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VALUE ADDITION ANALYSIS IN THE MARKETING OF CATTLE AND CATTLE PRODUCTS IN OGUN STATE, NIGERIA

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ABSTRACT: *This study examines the role of value addition in enhancing the profitability of cattle and cattle products marketing in Ogun State, Nigeria. The primary aim was to analyze the economic benefits of processing cattle into segmented products compared to selling them live. Specifically, the study sought to: profile the socio-economic characteristics of cattle marketers, identify value-added products and to compare profitability and return on investment (ROI. A cross-sectional survey design was employed, using structured questionnaires administered to 152 live cattle marketers and 181 processed product marketers across four agricultural zones. Data were analyzed using descriptive statistics, profitability analysis, analysis of variance (ANOVA) and independent sample t-tests. Findings revealed that selling processed cattle products yielded an average profit of ₦215,700 per cow—over twice the profit from live cattle sales (₦100,000). Products like kidney and cow tail had the highest ROI (₦1.14 and ₦1.11), while beef and ponmo recorded lower ROI. The study concludes that value addition significantly improves profitability in the cattle market. It recommends increased investment in processing infrastructure, capacity building, and access to finance to optimize returns and drive rural economic growth.*

KEYWORDS: Cattle Products, Live cattle marketers, Profitability, Return on Investment (ROI), Value Addition.

INTRODUCTION

The primary objective for any entrepreneur is to generate profit, and further to maximize these returns. This is particularly crucial in the cattle industry where value addition plays a pivotal role. Enhancing the value of cattle and their by-products in Nigeria not only boosts profitability but also fosters distinct market positioning, extends product shelf life, and stimulates job creation. According to Sarku (2014), the United States Department of Agriculture (USDA) defines value addition as altering a product's state or form, enhancing its production process to increase its worth, or physically segregating an agricultural commodity in a manner that elevates its value. Anderson and Hanselka (2013) concur, emphasizing that value addition primarily seeks to maximize net farm income and overall wealth for producers. This strategy is vital to ensure that farmers are not merely enriching downstream supply chain participants but are also capitalizing on economies of scale.

In the cattle industry, value addition involves contributions from each participant in the production, marketing, and delivery processes, encompassing activities such as processing, storage, transportation, and ownership. Ngore et al. (2011) highlight that the primary aim of agricultural value addition is to meet consumer demands effectively. Supporting this, Evans (2012) suggests that value addition is closely tied to the values perceived by consumers, which are crucial in driving their purchasing decisions. As the value addition process progresses from one stage to the next, the potential for profit accrues significantly. A cattle marketer might initially sell a live cow and achieve a profit by offsetting all marketing costs. The range of cattle-derived products is vast, extending beyond basic meat and beef to include steak, leather, and dairy products like butter, cheese, and yogurt.

Value addition transforms raw materials into products that possess higher value and broader utility (Popoola et al., 2015), thereby enabling the creation of marketable goods. In the context of cattle and cattle products, this process can significantly increase revenue beyond the sales of live cattle. Value added products such as dairy items, processed meats, and leather goods typically fetch higher prices in the market than their live counterparts due to the additional processes they undergo. These processes include further processing, enhanced packaging, and strategic branding, which not only elevate the products' market appeal but also improve their durability and shelf life.

The rationale behind value addition is fundamentally aimed at enhancing rural incomes, creating employment, and generating investment opportunities. It is crucial to concentrate on value addition by small-scale operators, which facilitates the investment in additional processing facilities. Such developments enable the channeling of marketable surpluses to processors, helping farmers to minimize post-harvest losses and subsequently boosting farm income (World Bank, 2017). Value addition allows farmers to capture a portion of the profits that remain untapped in the production of food, fiber, and various industrial products from agricultural resources. The significance of value addition is particularly critical for the agricultural sector in Nigeria, aligning with the economic policies of various administrations aimed at augmenting the agricultural contribution to the Gross Domestic Product and diversifying the economy away from the oil sector. Furthermore, cattle products, like many agricultural items, are bulky and perishable. However, through value addition processes such as processing and transportation, the shelf life of these products can be significantly extended. Processing not only preserves the products but also adds economic value, enhancing the marketability of cattle-derived products. The marketing of primary products, which are the

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different parts obtained from the cow at the first stage of the processing also improves the profitability compared to that of the live cattle and this is the focus of this study.

Agricultural marketing creates utilities which include form, place and time. It is also a known fact that these utilities add value to the product with its attending benefits. Despite these facts, most cattle farmers market their cattle live without taking advantage of the economic potential of the value addition process in marketing even in its simplest form in terms of processing the cow into its different parts to increase its economic value. This traditional approach has limited the potential for economic growth in the sector. The lack of value addition in the marketing of most livestock products by the livestock farmers is attributed to several factors. First is the lack of relevant information on value addition process to guide the farmers. There is insufficient literature on value addition in the marketing of cattle and cattle products to educate the farmers on how much potential profit is being lost by marketing the cattle live. Therefore, there is a need for more research and information dissemination on value addition in the marketing of cattle and cattle products in general particularly in Ogun State even at the primary stage of the value addition process. Numerous studies have assessed value addition in crops, yet research on cattle value addition remains notably sparse. For example, significant work has been done on cassava, pineapple, and plantain, which includes Chidozie (2014), Alufohai (2002), Alufohai and Ahmadu (2012). Similarly, research into the yam value chain has addressed constraints and opportunities for small-scale farmers in the middle belt of Nigeria (Damulak, 2012), and training initiatives have focused on cocoyam value addition for rural women in Abia State (Onuekwusi et al., 2016). Despite these efforts in other agricultural sub-sectors, there remains a significant gap in understanding and documenting the value addition processes in the cattle industry, particularly in Ogun State. This oversight highlights the urgent need for focused research to analyze value addition in the marketing of cattle and cattle products in this region, aiming to enhance both economic outcomes and stakeholder benefits. This is what this study is set to address.

The primary objective of the study is to carry out a value addition analysis in the marketing of cattle and cattle products in Ogun State, Nigeria. The specific objectives are to: profile the socio-economic characteristics of the marketers of live cattle and cattle products in the study area**;** estimate the weight of an average live cattle and its price; identify the value-added products obtainable from an average cow in the study area; carry out profitability analysis for the live cattle and for each of the value-added products and compare same; compare return on investment (ROI) for all identified value-added products.

METHODOLOGY

This research adopted a quantitative approach using a cross sectional survey design. This study was carried out in Ogun State, Nigeria. Ogun State is one of the six States that make up Southwest Nigeria. It is located between latitudes 7°3.5′ and 9°12′ north of the Equator and longitudes 3°35′ and 5°27′ east of the Greenwich Meridian with a population of 3,751,140 and an area of 16,980.55 km2 (National Population Commission, NPC, 2006). The maximum and minimum temperature about 37° and 26° while the maximum rainfall is about 111 mm. The primary occupation in the study area is agriculture which comprises the cultivation of crops and the rearing of animals. The State is also known for rearing pigs, agriculture and poultry production. While the Normadic cattle rearing is also common in the State. Ogun State is

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known for its significant role in the consumption and marketing of cattle. Cattle marketing is quite predominant in the state with large cattle markets in Imowo, Kara, Atokun and Ogere. The consumption of cattle products is high, and beef is the most commonly consumed cattle product in the State. The State is divided into four zones by the Ogun State Agricultural Development Project (OGADEP), namely Abeokuta, Ikenne, Ilaro and Ijebu and all four zones were covered in the study. The population for this study comprises cattle marketers (live cattle sellers) and cattle product marketers in Ogun State.

This research was carried out in two phases. The first phase involved the cattle marketers, i.e., sellers of live cows and the second phase was dedicated to the cattle product marketers. The two phases were carried out to ascertain the profitability of an average live cow and the different parts were weighed after slaughter for comparison.

First Phase: Two prominent cattle markets were purposively selected from each of the four zones using the list obtained from OGADEP in the first stage of the sampling. All cattle marketers in each market were enlisted during a pre-survey, resulting in a total of 500 cattle marketers, which constituted the sampling frame. Then Yamane's formula was used to obtain the desired sample size. The proportionate allocation system was used to obtain the number of marketers from each market to make up the sample size.

Yamane's formula is given as; $n = N/1+N(e^2)$
n = the sample size to be calculated

N = Population (Sampling frame)

e = margin of error (0.05)

The formula for the proportionate allocation system,

$n_i = (N_i / N) \times n$

n_1 = This is the proportion of the sample size to be calculated from each market

N_i = Sampling frame from each market

N = Total sampling frame from all markets

n = Calculated total sample size

The 152 respondents were sampled to obtain the average weight of a cow and its price that served as the representative cow for the analysis in Phase 2. The weight of each part of the slaughtered cow was then obtained to calculate the total value in Phase 2.

Second Phase: Two largest food markets were purposively selected from each OGADEP zone using the OGADEP list of markets. Marketers of the individual cattle products were enlisted in each of the markets to obtain the sampling frame. Yamane's formula was then used to obtain the sample size for the eight markets and the proportionate allocation system was employed to obtain the proportion of marketers from each market. Simple random sampling was employed to select the calculated sample size of 181 cattle product marketers.

Survey instrument was a comprehensive and well-structured questionnaire with two sections A and B for two sets of respondents. Section A was for the cattle product marketers while

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Section B was for the live cattle marketers. Each Section contained both open-ended and closed-ended questions. In Section A, the questionaire items were socio-economic characteristics, profitability analysis and the challenges faced by the respondents in their product lines. In Section B, profitability analysis, challenges faced by the respondents in their business lines and the reasons for not taking advantage of the value addition process were the items listed.

Primary data were collected for the study through the administration of a structured questionnaire by the researcher to marketers of both live and cattle products.

Analytical techniques used include Descriptive Statistics, Profitability Analysis and Value Addition Model.

Descriptive statistics which involves the use of frequency counts, percentages and means were used to achieve Objectives I and II.

Profitability Analysis and Value Addition Model were used to analyze the objective III and IV.

Profitability Analysis

Profit = TR – TC ………. (i)

TR = Total Revenue (price x quantity)

TC = Total Cost (Including all marketing costs)

$$\text{Return on Investment, ROI} = \frac{\text{Net Profit}}{\text{Total Investment}} \times 100\% \;\ldots\ldots\ldots\text{(ii)}$$

ANOVA to compare ROI and t-test to compare profit were used to analyse Objective V

Value Addition Model

Value Added in marketing refers to the additional benefits or enhancements that a product provides to customers beyond its basic features. These additions create a higher perceived value for the customer and can differentiate a brand from its competitors (Kotler et al., 2016).

Value Added = Profit from Value Added Product minus Profit from Unprocessed Product

Profit from Value-added product = Price of value added minus Cost of purchase and cost of adding value.

This analysis was done for all identified products.

Analysis of variance (ANOVA) was used to compare the Return on Investment (ROI) for all identified value-added products in Objective V. The Student t-test was used to compare the profit from the value-added products with the profit from the sale of the live cattle. The survey of the cattle marketers obtained the cost price and the selling of an average cow that was used to trace the value of products for comparison.

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RESULTS AND DISCUSSION

Socio-economic characteristics of Respondents

Table 1 shows the socio-economic characteristics of the live cattle marketers in the study area. These results reveal a male-dominated enterprise, with 100% of respondents being male. This aligns with findings from Addisu et al. (2012) and Ayele et al. (2003), who also reported that livestock marketing activities in Ethiopia and Nigeria tend to be dominated by men due to cultural norms and the physical demands associated with cattle trading. In terms of age, 46.1% of live cattle marketers were within 40–49 years, indicating a relatively mature and experienced workforce. This age distribution suggests a population with substantial marketing knowledge and stability, which is critical for the risk-laden nature of livestock trade. Additionally, a high proportion (91.4%) of the marketers were Muslims, reflecting the religious composition of the region and its influence on cattle trading, which often intersects with Islamic festivals like Eid-el-Kabir where demand for cattle surges.

Marital status and educational background further highlighted key socio-economic traits of the marketers. A significant proportion (67.1%) of respondents were married, which may indicate a stable household environment that supports long-term investment in cattle marketing. Furthermore, nearly half (49.3%) have attained secondary education, and only 2.0% reached tertiary level. This trend mirrors the findings from Ater et al. (2018) and Onuekwusi et al. (2017), where value chain actors in maize and cocoyam processing were predominantly individuals with secondary-level education. The moderate educational attainment may influence decision-making capacity, innovation adoption, and engagement in value-added activities. Similarly, household size, with 72.4% having between 4 to 8 members with a mean household size of 6, indicates a potential labor supply from family members, a factor frequently linked with increased efficiency and cost savings in agricultural enterprises (Mwangi & Kariuki, 2016).

Experience and institutional access also play pivotal roles. About 67.1% of the marketers had been in the business for 10–19 years, pointing to a relatively seasoned cohort of entrepreneurs. Membership in market associations was also notably high (89.5%), which is instrumental in knowledge sharing, access to credit, and collective bargaining. This supports the assertions of Atanda & Oparinde (2023), who found that such affiliations significantly influenced access to training and improved livelihood security among artisanal fisherfolk. Furthermore, 90.1% reported access to credit, primarily through informal sources like monthly contributions and savings, a finding corroborated by the studies of Chidozie (2014) and Onuekwusi et al. (2017), where informal financing played a critical role in facilitating small-scale agricultural enterprise growth.

Table 1: Socio-economic characteristics of Live Cattle Marketers (n=152)

Variable	Category	Frequency	Percentage
Gender	Male	152	100.0
	Female	0	0
Age	30-39 years	45	29.6
	40-49 years	70	46.1
	50-59 years	24	15.8
	60-69 years	13	8.6

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Religion	Christianity	5	3.3
	Islam	139	91.4
	Traditional	8	5.3
Marital Status	Single	6	3.9
	Married	102	67.1
	Separated	19	12.5
	Divorced	17	11.2
	Widowed	7	4.6
Level of Education	No formal education	27	17.8
	Primary education	47	30.9
	Secondary education	75	49.3
	Tertiary education	3	2.0
Household size	1 to 3	41	27.0
	4 to 8	110	72.4
	9 to 12	1	0.7
Marketing Experience	1-9 years	13	8.6
	10-19 years	102	67.1
	20-29 years	33	21.7
	30-49 years	4	2.6
Market Association Member	Belong to Market association	136	89.5
	Do not belong to market association	16	10.5
Other Income Source	Has other income sources	14	9.2
	Do not have other income sources	138	90.8
Other Income Type	Transportation business	2	1.3
	Crop farming	5	3.3
	Shop	2	1.3
	Missing	143	94.1
Access to Credit	Had access	137	90.1
	Had no access	15	9.9
Credit Source	Monthly contribution	66	43.4
	Monthly contribution, Personal Savings	39	25.7
	Thrift and cooperatives, Monthly contribution	31	20.4
	Personal Savings, Family Support	11	7.2
	Personal Savings	4	2.6
	Family Support	1	0.7

Source: Field Survey, 2025

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Table 2, the socioeconomic profile of cattle products marketers in Ogun State shows a significant female dominance, with 66.3% of respondents being women. This contrasts with the male-only participation in live cattle marketing, highlighting a gendered segmentation in the value chain. Women appear more active in the post-slaughter and value-added segments, a pattern also observed in Onuekwusi et al. (2017), where rural women led cocoyam value addition activities. Majority of these marketers (54.7%) fall within the 40–49 years' age bracket, suggesting a mature workforce with stable life stages suitable for sustaining microenterprise activities. Religion was nearly evenly split between Christianity (49.7%) and Islam (47.0%), pointing to a diverse religious participation in the sector, potentially reflecting broader socio-cultural integration in local economic life.

In terms of education, majority (60.8%) of cattle product marketers had secondary education, which aligns with findings from Ater et al. (2018) on maize value chain actors in Taraba State. This level of education may contribute to better financial and business management capabilities, essential in managing processing and retail operations. Additionally, 77.3% had household sizes of 4 to 8 members, suggesting potential for family-based labor support, which is often critical in informal marketing structures. Most marketers (84.5%) possess 10–19 years of marketing experience, demonstrating their deep-rooted expertise and stability in the sector. Notably, 93.4% of them belong to market associations, underscoring the institutional support and information-sharing networks that facilitate operational efficiency and access to resources, which were factors also emphasized by Atanda & Oparinde (2023) in their study on artisanal fisherfolk.

A strong indicator of financial integration was seen in the 92.3% access to credit among respondents, with most relying on monthly contributions and personal savings (51.4%), a pattern observed across several agricultural value chains in Nigeria. The presence of only 17.1% with secondary income sources implies a high level of dependence on cattle product marketing as a primary livelihood. This finding aligns with Mwangi & Kariuki (2016), who found that income from value-added livestock products significantly enhances household welfare. The dominance of women, high educational attainment, long marketing experience, and widespread credit access all suggest that cattle product marketers in Ogun State are well-positioned for scaling up value addition initiatives—provided that infrastructural and policy support are in place to address operational constraints and foster sustainable growth

Table 2: Socioeconomic characteristics of Cattle Products Marketers in the Study Area (n=181)

Variable	Category	Frequency	Percentage
Gender	Female	120	66.3
	Male	61	33.7
Age	20-29 years	5	2.8
	30-39 years	55	30.4
	40-49 years	99	54.7
	50-59 years	22	12.2
Religion	Christianity	90	49.7
	Islam	85	47.0
	Traditional	6	3.3
Marital Status	Single	11	6.1
	Married	127	70.2

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	Separated	26	14.4
	Divorced	15	8.3
	Widowed	2	1.1
Level of Education	No formal education	12	6.6
	Primary education	40	22.1
	Secondary education	110	60.8
	Tertiary education	17	9.4
	MSc	2	1.1
Household size	1 to 3	41	22.7
	4 to 8	140	77.3
Marketing Experience	1-9 years	12	6.6
	10-19 years	153	84.5
	20-29 years	16	8.8
Market Association Member	Belong to market association	169	93.4
	Do not belong to market association	12	6.6
Other Income Source	Had other income sources	35	19.3
	Had no other income sources	146	80.7
Other Income Type	Petty trade	2	1.1
	Crop farming	1	0.6
	POS business	1	0.6
	Missing	177	97.8
Access to Credit	Had access	167	92.3
	Had no access	13	7.2
	Missing	1	0.6
Credit Source	Monthly contribution, Personal Savings	93	51.4
	Monthly contribution	56	30.9
	Monthly contribution, Personal Savings, Family Support	21	11.6
	Thrift and cooperatives, Monthly contribution	9	5.0
	Other combinations	2	1.1

Source: Field Survey, 2025

The estimated weight of an average cow in the study area at the time of the study was found to be 178.33 kg as shown in Table 3. Three hundred and twenty cattle were observed in three categories. The average weight for the small category was 125 kg, the medium category gave an average of 175 kg, while the big category weighed an average of 235 kg, with corresponding average price of ₦550,000 for the small category, ₦670,000 for the medium category, while the big category sold for ₦750,000, giving a mean price of ₦656,666.67. It was observed that the very large sizes were not available at the time of the study.

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Table 3: Estimated Weight and Price of an Average Live Cattle in the Study Area

Cow Category	Frequency	Average Weight (kg)	Avg. Selling Price (₦)
Small (Calf)	40	125	₦550,000
Medium	160	175	₦670,000
Big	120	235	₦750,000
Total	320	—	—
Mean (Rep. Cow)	—	178.33	₦656,666.7

Source: Field Survey, 2025

The data presented in Table 4 reveal the diversity and frequency of value-added cattle products marketed in Ogun State, with a total respondent base of 181. The most commonly marketed product is *shaki* (tripe), identified by 52.5% of respondents, closely followed by beef (49.7%), and intestine (roundabout) at 42%. This indicates a strong consumer preference for specific edible offals and traditional delicacies, which are often central to local diets and cuisine. Other frequently marketed parts include lungs/heart/spleen (40.9%), skin or *ponmo* (27.6%), cow leg (27.1%), and cow tail (20.4%). These products represent a strategic shift from selling whole live cattle to the segmentation and retail of specific parts, allowing marketers to target niche demands and maximize profit margins through differentiated offerings according to Ayanwale et al. (2021). The relatively lower frequencies observed for liver (5%) and kidney (22.1%) suggest that while these products are valued, they are less popular compared to more widely consumed parts like *shaki* or *ponmo*. This pattern highlights how cultural preferences and cooking habits shape demand for particular cattle parts in the local market. The segmentation of cattle into diverse product categories not only extends product shelf life.

Table 4: Identified Value -Added Cattle Products in the Study Area

Identified Products	Frequency	Percentage
Beef	90	49.7
Skin (ponmo)	50	27.6
Cow leg	49	27.1
Cow tail	37	20.4
Liver	9	5.0
Shaki	95	52.5
Deboned Cow head	40	22.1
Kidney	40	22.1
Intestine (roundabout)	76	42.0
Lungs/Heart/Spleen	74	40.9

Source: Field Survey, 2025

The profitability analysis of live cattle marketers in the study area, as presented in Table 5, indicates a consistent pattern of positive returns across all cow categories, with an overall mean profit of ₦100,000 per cow. Medium-sized cows (representing the majority—160 out of 320 marketers) yielded the average profit of ₦100,000, making them the most economically viable option in terms of market availability and margin. Smaller calves generated a slightly lower profit of ₦90,000, likely due to reduced weight and carcass yield, while big-sized cows yielded ₦110,000, but their relatively low frequency suggests they are less commonly traded due to

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higher capital requirements. The representative cow (based on the mean) had an average weight of 178.33kg, purchased and managed at ₦556,666.67, and sold at ₦656,666.67, resulting in a profit margin of ₦100,000. The findings are consistent with observations from similar studies on live animal trading. For instance, Ngore et al. (2011) reported that medium-sized livestock are often preferred by smallholder traders due to their balance of manageable cost and favorable market pricing. Additionally, Addisu et al. (2012) noted that while large animals offer higher per-unit profits, the increased financial risk and input costs often limit their market share. The profitability shown here affirms that live cattle trading is a viable enterprise within the livestock sector. However, when compared with processed/value-added products (which often yield higher total revenue per cow), this live trading model may face limitations in maximizing full carcass value according to Atanda & Oparinde (2023).

Table 5: Estimated Profit in Live Cattle Marketing

Cow Category	Frequency	Average Weight (kg)	Avg. Purchase & Upkeep Cost (₦)	Avg. Selling Price (₦)	Estimated profit
Small (Calf)	40	125	₦460,000	₦550,000	₦90,000
Medium	160	175	₦570,000	₦670,000	₦100,000
Big	120	235	₦640,000	₦750,000	₦110,000
Total	320	—	—	—	
Mean (Rep. Cow)	—	178.33	₦556,666.7	₦656,666.7	₦100,000

Source: Field Survey, 2025

Table 6 provides an in-depth economic assessment of value-added products derived from a single representative slaughtered cow, revealing a total yield of 152 kilograms of segmented cattle products with an overall value of ₦913,000. Beef alone, constituting 98 kg, contributes ₦588,000 about 64.4% of the total value, highlighting its dominance in the cattle product value chain. Other parts such as skin (*ponmo*), intestines, and liver also contribute significantly to the total economic value, with their relatively high prices per kilogram underscoring strong market demand. The data aligns with the profitability theory in agriculture, which emphasizes optimizing returns through cost control and product differentiation (Drury, 2018). For example, despite their small weights, products like cow tail and cow head yield high unit prices (₦8,000 and ₦7,000/kg respectively), indicating consumer willingness to pay premium prices for specific cuts. This supports the view of Kumar and Reinartz (2018), who argue that profitability can be enhanced by aligning offerings with niche consumer preferences and demand-driven pricing. Similarly, Addisu et al. (2012) emphasized the importance of segmenting animal parts to maximize profitability and meet diverse consumption needs, especially in informal markets like those in sub-Saharan Africa. Thus, the segmentation strategy not only enhances profitability but also promotes rural entrepreneurship and resilience in the livestock sector.

Table 6: Quantity and Value of Each Product Obtained from a Slaughtered Representative Cow

Product	Quantity obtained (kg)	Price/kg (₦)	Value (₦)
Beef	98	6,000	₦588,000
Skin (ponmo)	18	5,000	₦90,000
Cow legs	4	7,000	₦28,000
Cow tail	4	8,000	₦32,000

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Liver	6	7,000	₦42,000
Shaki	4	7,000	₦28,000
Deboned Cow head	4	7,000	₦28,000
Kidney	2	4,500	₦9,000
Intestine (roundabout)	8	6,500	₦52,000
Lungs/Heart/Spleen	4	4,000	₦16,000
Grand Total	152	—	₦913,000

Source: Field Survey, 2025

The estimated profit and ROI figures presented in Table 7 illustrate clear differences in profitability among various cattle products, emphasizing the economic advantage of value addition in the cattle market of Ogun State. Notably, while all processed products yield positive returns, items like kidney and cow tail stand out with high ROI values of 114% and 111% respectively, indicating that marketers can more than double their investment on these parts. The study's use of ROI highlights not only absolute profit but the efficiency of capital use—a crucial insight for local cattle marketers with limited capital. These findings are corroborated by several comparable studies. For instance, Mwangi and Kariuki (2016) similarly showed that Kenyan dairy farmers who processed milk into cheese and yogurt achieved substantially higher profit margins than those selling raw milk. Likewise, Addisu et al. (2012) in Ethiopia found that disaggregating cattle into cuts and processed products increased the value chain's profitability, though they also noted that inefficient processing facilities could limit these benefits. The high ROI for parts like the kidney and cow tail in this study supports the argument by Popoola et al. (2015) that small livestock by-products often deliver disproportionately high returns due to low processing costs and strong niche market demand.

Furthermore, this table's profit figures align with broader value addition theory, which emphasizes transforming low-value raw products into higher-value, market-ready goods (Kotler & Keller, 2019). Studies such as Atanda and Oparinde (2023) have confirmed that value addition activities can increase rural producers' incomes by over 60%, strengthening household economic security. This empirical evidence, combined with the current study's profitability breakdown, reinforces policy recommendations advocating for improved processing infrastructure, market access, and training for marketers. Based on the ROI estimates in Table 7, there is a clear variation in returns across different value-added cattle products, with kidney and cow tail achieving the highest ROI of ₦1.14 and 1.11 per ₦1 invested, while beef and cow skin yielded significantly lower returns of ₦0.26 and ₦0.25 respectively. This variation invalidates the null hypothesis H_o1, indicating that there is a statistically significant difference in ROI across the value addition nodes from the Table 8.

Table 7: Estimated Profit and Return on Investment from the Products

Product	Purchase Price/kg (₦)	Value Addition Cost/kg (₦)	Total Cost/kg (₦)	Selling Price/kg (₦)	Profit (₦/kg)	ROI (₦ per ₦1 invested)
Beef	4000	750	4,750	₦6,000	1250	0.26
Skin (ponmo)	3,500	500	4,000	₦5,000	1000	0.25
Cow legs	4,500	300	4,800	₦7,000	2200	0.46
Cow tail	3,500	300	4,800	₦8,000	3200	1.11
Liver	4,500	100	4,600	₦7,000	2400	0.52

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Shaki	4,500	500	5,000	₦7,000	2000	0.40
Deboned Cow head	5000	500	5,500	₦7,000	1500	0.27
Kidney	2000	100	2,100	₦4,500	2400	1.14
Intestine (roundabout)	4,000	400	4,400	₦6,500	2100	0.48
Lungs/Heart/Spleen	3000	100	3,100	₦4,000	900	0.29

Source: Field Survey, 2025

Table 8 presents the relationship between Return on Investment (ROI) and different value-added cattle products. The calculated F-value of 8.12 is a ratio of the mean square between groups (MS between) to the mean square within groups (MS within). It indicates the relative variance explained by the different value-added products compared to random error. The p-value of 0.02 is less than the 0.05 significance level. This indicates that there is a statistically significant difference in ROI among the value-added cattle products**.** In other words, the type of product significantly affects the ROI achieved. This implies that certain value-added products (e.g., cow tail, kidney) generate significantly higher ROI compared to others (e.g., lungs/heart/spleen, beef), confirming that the type of product influences profitability. Marketers and investors should focus on high-ROI products to maximize returns, while improving value addition practices for lower-ROI products to enhance overall profitability.

Table 8: Comparison of ROI across the Different Value-Added Products (ANOVA Result)

Source of Variation	SS	df	MS	F	p-value
ROI and Value-Added Products	0.3972	4	0.0992	8.12	0.02
	0.0618	5	0.0124		
Total	0.4590	9			

Source: Field Survey, 2025

Table 9 clearly demonstrates the cumulative economic advantage of disaggregating a cow into multiple value-added products rather than selling it whole. The table shows that from a single cow, 152 kilograms of various products were obtained, generating a total profit of ₦215,700 at an average profit of ₦1,437 per kilogram. The breakdown highlights how primary cuts like beef contribute the largest share — with beef alone yielding ₦122,500 — but it also shows that smaller components such as cow tail, kidney, and intestine generate disproportionately high profits per kilogram due to their higher unit profitability. This segmentation aligns with the principle of maximizing total carcass value by tapping into diverse market demands. The data reflect the significant economic potential of fully utilizing all parts of the animal, which corroborates the broader findings in the literature that emphasize the benefits of value addition in livestock marketing. This approach nearly doubles the profit compared to selling live cattle alone, since otherwise underutilized parts like the skin (ponmo), shaki, and offals are converted into marketable goods with distinct local demand. The studies by Addisu et al. (2012) and Mwangi and Kariuki (2016) found similar patterns in Ethiopia and Kenya, respectively, where comprehensive processing and segmentation of cattle carcasses increased both total income and income stability for small-scale marketers and processors.

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Table 9: Total Profit from All Products of the Cow

Product	Quantity (kg)	Profit (₦/kg)	Total Profit (₦)
Beef	98	1,250	₦122,500
Skin (ponmo)	18	1,000	₦18,000
Cow legs	4	2,200	₦8,800
Cow tail	4	3,200	₦12,800
Liver	6	2,400	₦14,400
Shaki	4	2,000	₦8,000
Deboned Cow head	4	1,500	₦6,000
Kidney	2	2,400	₦4,800
Intestine (roundabout)	8	2,100	₦16,800
Lungs/Heart/Spleen	4	900	₦3,600
Grand Total	152kg	₦1,437/kg	₦215,700

Source: Field Survey, 2025

Table 10 offers a concise yet powerful illustration of the financial impact of value addition in the cattle value chain. A comparison between the profit from selling a live cow (₦100,000) and the profit obtained from selling all its processed products (₦215,700) reveals a significant value-added gain of ₦115,700, representing about 115.7% increase in profit through segmentation and processing. This outcome strongly validates the profitability theory, which posits that transforming raw agricultural goods into differentiated products substantially enhances returns (Drury, 2018). The margin also reinforces the utility creation model discussed by Kotler et al. (2019), where form and possession utilities introduced through processing elevate consumer value perception and increase income for sellers. This substantial gain further emphasizes the findings by Addisu et al. (2012), who demonstrated that product disaggregation and consumer-targeted value addition in livestock marketing significantly improve financial outcomes for small-scale actors. Selling the live cow offers a single, lump sum return, while processed products like cow head, tail, and offals command individually priced, high-margin revenues, unlocking hidden economic potential. As such, the table clearly supports the rejection of null hypothesis H_02 confirming that a statistically significant difference exists between the profit of live cattle and the cumulative value of its processed parts. The difference was significant at 1% level of probability.

Table 10: Value-Added Analysis

Profit from Live Cow (₦)	Profit from All Products of the Cow (₦)	Value Added (₦)	t-value
₦100,000	₦215,700	₦115,700	3.872***

Source: Field Survey, 2025 * indicates significance at the 1% level**

CONCLUSION

This study investigated value addition in the marketing of cattle and cattle products in Ogun State, Nigeria, focusing on how processing influences profitability and return on investment (ROI). The objective was to evaluate the profitability differential between live cattle sales and processed cattle products, identify value-added product types, and examine the socio-economic

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drivers behind marketers' choices. Using a quantitative cross-sectional surveys and profit/value addition analysis including structured surveys and profitability analysis.

The research provided a holistic view of the cattle value chain. Key findings reveal that while the average profit from selling a live cow stands at ₦100,000, segmenting the same cow into processed products yields a profit of ₦215,700—a 115.7% increase. This substantial margin underscores the transformative financial effect of value addition. Products such as kidney and cow tail demonstrated particularly high ROI (₦1.14 and ₦1.11 per ₦1 invested, respectively), while basic products like beef and cow skin showed lower efficiency (₦0.26 and ₦0.25 ROI). The ANOVA and t-tests confirmed a statistically significant difference in profitability across product categories, validating the first hypothesis (H_01) rejection. Conclusively, the study confirms that value addition significantly enhances profitability and broadens market opportunities. It not only supports increased rural income and employment but also aligns with broader economic diversification goals by shifting emphasis from traditional livestock trade to agro-processing and strategic market segmentation.

RECOMMENDATIONS

To unlock the full economic potential of the cattle industry in Ogun State, it is recommended that:

- Policymakers and stakeholders invest in processing infrastructure and capacity-building programs for small-scale marketers.
- Awareness campaigns and training on value addition should be intensified to improve market knowledge and entrepreneurial skills.
- Access to affordable financing and market linkages must also be strengthened to enable broader participation in value-added ventures.
- Furthermore, consumer-focused product development, improved cold-chain logistics, and branding initiatives will help maximize ROI across product categories and align outputs with urban and export market demands.

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