 465 million pigs, 26.4 million cattle, 353,173 camels, and 1,234,284 donkeys [3]; the majority of which are reared in small households and nomadic free-range agricultural systems [4]. Animals are known to play a crucial role in the general wellbeing of man, hence their welfare is paramount. Adherence to animal welfare standards in all areas of husbandry operations translates to improved farmer's income [5]. Animal welfare refers to its overall quality of life, and includes how well the animal adjusts to circumstances and environment. Human-animal interactions have been reported to have an impact on the general animal welfare, hence our responsibility to ensure that all animals are handled properly and with respect [6]. The inclusion of animal welfare in developmental programs has been reported to have a number of advantages; having a significant influence on developmental concerns

such as reducing poverty, ensuring sustainable livelihood, health and safety, and promoting biodiversity [7].

Animal welfare also refers to the treatment an animal receives that affects its physical and mental wellbeing [8]; the lack of proper animal welfare practice in developing nations, Nigeria inclusive has generated negative attention from the international community [9]. This has been attributed to the overall cost, adaptation of the local and or traditional husbandry systems which do not fully implement such practices/method [10], [11].

Animal welfare is crucial to the future of sustainable livestock production in Nigeria, and must always be taken into account when making decisions relating to security of food and nutrition. Hence, an animal's emotional, economic, physical and mental health; animal welfare and animal health are intrinsically related to one another [8].

A good animal welfare system is one whose husbandry practices are in line with the animals health care needs, behavioral requirements, and high standards of stockman-ship to the extent that is practical [9]. Several animal husbandry practices have been reported as being detrimental to the overall welfare of the animals [12], and include limiting the animals' freedom of movement, keeping animals too close to each other and stocking animals without appropriate bedding materials, which is considered cruel and ultimately affects the welfare of the animal [13, 14]. Other animal management techniques like neutering, dehorning, and tail docking, and cruel methods of slaughter are also detrimental to the general welfare of the animal [13, 14].

Animals bred for consumption are moved from place to place depending on their stage of production (breeding or feeding); in most cases animals transported from the farm to the slaughterhouse also experience the additional stress during movement. The process of transport in itself is stressful, even under the tightest welfare regulations [15, 16, 17 & 18]. Hence, animal handlers should have basic knowledge of animal behavior patterns and the underlying principles required to perform their duties, such as handling and movement of animals. Also the risk of harm to animals has been reported to be high at the point of loading and unloading; as frightened and confused animals are frequently moved using aggressive handling techniques like beating [18, 19, 20 & 21].

The factors that influence an animal's wellbeing begins at the farm, continues during transit till point of slaughter [22, 23]. Hence, the activities animals are subjected to prior to slaughter are responsible for the negative consequences seen in animals and ultimately affect the quality of animal products. Improving animal welfare conditions such as reducing stress, preventing diseases, injury and malnutrition will ultimately increase the efficiency of animal production, increase productivity, lower production costs and improve quality of animal products. Hence, this study aims to determine the level of understanding of the respondents on animal welfare, animal welfare practices as well as identify factors that affect animal welfare especially on transit.

2.0. METHODOLOGY

2.1. Study area

Ogbomoso is located within the Southwestern part of Oyo State, Nigeria; 8^0 7^I 60^{II} N Latitude $4^0 16^I 0^{II}$ E Longitude of the Equator and 347 meters above sea level. It is the second-largest city in Oyo state with the Yoruba's as the major ethnic group who are predominantly farmers, traders, teachers, and or artisans [24]. The study was carried out in Government-controlled facilities responsible for routine animal inspection and slaughter services to the various livestock markets and the local butcher/meat shops within Ogbomoso town. Hence, the Veterinary control post, Kara livestock market, Osa'aro small ruminant market, Oja-tuntun slaughterhouse and Ode-Olojo area slaughter-slab formed the study area.

2.2. ~~Study Population~~

Selection of residents involved in the study

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Or "selection of people involved in the study"

Prior to the commencement of the study approval was sort from the Director of Veterinary & Livestock Services, Oyo State Ministry of Agriculture, Natural Resources and Rural Development, Ibadan Oyo State to conduct the study within the that ~~study~~ areas. Respondents within the study area were randomly selected to include veterinarians, livestock attendants and livestock dealers. The aim of the study was explained and verbal consent sort prior to the commencement of the study. Respondents who gave verbal consent formed the study population.

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2.2. Data Collection and Analysis

The study was carried out using a combination of both a questionnaire and in-depth interviews. The research instrument (questionnaire) was approved by the Director of Veterinary & Livestock Services, Oyo State Ministry of Agriculture, Natural Resources and Rural Development, Oyo State prior to its use in this study. Data collected include respondent's demographics, level of animal welfare awareness, and attitude to animal welfare amongst others. Collected data was analyzed using descriptive statistics; Chi-square was also used to check for relationship between respondents' socio-economic characteristics and their level of animal welfare awareness.

3.0. RESULT AND DISCUSSION

The level of understanding of the various aspects of animal welfare can be directly related to the socio-economic characteristics of both veterinary staff and livestock dealers and include religion, tribe, level of education and awareness of animal right and welfare. These factors have been reported to affect animal welfare practices, aid judgments and inferred conclusions, and make recommendations based on existing choices [25]. A total of seventy-three (73) questionnaires were distributed to the veterinary control post personnel and livestock dealers who gave oral consent to take part in the study; fifty-five (55) of the distributed questionnaires were properly filled and returned constituting the study population (N=55) with a calculated response rate of 75.3%.

The results of the survey revealed that majority of the respondents were male (86.0%), within the age range of 40-49 years (46.5%), and had only a secondary education (46.5%) (Table 1). Although men and women are engaged in livestock production, the large percentage of male respondents as seen in this survey can be attributed to the greater preference of men in the trade of animal slaughter. The results of this survey are in line with the findings of Ogunniyi *et al*. [26] and Alonge *et al*. [27] which supports the overall observation that men outnumber women in the ownership of more valuable stocks, decision-making, and management livestock production. In addition, majority of the respondents were within the physically active and experienced age group (30-50 years). Hence, an indication that the majority of the ~~active~~ working population are involved in the livestock industry as a result of how rigidly animals are handled and restrained during transportation and at slaughterhouses [28, 29].

Majority of the respondents were married (100%), Muslims (72.1%), and Yoruba (69.8%), and the results is consistent with studies by Familade *et al.* [30] and Njoga *et al*., [31], who also reported that a large number of ruminant dealers were married and participated in the business as a source of income and food security for the families. The presence of a high population of Yoruba ethnic group in relative to other tribes in the study area can be explained by their large population as well as the location of the study area [32]. Also studies have reported level of education as a significant impact factor on adoption of new technologies and, consequently, productivity [25].

Table 1: Distribution of respondents by socio-economic characteristics

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Variables	Male			Female		
Age	**Frequency n(43)**	**%**	**Mean**	**Frequency n(7)**	**%**	**Mean**
Under 30	1	2.3				
30-39	13	30.2				
40-49	20	46.5	2.93±0.278	5	71.4	3.29±0.368

50-59	6	14.0		2	28.6	
60-69	3	7.0				
Religion						
Christianity	12	27.9				
Muslims	21	72.1	1.74±0.134	7	100	2.00±0.000
Traditional	0	0		0	0	
Tribe						
Yoruba	30	69.8	1.42±0.212	7	100	1.00±0.000
Hausa	8	18.6				
Fulani	5	11.6				
Marital Status						
Married	43	100	2.00±0.000	7	100	2.00±0.000
Unmarried	0	0		0	0	
Educational Level						
Islamic Education	8	18.6				
Primary	9	20.9		3	42.9	
Secondary	20	46.5	2.60±0.320	3	42.9	2.86±0.808
Tertiary	4	9.3		1	14.3	
No Formal Education	2	4.7				

The level of awareness amongst dealers of livestock in arears of animal welfare and its related issues in the town of Ogbomoso is 64.0% as revealed by the survey; with majority of the respondents (89.2%) claiming to be taught at the abattoir by animal health care professionals (Table 2). Thereby showing the readiness of the veterinary authorities to educate livestock traders on acceptable animal welfare practices during transport and prior to slaughter. This result was not in line with earlier research by Omotosho *et al.* [33]; which reported lack of any formal training and awareness of livestock traders and farmers in Oyo, Osun, and Lagos of animal care rights and welfare.

~~55.1% of study participants who said they had inherited their occupation; have been in the business for at least 15 years; and majority of whom have been consistently successful (86.0%). The practice of credit and thrift system was reported as the major source of finance (50%), loans (14%) and other sources of capital (36%); and in with results obtained from similar surveys [34]. This might be related to the availability of funds, low interest rates and higher dividend offered by thrift [35].~~

Majority of the respondents (66%) reported sourcing their animals from the northern part of the country, which they attributed to the high level of abundance ~~than~~ compared to in the southern regions of the country. The regions natural features, which include a lengthy dry season, light sandy soils, and a brief rainy season are believed to be responsible for the abundance of ruminant animals [36, 37]. While sourcing animals predominantly from the northern region of Nigeria, 56% of the respondents claimed to have traveled over 250 kilometers utilizing trucks (76%), trekking, or both as means of transportation. Animals must always be in good condition for any planned journey. The construction, upkeep, operation, loading, and unloading of the vehicles should be done in ways that minimize animal suffering and guarantees their safety. Poor animal movement is reported to affect biological responses of animals due to psychological stress or physical exhaustion thereby affecting their wellbeing and meat quality. Majority reported high levels of animal discomfort during movement (highly uncomfortable (42%), uncomfortable (48%)), which was similar to results by Samuel *et al.* [38] who also reported high level of discomfort (90%) during movement.

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The sentence is a disaster from the point of view of punctuation!

Rephrase:

Of study participants, 55.1% said they had inherited their occupation, have been in the business for at least 15 years and majority of whom have been consistently successful (86.0%). The practice of credit and thrift system was reported as the major source of finance (50%), loans (14%) and other sources of capital (36%) and in with results obtained from similar surveys [34]. This might be related to the availability of funds, low interest rates and higher dividend offered by thrift [35].

Table 2: Awareness level of welfare, means of animal acquisition and distances covered by respondents to Ogbomoso town

Variables	Yes Frequency (%)	No Frequency (%)			
Awareness level of animal welfare amongst respondents	32(64)	17(36)			
Means of awareness acquisition	Mass media	Vet. staff	Others		
	1(2.7)	33(89.2)	3(8.1)		
Method of knowledge acquisition	Training	Inherited			
	22(44.9)	27(55.1)			
Years of experience in livestock business	0-5 Years	6-10 Years	11-15 Years	≥16 Years	
	1(2)	2(4)	4(8)	43(86)	
Years spend in training	Nil	Under 5 Years	6-10 Years	≥11 Years	
	1(2)	32(64)	14(28)	3(6)	
Source(s) of capital	Loan	Thrift	Others		
	7(14)	25(50)	18(36)		
Source(s) of animal	Northern states of Nigeria	Northern states & villages within	Villages within Ogbomoso		
	33(66)	4(8)	13(26)		
Distances from source to the market	0-50 km	51-100 km	151-200 km	201-250 km	≥250 km
	12(24)	2(4)	2(4)	6(12)	28(56)
Means of transportation	Vehicle	Motor Cycle			
	38(76)	12(24)			
Level of animal comfort	Highly Discomfort	Discomfort	Neutral	Comfortable	
	21(42)	24(48)	4(8)	1(2)	
Time spent on transport	<1Hour	1-6 Hours	7-12 Hours	13-24 Hours	≥25 Hours
	5(10)	10(20)	4(8)	13(26)	18(36)

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A number of parameters are known to ultimately contribute to the level of animal welfare practices. Several of which include feed and water shortages, lack of novelty, noise, vibration, travel duration and distance, physical climatic conditions, and danger of transmission of infection from deceased carcass [21, 39]. Majority of the respondents reported subjecting the animals to a high level of stress and long travel hours (70%) (Table 3). Other reported parameters of animal welfare practices include bad attitudes toward transit feeding (96%), exposure to injuries (61.1%), fatalities (90%), and carcass disposal (94%). Also an approximated 57% of respondents reported offering veterinary services to sick and injured animals on transit.

Table 3: Respondents attitudes towards general welfare parameters

General Welfare Parameters	Frequency (%) n (50)	
	Good	Poor
Welfare attitudes on Transport Distance	15 (30)	35 (70)
Welfare attitudes on Discomfort	0 (0)	50 (100)
Welfare attitudes on Transport Hours	15 (30)	35 (70)
Welfare attitudes on Feeding	2 (4)	48 (96)
Welfare attitudes on Injuries	15 (31.9)	32 (61.1)
Welfare attitudes on Treatment	15 (42.9)	20 (57.1)
Welfare attitudes on Mortalities	5 (10)	45 (90)
Welfare attitudes on Carcass Disposal	3 (6)	47 (94)

Table 4 shows the correlation between the various parameters of animal welfare. The time spent traveling and potential for veterinary care had positive significant correlation coefficients (0.810, and 0.493) with the distance traveled from the livestock sources to the market. Animals were reported to be more likely injured during travel (0.358, P≤0.05). Time spent traveling was also reported to have a negative correlation (-0.414) with comfort level (P≤ 0.01). This implies that the pain level rises with increased travel time.

Table 4: Correlation coefficients among the welfare parameters

Spearman's rho	Distance from source to market	Level of comfort
Time spend on transport	0.810**	-.414**
Animal rested for feed and water	-0.178	-0.125
Injury during transportation	0.358*	-0.106
Treatment for sick and injured	0.493**	0.05

**Correlation is Significant at P< 0.05.*
***Correlation is Significant at P< 0.001.*

~~This Chi-Square distribution demonstrates that the prevalence of these factors during transport among the respondents is accounted for by 28.48%, 20.25%, 17.72%, 9.5%, and 9.5% of animal mortality during transport, injuries to animals during transport, disposal of carcasses during transport, treatment of sick and injured animals, slaughtering of debilitating animals, and sales of slaughtered debilitating animals during transport.~~

This Chi-Square distribution demonstrates that the prevalence of these factors during transport among the respondents is accounted for by 28.48% for animal mortality during transport, 20.25% for the injuries to animals during transport, 17.72% for the disposal of carcasses during transport, 9.5% for the treatment

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of sick and injured animals, 9.5% for the slaughtering of debilitating animals, and 7.59% sales of slaughtered debilitating animals during transport.
This indicates that as distance from source to market grows, so are the time spent in transportation, the likelihood of animal injury during transportation, and the cost of treating such injury.

~~This indicates that as distance from source to market grows, so are the time spent in transportation, the likelihood of animal injury during transportation, and the cost of treating such injury.~~

Table 5: Chi-square Distribution of Welfare Parameters

Welfare Parameters	No of Positives Responses	% of Welfare Parameters per Positive Responses	FExp	F.Obs-F.Exp	(F.Obs-F.Exp)^2	((F.Obs-F.Exp)^2)/F.Exp
Dead animals on transit	45	28.48	17.56	10.92	119.27	6.79
Injuries during transport	32	20.25	17.56	2.69	7.25	0.41
Carcass disposal by throwing away	28	17.72	17.56	0.16	0.03	0.00
Treatment for injured animals	15	9.49	17.56	-8.07	65.07	3.71
Animals slaughtered and sold	15	9.49	17.56	-8.07	65.07	3.71
Animals sold before death	12	7.59	17.56	-9.97	99.3	5.66
Carcass disposal by burying	8	5.06	17.56	-12.5	156.17	8.89
Provision of feed/water on transit	2	1.27	17.56	-16.29	265.36	15.12
Animals slaughtered and preserved	1	0.63	17.56	-16.93	286.53	16.32
Sum of positive responses	158	100				
Total responses gathered	**450**					**Chi Square= 60.60****
% of positive responses	**35.11**					

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Table 6: Principal Component Analysis

Problem Parameters	Principal Components						
	1	2	3	4	5	6	7
Bad road	-0.352	**-0.607**	0.25	-0.036	0.319	0.251	-0.08
Robbery/Theft	-0.271	-0.386	0.185	-0.217	0.21	-0.423	0.044
Credit purchase by customers	-0.15	-0.078	0.38	**0.527**	-0.009	0.031	0.37
Loan/Debt repayment	-0.223	0.052	**0.55**	**0.512**	-0.05	0.075	0.056
Price volatility	0.06	0.051	-0.465	0.177	-0.331	-0.005	**0.565**
Multiplicity of security checks	-0.029	-0.105	-0.278	-0.061	0.184	**-0.606**	-0.158
Mechanical faults	-0.048	-0.15	0.177	**-0.618**	-0.201	0.264	0.083
Exposure to Infections	0.007	-0.128	-0.355	0.145	0.269	**0.63**	-0.309
Feed inadequacies	**0.931**	-0.12	0.188	0.079	0.099	-0.057	-0.016
Fund/Money	0.456	0.165	0.252	-0.429	-0.372	0.164	0.12
Low patronage	0.015	**0.828**	0.114	-0.077	0.28	0.047	0.024
Heavy rainfall/flooding	-0.032	**0.517**	0.057	0.229	-0.343	-0.105	**-0.585**
Insecurity	**0.775**	-0.152	0.195	0.074	0.151	-0.016	-0.063
Poor government support	0.000	**0.609**	-0.004	-0.167	**0.625**	0.045	0.296
Transportation challenges	0.378	-0.157	**-0.707**	0.208	0.06	0.067	0.064
Multiple taxation	**0.931**	-0.12	0.188	0.079	0.099	-0.057	-0.016
Initial Eigenvalues	2.963	2.007	1.682	1.359	1.175	1.136	1.047
% of Variance	18.521	12.546	10.514	8.493	7.346	7.098	6.545
Cumulative %	18.521	31.067	41.582	50.074	57.42	64.519	71.064

PC (> 0.5)

Where:

PC1- Multiple expenses.

PC2- Poor finances and flooding.

PC3- Improper use of transport facilities.

PC4- Credit purchase, High loan repayment and Mechanical faults.

PC5- Poor government support.

PC6- Infections and distances covered in order to avoid extortion by law enforcement officers.

PC7- Seasonal price volatility.

The table above **(Table 6)** contained the factors that were extracted. PC1 was referred to as the multiple expenses factor and was responsible for 18.521% of the variance; PC2 was referred to as the poor financial and flooding factor and was responsible for 12.546%; PC3 was referred to as the improper use of transportation facilities and was responsible for 10.514; PC4 was referred to as the credit purchase, heavy loan repayment, and mechanical faults and was responsible for 8.493%; PC5 was referred to as the poor government support and was responsible for 7.346%; PC6 was referred to as Infections and distances covered in order to avoid extortion by law enforcement officers and was responsible for 7.098%; and PC7 was identified as the seasonal price volatility factor, which was responsible for the 6.545% fluctuation. Others that recorded eigen values below 1.00 and accounted for 28.036% of variation are not included.

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Table 7: Factor names and Percentage Variation Accounted for by each factor

	Factors	% of Variance	Cumulative %
1	**Multiple expenses**	18.521	18.521
2	**Poor finances and flooding**	12.546	31.067
3	**Improper use of transport facilities**	10.514	41.582
4	**Credit purchase, high loan repayment and mechanical faults.**	8.493	50.074
5	**Poor government support**	7.346	57.420
6	**Infections and distances covered in order to avoid extortion by law enforcement officers**	7.098	64.519
7	**Seasonal price volatility**	6.545	71.064
8	**Others**	28.036	100

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3.1 Derivation of Principal Components

3.1.1. The first factor, "Multiple expenses,"

Feed shortages and insecurity both have very high loading coefficients on this factor (L=0.931 and L=0.775, respectively). The expenses ~~expended~~ on animal transport from the various sources of livestock to the slaughterhouses and livestock markets are the underlying derived factor that the common denominator is pointing to. As a result, they are categorized into a number of expenses, such as various levies paid by livestock dealers to government authorities, loading and unloading costs, to which are added expenses generated by harassment and extortion by touts posing as local government officials, as well as the recent increase in bBoko hHaram insurgent activity, rural arm banditry, and other insecurity factors [40]. ~~Additionally to the recent rise in boko haram insurgency activity, rural arm banditry, and high levels of cow rustling.~~ –These factors have also been exacerbated by previous legal battles between herders and farmers involving the ownership of land and resources like pasture and water. The results of the study are supported by the work of Manu *et al.* [41], who reported that the ongoing wave of herders-farmers crises and animal rustling in Nigeria has hampered the economic and welfare support that livestock producers provide to their households, villages, and towns as well as significantly impacted their substantial contributions to the nation's economy.

3.1.2. The second factor, “Poor finances and flooding”

Low patronage (L=0.828), excessive rain/flooding (L=0.517), low government funding (L=0.609), and bad roads (L=-0.607 **(Table 6)** are variables with strong loadings on this component. The destructive consequences of climate change, particularly the variability of rainfall, and the inadequacy of conventional systems for animal production are the common denominator to these variables. This variable reveals the

Comment [T13]: since in this paragraph you refer to data found in table 6, table 7 should be AFTER the paragraphs that are related to table 6 are finished. A table or graph should be placed as close as possible to the paragraph that refers to they.

degree to which respondents were constrained by teething issues that occurred as cattle are transported from different origins across the country to its destination (Ogbomoso livestock markets and slaughterhouses).
The impact of severe rains often pains the cattle stakeholders. According to Ujene and Oguike [42], flooding inundates and harms plants, animals, including people, buildings, and infrastructure across the nation, including highways and drainage systems. In light of the current situation, many societies have a long history of caring about the wellbeing of animals, while having different cultural values and beliefs. As a result of concerns over animal cruelty, the government worked to pass legislation to stop such acts and became more actively involved in the creation of policies, such as laws, regulations, codes of conduct, research and development, low-interest credit facilities, and directives pertaining to various aspects of how people interact with other animals [43].

3.1.3. The third factor, "Improper usage of transportation facilities"

Comment [T14]: possibly table 7 should be inserted before this paragraph.

Loan/debt payments (L=0.55) and Transportation difficulties (L=-0.707) are variables that are heavily loaded on these factors. The incapacity of farmers to repay loan proceeds, high domestic transaction costs, structural limitations on infrastructure, the effectiveness of transportation services, and security all threaten the high significant factor needed to increase livestock productivity. Periodic attacks have a severe impact on farming, disrupting productivity, the harvest, and the security of land tenure in Nigerian farming communities. Conflicts between farmers and pastoralists have also hurt the industry. A modest amount of education is also provided to farmers regarding financing programs. This submission is consistent with Etukumoh and Akpaeti's, findings from 2015, which show that loan performance indices for collected loan payback in Nigeria's Akwa Ibom state are low. The main reasons for this poor repayment rate were loan diversion and borrowers' reluctance to make loan payments. Additionally, the amount borrowed, loans from other sources, and overall income were all elements that strongly impacted loan repayment in the research area. Therefore, the lender's monitoring and control efforts should be intensified to ensure prompt repayment. El-Maude *et al.* [45] also recommended addressing inadequate government policies, pricey production, fees, and barriers, difficult formal trade circumstances, and infrastructure issues in order to improve performance.

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3.1.4 "Credit purchase, high loan payback, and mechanical faults" is factor number 4.

Customer credit purchases (L= 0.527), loan/debt repayment (L= 0.512), and mechanical failures (L= 0.618) are variables that are heavily weighted on these factors. With regard to the evolution of consumer concerns and public perceptions, the poorly informed livestock stakeholders are the common denominator among these variables, making it difficult for them to make decisions that would enhance their sustainability, social responsibility, and public credibility through social ethical values. This is an inherent characteristic that enables lenders to lend out scarce resources to borrowers so they can take advantage of products and services now with the intention of repaying the lender with or without interest in the future. Repayment of loans and credit purchases have frequently come up in discussions about the livestock industry.
Lack of maintenance, issues with the weight balance between the car and the trailer, design flaws, the overall weight and relative weight of the vehicle, weather conditions, topography, and road design are some of the significant factors that might contribute to mechanical failures. This supports the findings of Miranda-de la Lama *et al.* [46], who found that animal species have different features relating to vehicle problems and accidents. Always take into account factors like driver weariness, poorly designed route plans, high levels of pressure, and the weather.

3.1.5. "Poor government support" is the name given to Factor 5.

Poor government assistance is a variable that is heavily loaded on this aspect (L=0.625). The inadequate degree of government policy implementation in the livestock sub-sector on several levels, intended to protect both livestock producing firms and the general public who consumes food, is the common denominator of this variable. Government strategies for increased livestock production are influenced by notions of economic development, economic interest, rules and regulations set by international organizations and regimes, and other factors.

This was in line with the Hon. Mohammed Abubakar, Minister of Agriculture and Rural Development, who speech on inconsistent government policies, weak institutional frameworks, links, regulations, and standards, which have failed to result in significant and sustainable transformation in sustainable industry change with minimal effects on all stakeholders' ability to maintain their standard of living along its value chains [47].

3.1.6 "Infections ~~and~~; distances traversed in order to avoid extortion by law enforcement agencies" are the names of Factors 6.

Exposure to diseases (L=0.63) and extortion by law enforcement (L=-0.606) are variables with substantial loadings on this component. The common factor among these variables indicates that disease spreads as a result of the regional and national movement of livestock, as well as the high-level intimidation and harassment by some of Nigerian security personnel as a result of the numerous roadblocks and extortion that go along with it.
Although complicated and lucrative, the movement of cattle carries a high danger of infectious disease. Movement can result in the introduction of human or exotic animal illnesses, which itself may have significant negative effects on the economy and/or public health. As a result of self-duplication used by various security organizations, the majority of stop and search units frequently crowd commuters. Due to their excessive reliance on common resources both in transit and on the farm, the vast movements and herd interactions documented by Ekwem *et al.* [48] revealed a potentially significant risk of disease transmission among traditionally managed livestock.

3.1.7. The term "Seasonal Price Volatility" refers to Factor 7.

Price instability (L= 0.565) and significant precipitation/flooding (L= -0.585) are variables that are heavily weighted on this component. These variables all have price volatility as a common denominator, which influences how quickly a stock's price rises or falls over a certain time period. A farmer can more accurately predict potential future variations thanks to more stock price volatility, which also often translates to higher risk.
Therefore, the migration of livestock may result in a rise in price and a subsequent increase in its volatility. Additionally, prices for agricultural products are not constant but rather fluctuate due to factors like output fluctuation, seasonal variations, interruptions in supply, and changes in income. Therefore, price plays a key role in determining market efficiency. This is consistent with the findings of Bulama *et al.* [49] who examined the fluctuation of livestock prices in Nigeria over a period of 16 years and found that the volatility was persistent and the prices of livestock in the Nigerian marketplaces were quite erratic.

Table 8: Formal knowledge of abattoir workers on animal welfare and slaughterhouse activities in Ogbomoso slaughterhouses

Variables	Frequency (f) n(5)	Percentages (%)
Exposure to awareness programme(s)		
Yes	5	100
No	0	0
Source(s) of the enlightenment		
Mass media	1	20
Government authorities	4	80
Provision(s) for lairage in the abattoir		
Yes	0	0
No	5	100
Provision(s) for food, water, shelter & rest while in the lairage?		
Yes	0	0
No	5	100
Presence of pregnant animals in the holding pen		
Yes	2	40
No	3	60
Slaughter of pregnant animals		
Yes	2	40
No	3	60
Presence and slaughter of non-ambulatory animals at the holding pen		
Yes	2	40
No	3	60
Access to veterinary services		
Yes	1	20
No	4	80
Presence of welfare officer(s)		
Yes	2	40
No	3	60
Number of welfare officers		
Nil	3	60
1-2	2	40
Ante- and post-mortem examinations		
Yes	4	80
No	1	20
Duration of animal stay before slaughter		
No Lairage	3	60
13-24 hours	1	20
25 and above	1	20
Decisions on rejected animals during ante-mortem inspection		
Passed for slaughtered	1	20
Passed as suspect	1	20
Condemned	1	20
Treated	2	40
Decisions on condemned carcass during post-mortem		
Condemned and Disposed	4	80
Sold	1	20

In Nigeria today, the majority of abattoirs are owned by the government. While the local government authorities (LGA) are legally permitted to own slaughterhouses and abattoirs within their borders, subject to the approval of the overseeing veterinary division, the federal and state governments all participate in meat inspection [33, 50]. Though there are 5 (five) veterinary officers attached to the Ogbomoso slaughter facility, the number is sadly insufficient when compared to the number of the slaughter ~~population~~ animals. After receiving adequate informed consent of the difficulties to the facilities' optimal operation, the veterinary officers were interviewed.

They all stated (100%) that they have been exposed to acceptable animal welfare practices (Table 8). According to reports, the local government trained 80% of the veterinary officers. This is in keeping with the FMARD [51] report, which aims to increase the quality of animal products accessible for human consumption in Nigeria by promoting and advancing animal welfare. The results further revealed complete absence (100%) of a functional lairage, despite the fact that lairages play a crucial role in the abattoir by providing stressed or fatigued animals with a chance to recover from the stress of transport and unloading prior to slaughter [52, 53]. This current outcome is on par with other others in Nigeria. For instance, Lawan *et al.* [54] evaluated the physical facilities and processing operations of the main slaughterhouses in the states of Nigeria's north-west and found that the majority of them are deficient in the essential elements or were in a terrible state. This survey also reveals that 100% of lairages fail to provide animals with enough food, drink, shelter, and rest. In a similar investigation by Bulama [49], it was noted that cattle handlers in an abattoir in Ogun State, Nigeria, had negative welfare attitudes. This may be due to a lack of education, as seen by the extremely low literacy rate and a general ignorance of good animal care.

Along with being cruel to animals, slaughter of pregnant animals continues to be ineffective, poses a risk to food security, and results in a significant loss of livestock income and resources [31, 55]. According to these data, 40% of the animals slaughtered for meat were pregnant, which portends blatant disrespect for the demands of the pregnant animals' welfare. The findings of this study are consistent with those of Njoga *et al.* [31], who noted a high rate (17.4%) of animals that were pregnant when they were slaughtered in southeast Nigeria. This shows that there may not be a high level of awareness of animal welfare in the studied areas.

The majority of the non-ambulatory conditions seen in animals during ante-mortem inspection typically happen as they are being transported from farms or markets to abattoirs [39]. Bad roads' and overcrowding can induce falls and smashes against the walls of trucks, which can result in injuries, internal bleeding, and fractured bones [56
57]. According to Oziegbe *et al.* [58], who confirmed the prevalence of non-ambulatory animals (1.4%) from a study conducted at the Jos abattoir, which frequently results in poor meat quality, the overall specie prevalence and slaughter of non-ambulatory animals during the study period was observed to be 40%.

This study found severe deficiencies in the number of veterinary officers (80%) and welfare officers (60%) as compared to the slaughter population, where there were only 2 (two) welfare officers (or 40%). The reports by Omotosho *et al*. [33], who highlighted several areas of animal welfare concerns and public health consequences done in three southwestern states of Lagos, Ogun, and Oyo states of Nigeria, further supported this.

The veterinary officers reported a high level (80%) meat inspection compliance rate in the study region. This is in contrast to the findings of Unamba-Oparah *et al.* [59], who found that while over 90% of stakeholders acknowledged the value of meat inspection, over 60% of animal owners and up to 40% of butchers in Owerri, southeast Nigeria, felt they were unaware of it. The absence of a working lairage (60%) as reported by the veterinary and welfare officers demonstrates that the length of time an animal spends in the temporary holding pen in the slaughterhouse is significantly influenced by pricing, marketability regulations and other parameters. In order to identify and reject animals that are unsuited for slaughter and to note any clinical indications or lesions of disease that might not be visible after slaughter, the veterinary and welfare inspectors at the abattoir undertake ante-mortem inspections prior to slaughter. According to the research area report, 40% of the animals that underwent the ante-mortem inspection were given treatment. And 80% of animals that are confirmed to be diseased during post-mortem are partially or totally condemned. Olabode *et al.* [60] noted that in the Jos abattoir, only gross pathology is typically used as the basis for partial or complete condemnation for suspicious organs. Ante-mortem and post-mortem meat inspection is not routinely performed, and the animals are slaughtered, flayed,

eviscerated, and decapitated on the floor, which invariably increases the risk of meat contamination. The results of the present investigation do not exactly match those in this paper.

Table 9: Chi-square results on the limitations to optimal performance experience in Ogbomoso slaughterhouses operation

Problems at the temporary holding pen (Lairage)	Number of Responses to Problems	Percent	F.Exp	F.Obs-F.Exp	(F.Obs-F.Exp)^2	((F.Obs-F.Exp)^2)/F.Exp
Inadequate water supply	3	18.80	9.09	9.71	94.27	10.37
Lack of waste disposal	3	18.80	9.09	9.71	94.27	10.37
Lack of concreted slaughter slab	2	12.50	9.09	3.41	11.62	1.28
Outdated slaughter slab	1	6.20	9.09	-2.89	8.36	0.92
Water drainage	1	6.20	9.09	-2.89	8.36	0.92
Public's participation	1	6.20	9.09	-2.89	8.36	0.92
Rough handling of animals	1	6.20	9.09	-2.89	8.36	0.92
Inadequate veterinary personnel	1	6.20	9.09	-2.89	8.36	0.92
Inadequate feeding	1	6.20	9.09	-2.89	8.36	0.92
Insanitary environment	1	6.20	9.09	-2.89	8.36	0.92
No provision for lairage	1	6.20	9.09	-2.89	8.36	0.92
	16	**100.00%**				**Chi Square= 29.37****

F.Exp= Frequency of Expected value
F.Obs= Frequency of the Observed value

This Chi Square distribution (Table 9) shows that 18.80%, 18.80% and 12.50% of inadequate water supply, lack of waste disposal and lack of concreted slaughter slab accounts for 50% of problems encountered at the temporary holding pen (lairage) among the respondents.

CONCLUSION AND RECOMMENDATION

According to the reports in this study, common animal welfare compromises included depriving animals of feed, water, and rest by some livestock dealers and middlemen, avoiding the use of animal rest stops and control posts, using crowded vehicles, traveling long distances in open trucks and on foot, being exposed to extreme weather, and abusing animals by their handlers.
The study is important because it sheds light on the suffering that slaughter animals go through while being handled by handlers from various locations and transported to the markets and slaughterhouses in Ogbomoso. To build a consumer base that is concerned with animal rights and welfare, which is the basis for reviving a healthy and competitive animal rights and welfare market, there is an urgent need for sociocultural re-education and public enlightenment on animal rights and welfare which would serve as the foundation for developing an effective and competitive system of animal rights and care in Nigeria. It is also obvious that the majority of the laws found in our regulations are insufficient, out-of-date, or unenforceable, and are no longer relevant to twenty-first century practice. As a result, they urgently need to be reviewed and upgraded

Consent: Informed consent was obtained from the relevant authorities and persons before data collection.

Ethical approval: As per international standard or university standard written ethical approval was obtained.

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