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Research Article

Evaluation of livestock's hide and skin marketing in Adamawa State, Nigeria

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ABSTRACT
This study evaluated hide and skin marketing in Adamawa State, Nigeria, with the aim of describing the socioeconomic variables of the marketers, determining the marketing efficiency and major socioeconomic factors that influenced participation in the area. Purposive and simple random sampling methods were used in the selection of four large and small ruminant markets, and 120 hide and skin marketers, respectively. Descriptive statistics, Marketing Efficiency (ME) and regression analysis were employed in the analyses of data. Results show that all the marketers were males (100%) and married (66.67%) within middle-aged group. A larger proportion (40.00%) had secondary school education and fairly experienced in the business. The most popular (51.67%) channel of hide and skin marketing was producer-rural collector-urban collector-wholesaler-tanneries, with a very efficient marketing (178.52%). Further, the level of education and marketing experience of marketers and the average purchasing price of hide and skin were found to heavily influence the marketing output in the area. The major challenges experienced were insufficiency of capital (88.33%), multiple taxations on transit (71.66%) and quality deterioration (63.33%). It is recommended that institutions that intend to improve on hide and skin marketing in the State and areas with similar economic terrains should resolve the aspect of inadequacy of funds, minimise tax on products, and employ efficient extension services to tackle spoilage.

Keywords: Adamawa, efficiency, hides, marketing, marketers, Nigeria, skins.

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INTRODUCTION
Hides and skins are the outer cover layers of large and small animals carefully removed and had prepared for use by humans. While the large animals mainly include, but not limited to, creatures like cattle, buffalos, camels, donkeys, horses, zebras, among others, the small animals denote sheep and goats, antelopes, snakes and related stock. However, the types and categorisation of these animals in a place heavily depend generally on the environment and more importantly the ecological conditions of the entire area. In whatever form hides and skins are found, they provide several economic uses for many nations and by implication,

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enhance the livelihoods of the rural dwellers that participate in the marketing of the by-products. For instance, Alemnesh *et al.* (2018) and Kenea (2019) reported that hide and skin serve as essential economic products to Ethiopia, substantially contributing to the country's largest chunk of foreign total and agricultural export commodities. The position of these by-products is followed by the export of live animals. In fact, these livestock by-products are considered the most valuable export item for the nation next to coffee. It was documented by UNIDO (2016) that the leather industry raked-in a total of US$110 million in 2016 alone for Ethiopia. This was in spite of the neglect the industry suffered from the government. Similarly, the place of hides and skins in the economic dispensation of most developing countries are reported to be positive, especially in Kenya (Wuyua and Kagunyu, 2012); Tanzania (Mwinyihija, 2014); Somaliland (Wanyoike *et al.*, 2018); and Pakistan (Awan *et al.*, 2019) among several other nations. All the documentations are pointer to the significant roles the hide, skin and leather industry plays in advancing the foreign exchange earnings for these nations, as well as the livelihoods of the citizenries.

Taking a cursory assessment of the western world economy, a whooping US$ 1.62 billion was seen declared for the United States of America (USA) for the year 2018 as trade proceeds from hide, skin and leather industry consisting of a combination of cattle hides, pigskins and semi-processed leather products (USHSLA, 2018). Further, the nation exported wet salted bovine leather worth nearly US$ 1.09 billion. And in the United Kingdom (UK), trading in the leather industry in terms of export stood at approximately £1.42 billion in 2017 (Sabanoglu, 2018), and these finished items were normally composed of leather garments, footwear, hand gloves, sports goods, and upholstery, among many. Giving its endless list of products and by-products, leather could perhaps be the most utilised household item in the entire industrial history. This assertion was further strengthened when UNIDO (2010) noted that leather is among the most widely traded commodities in the world. The organisation reported that a staggering sum of US$100 billion was the yearly estimated global traded value of leather and leather products, thereby playing the most prominent role in the world's economy. And the demand for these products and by-products have been on the increase taking into cognisance of the population outgrowth worldwide which further broaden the scope of the market.

In Nigeria, agriculture has been the major employer of labour, with about 70.00% of the population engaging in it, and contributing about 40.00% of the Gross Domestic Product (GDP). Of this figure, 13.00% was accounted for by livestock from which hide and skin are derived (FMRI, 2016). Further, Nigeria has been known to be one of the producers of the best hides and skins in the world. And in order to encourage the leather industry in the country, a ban was placed on the exportation of raw hides and skins. As a result, noted Yakasai (2019), Nigeria presently produces between 40 and 50 million skins annually, and yielding from US$600-US$800 million for the nation from the export of leather. However, this is spite of the pronounced years of neglect the industry has been experiencing from successive governments. In this regard, NESG (2017) asserted that exploring the opportunities in the leather industry simply entails broadening the revenue base of the Federal Government of Nigeria (FGN), and by extension providing some shock absorbers against effects of fluctuation in oil price on the global market as well as providing an avenue for job creation among the teeming unemployed youths in the country. However, NESG (2017) observed that a dearth of information exists, and at times it is almost impossible to obtain reliable data of need in the leather industry. Moreover, several studies (Leach and Wilson, 2009; Wuyua and

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Kagunyu, 2012; Alemnesh *et al.*, 2018; Wanyoike *et al.* 2018; Adem, 2019) had been conducted on issues pertaining to the international market arena and the technical aspect of the leather with remarkable success. But minimal information exist with regards to local and demographic studies (Adebayo, 1992; FMRL, 2016; Yusuf *et al.*, 2016).

It is against this background that this study, evaluation of livestock's hides and skin marking in Adamawa State, Nigeria, was undertaken to investigate the efficiency of the marketing and determine socio-economic factors that influence market participation in the research area; and unveil relevant information that could form the basis for reliable policymaking that can improve the leather industry in the country and beyond.

MATERIALS AND METHODS

Area of the study

This study was conducted in Adamawa State in the North-Eastern part of Nigeria. It is composed of 21 Local Government Areas (LGAs) namely, Demsa, Fufore, Ganye, Girei, Gombi, Guyuk, Hong, Jada, Lamurde and Madagali. Others are Maiha, Mayo-Belwa, Michika, Mubi-North, Mubi-South, Numan, Shelleng, Song, Toungo, Yola-North and Yola-South. The State is located between Latitude 7^0 and 11^0 North of the Equator and lies between longitude 11^0 and 14^0 East of the Greenwich Meridian. In terms of boundaries, the Cameroon Republic is on the eastern side. The Taraba State is placed in the South and West, with Gombe State in the North-West and Borno State in the North (Adebayo and Tukur, 1999). The projected population-based on Gabdo *et al.* (2020)'s 2.49% growth rate used on NPC's (2006) population of 3, 178,959 as a baseline is 4,633,160. The State covers a landmass of 39, 742.12 m^2. The people of Adamawa State are mostly farmers, growing crops and raising a variety of livestock which serve as a cushion to starvation when food is scarce and also a source for cash reservoir. Major crops cultivated are cereals and include maize, rice, sorghum, millet and wheat. Others are groundnut, bambara nut, tiger nut, cowpea and beniseeds. The main animals kept are ruminants that include cattle, sheep and goats from which hides and skins are derived. Poultry are virtually kept in every household, with chicken, ducks and pigeon in the majority. Other sideline economic activities like beekeeping, pottery and petty trading are also practiced in the State.

Sampling procedure and data collection

Purposive and simple random sampling methods were employed in the selection of areas and hide and skin marketers or respondents, respectively. Of the four agricultural zones in the State, an LGA is known for its prominence in ruminant markets was selected, giving a number of four LGAs engaged in the study. Attempts were made to engage all the registered marketers in the selected LGAs as their population was not anything out of place. See table 1 for more details. Data for the study were mainly from the primary sources. Structured questionnaires were served the respondents for data collection. These were complemented with interview sessions and group discussion with members of the marketers' associations. Information mainly sought were on socio-economics characteristics, marketing costs and returns, challenges associated with hide and skin marketing in the area, and some interventions from public and private institutions.

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Table 1: Method of generation of marketers.

Zone	LGA	Number of Marketers	Percentage
Zone I	Mubi-North	60	46.15
Zone II	Song	25	19.23
Zone III	Yola-South	30	23.08
Zone IV	Ganye	15	11.54
Total		130	100.00

Source: Field survey data (2019).

Methods of data analysis

Descriptive statistics which included the use of frequency distribution, mean and percentages were employed in achieving the aspect of socio-economics objectives, while the Marketing Efficiency (ME) tool and multiple regression were applied in realising parts that dealt with marketing margins and socio-economic factors affecting marketing output, respectively. The explicit specifications of the models are as follow:

$$ME = \frac{VAMA}{CMS} \times 100 \quad \ldots\ldots (1)$$

Where:

ME = Marketing efficiency
VAMA = Value added by marketing activities
CMS = Cost of marketing services

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9 + U) \quad \ldots\ldots (2)$$

Where:

Y= Total sales of hide and skin (₦)
X_1 =Age (years)
X_2 = Marital status (dummy: 1 if married, otherwise 0)
X_3 = Educational level of the respondent (years)
X_4 = household size (numbers)
X_5 = Marketing experience (years)
X_6 = Cost of purchasing hides and skins (₦)
X_7 = Cost of transportation (₦)
X_8 = Tax on hides and skins (₦)
X_9 = Cost of rent (₦)
U = Error term

Using this model, four functional forms namely, linear, exponential, semi-log and double-log were applied in this study in order to select the one with the best fit. The implicit functional form of the selected linear model is as below:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_8 + bX_9 + U \quad \ldots\ldots\ldots (3)$$

Where: Y, $X_1 - X_9$ and U are as defined in equation 2 above,

a = is the constant or intercept.
$b_1 - b_9$ = are the coefficients.

RESULTS AND DISCUSSION

This section of the paper tabulated and discussed the findings according to the stated objectives. These included describing the socio-economic characteristics of the hide and skin

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marketers, determined the ME and the factors that influenced marketing outputs in the study area.

Socioeconomic characters of the marketers

The findings in table 2 show the socio-economic characters of the hide and skin marketers in Adamawa State, Nigeria. Variables considered were the age, gender, marital status and level of education of the respondents. Others were the household size and marketing experience.

Table 2: Socio-economic characters of hide and skin marketers.

Item	Frequency	Percentage
Age (Yrs.)		
18-30	35	26.67
31-40	65	50
41-50	26	20
>50	4	3.33
Total	130	100
Gender		
Male	130	100
Female	-	-
Total	130	100
Marital Status		
Married	40	66.67
Single	20	33.33
Total	130	100
Level of Education		
Primary school	34	26.66
Secondary school	52	40
NCE/ND	26	20
Degree/PG	9	6.67
Others	9	6.67
Total	130	100
Household Size		
43835	26	20
43992	69	53.33
44150	13	10
>15	22	16.67
Total	130	100
Marketing Experience		
43840	43	33.33
44155	52	40
21-30	22	16.67
>30	13	10
Total	130	100

Source: Field survey data (2019).

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The relevance of socio-economic variables of farmers and related fields of agriculture in the formulation of policies that bring about development particularly in the rural set-up where the majority of people are residing and gainfully employed in the sector, cannot be over-emphasised.

Gabdo *et al.* (2020), Audu *et al.* (2020) and several other development economists reported the essence of these variables in policymaking processes. It could be seen from the results that the majority (50.00%) of hide and skin marketers were middle-aged persons, composed of married all males in the area. Collectively, about 91.00% of respondents have had one form of western education or the other, with only a very negligible (9.00%) portion of them with informal schooling. The latter group of persons were those who might have acquired either Qur'anic or Bible education informally, implying that most of the marketers were enlightened personalities. Therefore, training or extending extension services to this category of persons to improve the business and by extension the hide and skin industry would not encounter some problems.

In agriculture and other farming related fields, the size of the household plays a significant role in determining the size of farmland to cultivate or the business expansion, because of the availability of family labour which usually isn't paid for. This is also shown in table 2. A total of 53.33% of the respondents constituted those who had between 6 and 10 family members which on average is considered large household. Similarly, a larger proportion of the marketers (40.00%) had from 11-20 years of experience in trading in hide and skin in the area. What this entails is that, a larger chunk of the respondents had been trading in hide and skin for quite some time. And this would accord participants more skills in understanding the pros and cons of the business thereby minimising losses or constraints associated with it.

The channels of marketing hide and skin in the area.

The marketing of hide and skin starts at the producers' level who are mostly the butchers that buy and slaughter animals for the sake of selling the meat. In the process, the animals are flayed, thereby yielding a by-product known as hide or skin. These stuffs pass through a chain of middlemen until they reach the tanneries. Table 3 presents the major marketing chains or channels of hide and skin in Adamawa State, Nigeria. From the findings, four major channels were identified. Of this figure, the majority (51.67%) channeled the by-products of livestock through *Producer – Rural Collector – Urban Collector – Wholesaler – Tanneries.* However, this method was followed by those who channeled their stock through *Producer – Rural Collector – Wholesaler – Tanneries* with 20.00%.

Table 3: marketing channels of hide and skin in the area

Channel	Frequency	Percentage
• Producer- rural collector-urban collector-wholesaler-tanneries	67	51.67
• Producer-tanneries-consumer	15	11.66
• Producer-rural collector-wholesaler-tanneries	26	20.00
• Producer-urban collector-wholesaler-tanneries	22	16.67

Source: Field survey data (2019).

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Similar findings were reported by Likasa *et al.* (2017) and Onyango *et al.* (2019) in Ethiopia and Kenya, respectively. In all these reports, the bottom-line is that the hides and skins products marketing channels connect producers, collectors, tanneries and consumers in a chain. Also, more common, is the fact that the producers are either from individual household slaughters or abattoirs and slaughter-slabs.

The socio-economic factors that determined the hide and skin marketing in Adamawa State, Nigeria, is documented in table 4. Nine variables namely, X_1 (age of marketers), X_2 (marital status), X_3 (level of education), X_4 (household size), X_5 (marketing experience), X_6 (cost of purchasing hide and skin), X_7 (cost of transportation), X_8 (tax on hide and skin) and X_9 (cost of rent) were regressed against the marketing output (Y). Of the four functional forms used, the linear function was selected as the lead equation based on the apriori expectation of the signs of the coefficients, the coefficient of determination (R^2), the significance of the F-value, and as well as the number of significant variables in the model.

The R^2 value of 0.873 implied that 87.30% variation on hide and skin marketing was as a result of the entire independent variables (X_1-X_9) included in the model, while the remaining 12.70% was accounted for by the variables not included in the model. Form the findings, it could be seen that three out of nine independent variables were found to contribute significantly to the variation in the dependent variable which was the total sales of hide and skin in the area of study. These were the level of education, marketing experience and the average purchasing price of hide and skin. The variables were significant at P<0.05, P<0.05 and P<0.001, respectively. Further, the coefficient of the level of education is signed positive (0.5038), meaning that things being equal, an increase in knowledge of the marketer would lead to an increase in marketing output by the corresponding value of its coefficient.

Table 4: Socio-economic factors determining marketing output in the study area

Variable	Coefficient	Std Error	t-value	Level of Sig.
Constant	-18.2785	3.0462	-0.6	551
X_1	-0.9912	0.8268	-0.12	0.905
X_2	0.2599	1.5044	1.728	0.09
X_3	0.5038*	1.721	2.927	0.005
X_4	1.1583	0.9898	1.17	0.247
X_5	1.6729*	0.6242	2.68	0.01
X_6	-1.1110**	0.083	-13.422	0
X_7	1.722	2.6334	0.654	0.516
X_8	2.9197	2.3948	1.219	0.229
X_9	1.2197	1.2745	-0.957	0.343
Adjusted R^2	0.873			
F-value	28024.70**			0

*Note: *= P<0.05, **= P<0.001.*
Source: Field survey data (2019).

Similarly, the coefficient of marketing experience of marketers is signed positive (1.6729, implying that, any increase in the experience of the marketers would equally amount to increase in the marketing output equal to the value of the coefficient. However, the value of purchasing price of hide and skin is signed negative (-1.1110), indicating that, as the

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purchasing cost of hide and skin decrease, the marketing output increases by equal value of the coefficient which is quite in line with the economic principle.

This finding agreed with that of Osundare and Toluwase (2016) which revealed that the cost of cattle hide had a negative and significant ($P<0.05$) effect on the market output in Ondo State, Nigeria. Also, Likasa *et al.* (2017) in a different and independent study reported earlier a significance of marketing experience in influencing hide and skin marketing output in Oromia, Ethiopia. Therefore, the result of this study is further revealing the essence or relevancy of these socio-economic variables in hide and skin trading generally.

Determining marketing efficiency of hide and skin in Adamawa State, Nigeria

Table 5 shows the findings on hide and skin marketing efficiency in the study area. A value of 178.52% ME obtained simply implied a highly efficient and profitable hide and skin marketing in the State. In other words, it would be a reliable and viable enterprise to support the teeming participants if appropriately conducted. Going by specifics, the results revealed that there were three main sources of leather materials in the area namely, cattle hides, sheep and goats' skins. These items collectively gave a Total Gross Receipts (TGR) of ₦40.44 million. Of the three sources, cattle accounted for the largest chunk (75.56%), followed by sheep and goats accordingly. Similarly, of the Total Marketing Expenses (TME), cost of transportation of hide and skin recorded the highest (78.20%) amount, followed by the cost of rent for storing the leather by-products and tax on the same items, respectively.

Table 5: Marketing efficiency of hide and skin in the study area

Item	Total Cost (₦)	Percentage
Gross Receipt (GR)		
Cattle hide	30, 552,686.00	75.56
Sheep skin	7,217,647.50	17.85
Goats skin	2,664,666.50	6.59
Total Gross Receipt (TGR)	40,435,000.00	100
Marketing Expenses		
Cost of transportation	17, 712,300.00	78.2
Tax on hide and skin	1, 734,990.00	7.66
Rent	2, 070,210.00	9.14
Cost of preservative (salt)	1, 132,500.00	5
Total Marketing Expenses (TME)	22, 650,000.00	100
TGR		40, 435,000.00
ME		178.52%

Note: US$ = ₦ 420
Source: Field survey data (2019).

Yusuf *et al.* (2016)'s study on marketing structure and performance of value chain actors in hide and skin processing and marketing in Anambra, Kano and Lagos States in Nigeria, revealed a value of 176% as ME. Also, Ja'afar-Furo *et al.* (2020) estimated the efficiency and effect of transportation cost on marketing of cereals in Adamawa State, Nigeria, discovered that 53.55% of the TME was accounted for by cost of transportation. This implied that although marketing of agricultural products is profitable in the State, cost of conveyance of agricultural goods is a constraint that requires tackling in the area.

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Challenges experienced in marketing of hide and skin in the area studied.

Challenges are bound to occur in all businesses, either in agricultural enterprises or other sectors put together. But what makes the difference is the nature and magnitude of these challenges in the spere of these endeavors and the commitments made to counter same that matter. These constraints are shown in table 6. About seven major challenges that thwart hide and skin marketing in the study area were reported. Insufficient funds for the purchase of hides or skins ranked first. In fact, most of the marketers complained of paucity of capital to start or expand their enterprises, as such many relied on personal savings or friends and relatives to finance their businesses. This is followed by the issue of multiple taxations by security agents which usually occurred when marketers are in transit between production areas and market places. Quality deterioration of hides and skins is the third most encountered challenge among the marketers. Although collectors heavily applied salt on raw hides and skins to prevent or stop spoilage, some of these by-products still lose quality very fast due to the nature of items which is biological. Other complaints were low marketing information, poor infrastructure, unusual price fluctuation of items and a minimal number of abattoirs and slaughter-houses or slabs to serve as collection centres, trailing as fourth, fifth, sixth and seventh positions respectively.

Table 6: *Challenges associated with hide and skin marketing in the study area

Criterion	Frequency	Percentage	Rank
Insufficient Finance	115	88.33	1st
Multiple Taxation	93	71.66	2nd
Quality Deterioration	82	63.33	3rd
Low Market Information	74	56.66	4th
Poor Infrastructure	67	51.66	5th
Price Fluctuation	56	43.33	6th
Few Abattoir/Slaughter Slab	37	28.33	7th

*Note: *= Multiple responses were recorded.*
Source: Field survey data (2020).

CONCLUSION

In conclusion, it could be stated that the livestock's hide and skin marketing was a middle-aged married male-dominated enterprise in Adamawa State, Nigeria. And the most utilised channel of marketing was the *Producers – Rural Collectors – Urban Collectors – Wholesalers – Tanneries.* The level of education of marketers, marketing experience and average purchasing price of hide and skin were the socio-economic factors heavily influencing marketing output in the State. Cattle, sheep and goats were the three main sources of hides and skins, with a highly efficient marketing in the area studied. Challenges majorly experienced in the enterprise were insufficiency of finance, incessant taxation, quality deterioration and inadequate market information, in descending order. Others were poor infrastructure which mainly led to the high cost of transportation, price fluctuation of leather by-products and a few numbers of abattoirs, slaughter houses and slabs. In this regard, institutions that intend to improve upon this enterprise in the State, and locations with similar economic terrains should concentrate on solving these reported anomalies.

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Authors Contributions
MRJF did the conceptualisation, research design and wrote the entire script. KC designed the questionnaire and collected data. AA assisted in collection of data and participated in the data analysis. All authors did read and agreed on the final version of the published manuscript.

Conflict of Interest
The authors have no conflict of interest to declare.

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