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Developing Effective Strategies to Boost Internal Revenue Generation from Cattle Markets in Adamawa State of Nigeria

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Abstract

This study examined strategies to enhance internally generated revenue (IGR) from cattle markets in Adamawa State, Nigeria, focusing on five major variables: modern market infrastructure, market management committees, motivation of personnel, security arrangements, and sanction of corrupt or fraudulent staff. Despite the state's abundant cattle markets, revenue collection remains below potential due to infrastructural deficits, operational inefficiencies, insecurity, and corruption. The study employed a descriptive survey and ex post facto research design, collecting primary data from 300 respondents where 288 dully responded across six strategically selected cattle markets representing the three geopolitical zones in the state. Data were analyzed using descriptive statistics, correlation analysis, and multiple regression techniques with STATA 14. Regression results revealed that modern market infrastructure positively and significantly affects IGR (B = 0.1813, p = 0.000), while management committees (B = 0.2992, p = 0.000) and security measures (B = 0.3615, p = 0.000) were the strongest predictors of revenue generation. Motivation of personnel also positively influenced revenue (B = 0.1090, p = 0.020), whereas sanctions showed a negative effect on IGR (B = -0.1654, p = 0.000). The findings identify the critical role of adequate infrastructure, competent management, motivational incentives, and adequate security in optimizing revenue, while improperly applied sanctions can reduce participation and revenue performance. The study recommends that local government authorities invest in modern market facilities, strengthen management committees, provide appropriate incentives, enhance security,

and implement fair and consistent sanction policies to maximize internally generated revenue from cattle markets in Adamawa State.

Keywords: Cattle markets, Revenue generation, Market infrastructure, Management, Security

Introduction

Over the years cost of the running governments in Nigeria coupled with unsteady revenue to the governments despite abundant sources of revenue, this situation had compelled many governments to institute plans on how to improve their internally generated revenue in order to address the constant acute paucity of funds the governments are constantly facing. In view of this, the need for developing effective strategies to assist government to improve their revenue generation efforts is essential. Dhlamini (2022) stated that strategies are considered as ways of meeting up with the overall goals and objectives of organization. Due to the vast rate of technological developments, the use of strategies has become crucial in attaining objectives. One of the fundamental sources of funding to the governments is revenue generation to be specific internally generated revenue. Revenue generation refers to all income received by governments from both external and internal sources of revenue (Anjande & Yahaya, 2017). Usman and Abba (2023) affirm that revenue refers to all the money received other than from debt and liquidation of investments. Government revenue includes taxes, licenses, fines, charges, sale of government properties, sales of crude oil, and other export; among others. Therefore, revenue is the entire amount of income a government is able to raise from various sources under its jurisdiction within a definite period and according to the law. The constitution of the Federal Republic of Nigeria as amended to date has specifically allotted revenue generations from Market facilities (be it conventional or special market) to the Local Government Authorities, provided the market(s) is/are built and financed by the Local Government Authority.

The development of effective strategies in the cattle markets is necessary, because it goes a long way in encouraging economic growth by providing opportunity for jobs creation, trade, and encouraging local businesses such as food vending, menial hawking, transport, feed supply, and veterinary services (Rianzani et al., 2018; Astiti, 2022). Denis and Raymond (2025) affirmed that well-regulated markets can generate significant revenue through transaction fees, livestock taxes, and ancillary service charges. The duo further asserted that improved revenue collection instruments can enhance government budgets, particularly in developing economies like Nigeria.

Therefore, developing effective strategies in the cattle markets through the provision and installation of befitting standardized cattle market infrastructure,

Cattle Market management committee, motivation of cattle market management and personnel, provision of adequate security arrangement within the cattle markets, and instituting severe sanction on corrupt and fraudulent personnel of the cattle markets in Adamawa State of Nigeria, these and other relevant workable strategies will greatly enhance and boost internally generated revenue of both the State Government and Local Government areas where these cattle markets are located.

Cattle market is an emporium where people come to buy and sell cattle. Adamawa State is one of the states in Nigeria that has the largest number of cattle markets with active operations according to the normal arrangement. The cattle markets are situated in thirteen locations in Adamawa State which includes Ganye, Girei, Jabbi-Lamba, Jada, Kojoli, Konkol, Lafia-Lamurde, Mayo-Belwa, Mubi-South, Ngurore, Shigari, Song and Toungo, spread across the three geo-political zones in the state, welcoming cattle business tycoons from within and outside the country (Nigeria).

In agriculturally oriented economies such as Nigeria, the cattle market is not only fundamental to rural livelihoods but also a possible tool that will attract to the state and local governments revenue through the collection of taxes, fees, levies, and permits. Cattle markets serve as commercial centers where livestock are bought and sold, facilitating income flows among farmers, traders, transporters, and allied businesses. These activities generate direct revenue for government authorities through slaughter taxes, transaction levies, yearly permits, loading/unloading fees, and stall rentals. Indirectly, the presence of a functional market motivates economic activity, at the same time increase the taxable base within surrounding communities (Yusuf et al., 2018; FAO, 2020; Denis & Raymond, 2025).

Unfortunately, over the years the governments are expected to have adequate and sufficient fund available at its disposal to meet up with its constitutional responsibilities. Adamawa State have no reason whatsoever to complain, because it has more advantage over their counterparts in the Northeast geo-political zone in terms of strong revenue base, this is because of the numerous presence of cattle markets in the state. People from places patronized the cattle markets on weekly basis. All of them are facing series of daunting challenges for quite a long time. These include poor operating procedures, lack of organized leadership in the market, infrastructural decay, absence of adequate veterinary facilities, insecurity, and corruption among others. The cattle markets are also characterized by inefficiencies of the administration of agricultural products where Abdu, Mustapha and Dambatta (2016) decried on numerous allegations of inefficiencies leveled against marketing system for agricultural products especially beef cattle in Nigeria. In order to address these challenges the following strategies should be developed to cushion the effects of the challenges: modern cattle market infrastructures (veterinary facilities, motor-park, etc.); cattle market management committee; motivation; cattle market security; sanction of fraudulent revenue officials and agents.

In spite of the abundance of cattle markets spread across the geo-political zones in Adamawa State, yet the state and the Local Governments where these cattle markets are located fail to deliver reasonable internal revenue returns to the governments due to operational

inefficiencies. Studies have shown that structural and systemic issues such as poor infrastructure, lack of formal regulation, weak institutional oversight, and the prevalence of informal trading practices. Administrative challenges include weak tax institutions, insecurity, corruption, and inadequate enforcement mechanisms limit revenue collection (Yahaya, 2018; Bugaje, Okpe & Odunko, 2023; Aina, 2025). In some cases, the revenues that should accrue to local governments are lost due to leakages, inadequate monitoring, and uncoordinated management frameworks.

In Nigeria, Adamawa State is one of the states that breed and rear high proportion of livestock with significant portion of agricultural activities, and the cattle markets could not take advantage of unused potential to boost internally generated revenue (IGR) adequately. Most of these cattle markets are strategically positioned on Federal highways to attract high patronage of business persons, but yet they continue to operate below their economic and fiscal capability, which is largely caused due to Weak physical infrastructure, informal fee collection and sharp practices, as well as poor market management remain widespread issues that draw back successes of the cattle markets (Denis & Raymond, 2025).

Furthermore, cattle markets are faced with myriads and significant challenges, including deficiencies in infrastructure such as the absence of adequate holding pens, clean water supply, sanitation facilities, poor veterinary services, and reliable transportation systems directly hinder efficient market operations. These operational inefficiencies not only undermine the rate of trader participation and transaction but also reduce the government's capacity to enforce fees, collect levies, and expand its tax base. In effect, poor market conditions result in reduced economic activity within the market environment, thereby constraining revenue generation (Omunyin-Mewese & Oluyole, 2020; Umeh & Ogbanje, 2020; Yusuf et al., 2025). Sharp and corrupt practices most often result in revenue losses for governments; periodic demand and supply fluctuations affect market stability and predictability; incessant security breaches caused by hoodlums is a thing of special concern in the cattle markets; the management uncoordinated response to issues in the cattle markets remain a serious problem to contain, because it exposes the market to unpredictable future with little or no hope; at the instance of varied cattle markets problems, most of the cattle markets are faced with infrastructural decay which deter the markets to move along with global latest developments within the circle of standard global cattle markets.

It is against this backdrop that this study examined a study on "developing effective strategies to boost revenue generation from cattle markets in Adamawa state of Nigeria". The study selected Six (6) cattle markets, one (1) each from six (6) different Local Government Areas, i.e. two (2) cattle markets from each geo-political zone in the state, this is to enable proper generalization of conclusion on the cattle markets in Adamawa State; the study made use of five proxies of independent variables which include: modern cattle market infrastructure, management of cattle market, motivation of cattle market management, cattle market securities and sanction of corrupt and fraudulent personnel. This is to ensure that major areas of cattle markets issues had been addressed substantially to permit robust improved revenue

generation yield to the entire stakeholders in the markets, as well as political, social and economic aspect of the markets to stakeholders are genuinely addressed.

The main objective of this study was to evaluate the extent to which developing effective strategies significantly boost revenue generation from cattle markets in Adamawa State of Nigeria. In order to achieve the main objective of this study the following specific objectives must be attained as follows:- (i) to examine the extent to which modern cattle market infrastructures significantly boost revenue generation from cattle markets in Adamawa State of Nigeria; (ii) to determine the extent to which management of cattle market significantly boost revenue generation from cattle markets in Adamawa State of Nigeria; (iii) to assess the extent to which motivation of cattle market management significantly boost revenue generation from cattle markets in Adamawa State of Nigeria; (iv) to investigate the extent to which cattle market security significantly boost revenue generation from cattle markets in Adamawa State of Nigeria; and (v) also to appraise the extent to which sanction of corrupt and fraudulent personnel significantly boost revenue generation from cattle markets in Adamawa State of Nigeria.

The Theory of Constraints

The theory of constraints as postulated by Goldratt in 1984 as cited in Muriuki and Mwengei-Ombaba (2018) stated that every system is subject to at least one constraint which prevents the system from achieving extremely high levels of performance. For the system that is a corporation, the often unidentified constraint prevents it from achieving infinite profits, just as a chain's weakest link limits the chain's capacity to transmit force. The assumption of the theory describes the need to join activities aimed at elevating the outcomes of any system, especially a business system, with respect to its goal by eliminating its constraints one by one and by not working on non-constraints. This theory is relevant to the study as it supports the main objective on developing effective strategies. In connection to the study on boost revenue generation in cattle markets subject to at least one or more than one problem which prevents attaining its desired target. Given the often unidentified problems in revenue generation, these should be addressed as identified under the independent variables which include: modern cattle market facilities, cattle market management committee, motivation; cattle market security, and sanction which are strategies that can be employed in order to achieve the desired objectives. Local government councils in Adamawa State should therefore identify effective strategies that can be sustainable to face the identified constraints head-long to ensure that revenue generation from cattle markets have been rejig to regain its proper position of being next to oil revenue in Nigeria.\

Empirical Review

The study in this area has manifested positive outcome providing the required needs of the cattle markets which aligned with study conducted by Sinulingga et al (2023) who examined the strategy applied to cattle market traders and the cost and profits obtained from the livestock

market in Suka Village, Tigapanah District, Karo Regency, North Sumatra Province. Where the findings showed that marketing of beef cattle in the livestock market in Suka Village, Tigapanah District, Karo Regency is efficient in all ramifications. Similarly, Ajulor and Korede (2020) assessed internally generated revenue and infrastructural development in Ogun State. The study relied on secondary data generated from journals, articles, books, internet and data obtained from national bureau of statistics, joint tax board and state boards of internal revenue. The findings revealed that internally generated revenue (IGR) have contributed significantly to the provision of infrastructure in the State; similarly, Tanko and Shishi (2020) discovered that IGR has a positive impact on infrastructural development. Furthermore, Yahaya (2018) examined the social and economic contribution of Mubi Cattle Market to the economy of Mubi South Local Government Area. The study adopted primary data sourced from the market using structured questionnaire and interviews. The finding revealed that Mubi Cattle Market is a major source of internal revenue generation item in Mubi-South Local Government Area of Adamawa State.

Conversely, the study produced negative results where Denis and Raymond (2025) examined strategies for enhancing revenue generation in the cattle market of Adamawa State, Nigeria. Using a mixed-method approach, data were collected from 150 respondents through structured questionnaires and interviews conducted across four major cattle markets: Yola, Mubi, Ganye, and Numan. Quantitative data were analyzed using descriptive statistics, Pearson correlation, and multiple regressions. The findings revealed that the following key factors which influenced revenue generation include: market infrastructure, access to veterinary services, and availability of real-time market information, financial support, and transport security, while the interview conducted disclosed the presence of recurring challenges such as poor facilities, cattle diseases, lack of pricing transparency, and insecurity during transportation. So also, Atser et al (2023) analyzed cattle marketing and risks among traders in North-Central Nigeria. It considered the socio-economic characteristics of cattle marketers; Primary data were adopted in the study. The findings showed that there were issues of lack of adequate infrastructure and illegal taxes and levies in the cattle market.

In the same vein, Gambo (2020) examined the supply of cattle from the north (northern states of Nigeria and neighbouring countries of Niger, Chad and Cameroon) to meet the demand for animal meat in southern Nigeria which generated cattle trade corridors in the country. The study found that there are challenges of local trade corridor are in cattle production, infrastructural services, and security which desire urgent attention. Dzarma and Hamawa (2020) assessed the economics of cattle marketing in Mubi area of Adamawa State, It was revealed that challenges such as inadequate capital, high transportation cost of conveying the live animals to far distance markets, theft, insecurity, price fluctuation, deplorable road among others exist in the cattle market. Similarly, Asadullah et al. (2019) examined the behavioral theories and modern theories that aimed at motivating the employee to increase his performance by reinforcements and punishments. The results of this investigation from both

the cases portrayed that reinforcement and punishment significantly influence motivation, values, decision making, tackling conflicts and overall performance of the employee.
Onubuleze (2023) examined the impact of staff sanctions on the job performance of teachers in secondary schools in Enugu State. The study findings revealed that demotion and suspension significantly influenced teachers' job performance. Similarly, Akpan and Awu (2022) examined the relationship between the impacts of employee discipline on organizational survival. The study findings revealed that discipline is an important factors for any organizational to enjoy effectiveness which breeds survival.

Research Design

This paper adopted a descriptive survey and ex post facto research design, considering the fact that the study is non-experimental research. It assisted the study to obtain information from individuals and groups through the use of descriptive survey research, over a period of Ten (10) years for the study, (2015-2024).

Method of Data collection

The study adopted mixed approach sources of data for the paper. The paper applied primary data using questionnaire with the use of a 5 points Likert scale with 1 point Strongly Agree (SA), Agree (A), Undecided (U), Disaggree (D) to 5 points (Strongly Disagree (SD) and focus group discussions as the instrument for the data collection from the respondents as well as secondary data.

Study Population

The population of this study stood at 1205 people which comprised of all the stakeholders such as: Cattle market management committee (if any); revenue management team; all relevant associations in cattle markets; auxiliary traders in the cattle markets; cattle dealers; governments representatives; Ardos, security operatives in the selected cattle markets which includes Song, Ngurore in Yola North, Ganye, Lamurde, Jabbi-Lamba in Maiha and Mubi South cattle markets representing the three (3) geo-political zones in Adamawa State.

Sample Size and Sample Population

For the purpose of this study, the sample size consists of three hundred (300) people selected from among the one thousand two hundred and five (1205) people who served as the population of the study elicited from all the selected cattle markets in Adamawa State which includes Song, Ngurore in Yola North, Ganye, Lamurde, Jabbi-Lamba in Maiha and Mubi South. Taro Yamane, (1967) sample size formula was adopted in order to determine the sample of the study. Taro Yamane sample size formula: $SS = N/ (1+N (e)^2)$.
Where:-
N= 1205
1= Constant

e= 5%
n= $1205/(1+1205(0.05)^2)$
n= 1205/(1+1205(0.0025)
n= 1205/(1+3.0125)
n= 1205/(4.0125)
n= 300.3115
n= 300

Instrumentation
This is a tool used to collect, measure, and analyze data related to research of interest. Data for objectives i, ii, iii, iv and v, was elicited through primary source and regression was used to analyze the collected data.

Validity of the Instrument
Validity test was carried out to check the ability of the research instruments to measure the variables of the study. Validity is the degree to which a test or an instrument measures what it is supposed to measure. Sürücü and Maslakçi (2020) defined validity as the extent to which a measurement tool accurately measures the construct and assess how effectively it performs its function. The study was able to conduct Face, Content and Construct validity.

Method of Data Analysis
This paper employed the use of descriptive and inferential statistics as the techniques of data analysis for the paper. The study used Stata 14 software to analyze the data collected for the study. Statistical software has descriptive and inferential statistics features that guarantees variable response comparison and provides clear indications of response frequencies. Tables and other graphical presentations were adequately used to present the data raised for the purpose of convenience. The paper employed multiple regression analysis models to analyze descriptive and inferential statistics as follows:-

IGR=F(STRG)…….(1)

Where:
IGR = Internally Generated Revenue
STRG = Strategies represented by
FCLTS = Facilities
CMMC = Cattle Market Management Committee
MTVT = Motivation
SCRT = Security
SANCT = Sanction

The study rewrites the equation (1) as follows;- $IGR=\beta 0+ \beta_1 fclts +\beta_2 mtvt +\beta_3 cmmc+\beta_4 scrt+\beta_5 sanct+\varepsilon$……..……..……..(2)

Where:
β0 = Constant term
FCLTS = Facilities
CMMC = Cattle Market Management Committee
MTVT = Motivation
SCRT = Security
SANCT = Sanction
ε = error term

Descriptive statistics

Table 1 presents the descriptive statistics of the study variables used in examining strategies to boost internally generated revenue (IGR) from cattle markets in Adamawa State, Nigeria. The dependent variable, Internally Generated Revenue (IGR), has a mean score of 3.8333 with a standard deviation of 1.1384. Given that the responses were measured on a five-point Likert scale (1–5), this mean indicates that respondents generally perceive the level of revenue generation in cattle markets to be moderately high. The relatively moderate standard deviation suggests some variation in perceptions across respondents, but not excessively wide dispersion.

Facilities (FCLT) recorded a mean value of 3.1944 and a standard deviation of 1.2113. This suggests that respondents perceive the availability and adequacy of facilities in cattle markets to be slightly above average but not highly satisfactory. The relatively higher standard deviation indicates noticeable differences in opinion among respondents, implying that facilities may vary significantly across markets within Adamawa State. Cattle Market Management Committee (CMMC) has a mean score of 3.2812 and a standard deviation of 1.3228. This indicates a moderate perception of the effectiveness of market management committees. However, the relatively large dispersion suggests inconsistencies in management performance across different cattle markets.

Motivation (MTVT) recorded a mean of 4.0034 with a standard deviation of 1.1308. This implies that respondents generally agree that motivational factors (such as incentives, staff encouragement, or performance rewards) are present and relatively strong in the cattle markets. The moderate spread indicates reasonable agreement among respondents. Security (SCRT) has the highest mean value of 4.0416 and a standard deviation of 1.1066. This suggests that security measures in cattle markets are perceived to be strong and satisfactory. Since security is critical in livestock trading due to risks such as theft and conflict, this high mean indicates that stakeholders recognize its importance in revenue generation. Sanction (SANCT) recorded a mean score of 3.3888 with a standard deviation of 1.3152. This suggests that enforcement measures and penalties for non-compliance are moderately applied.

However, the relatively high standard deviation indicates variation in enforcement practices across markets.

Table 1: Summary of the Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
IGR	288	3.8333	1.1384	1	5
FCLT	288	3.1944	1.2113	1	5
CMMC	288	3.2812	1.3228	1	5
MTVT	288	4.0034	1.1308	1	5
SCRT	288	4.0416	1.1066	1	5
SANCT	288	3.3888	1.3152	1	5

Source: Output from STATA 14

Correlation analysis

Table 2 presents the Pearson correlation coefficients showing the relationship between Internally Generated Revenue (IGR) and the explanatory variables: Facilities (FCLT), Cattle Market Management Committee (CMMC), Motivation (MTVT), Security (SCRT), and Sanction (SANCT). The results show that Facilities (FCLT) has a positive correlation with IGR (r = 0.2687). This indicates a moderate positive relationship, suggesting that improvements in market infrastructure and facilities are associated with increases in internally generated revenue. Cattle Market Management Committee (CMMC) shows a stronger positive relationship with IGR (r = 0.4523). This suggests that effective management practices significantly relate to higher revenue generation. Motivation (MTVT) has a weak positive correlation with IGR (r = 0.1385). This suggests that while motivation of personnel and stakeholders contributes to revenue generation, its direct influence is relatively small compared to other factors. Security (SCRT) demonstrates a strong positive correlation with IGR (r = 0.4480), almost equal to that of management effectiveness. This indicates that improved security measures such as protection against theft, conflict, and fraud are closely associated with higher revenue generation. In contrast, Sanction (SANCT) shows a negative relationship with IGR (r = -0.1986). This suggests that stricter or poorly implemented sanctions may be associated with lower revenue generation. This negative association could imply that excessive penalties or enforcement strategies might discourage participation in market activities, thereby reducing revenue. Regarding the relationships among independent variables, the correlations are generally low to moderate, indicating no serious multicollinearity problem. For example, FCLT and CMMC (r = 0.1245), and SCRT and CMMC (r = 0.2228) show weak associations. The absence of very high inter-correlations (above 0.70) suggests that the explanatory variables measure distinct aspects of cattle market operations.

Table 2: Correlation Matrix

	igr	fclt	Cmmc	mtvt	Scrt	Sanct
Igr	1.0000					
Fclt	0.2687	1.0000				
Cmmc	0.4523	0.1245	1.0000			
Mtvt	0.1385	0.1292	-0.0822	1.0000		
Scrt	0.4480	0.0589	0.2228	0.1113	1.0000	
Sanct	-0.1986	0.0114	-0.0591	0.0272	0.0223	1.0000

Source: Output from STATA 14

Regression result

Table 3 presents the Analysis of Variance (ANOVA) results of the multiple regression model examining the effect of Facilities (FCLT), Cattle Market Management Committee (CMMC), Motivation (MTVT), Security (SCRT), and Sanction (SANCT) on Internally Generated Revenue (IGR) in cattle markets in Adamawa State. The regression model shows a Model Sum of Squares (SS) of 156.012 with 5 degrees of freedom, while the Residual Sum of Squares is 215.988 with 282 degrees of freedom. The Total Sum of Squares is 372.000 with 287 degrees of freedom. This indicates that a substantial proportion of the variation in IGR is explained by the independent variables included in the model. The computed F-statistic is 40.74, with a corresponding probability value (Sig.) of 0.000. Since the p-value is less than 0.05, the overall regression model is statistically significant.

Table 3: regression Result

Source	SS	Df	MS	F	Sig.
Model	156.012	5	31.202	40.74	0.000
Residual	215.988	282	0.766		
Total	372.000	287	1.296		

Source: Output from STATA 14

Table 4: Regression Coefficients Table

Variable	B (Coef.)	Std. Error	t-value	p-value	95% Confidence Interval
Fclt	0.1813	0.0434	4.17	0.000	0.0958 – 0.2668
Cmmc	0.2992	0.0407	7.34	0.000	0.2190 – 0.3793
Mtvt	0.1090	0.0467	2.33	0.020	0.0170 – 0.2009
Scrt	0.3615	0.0483	7.48	0.000	0.2663 – 0.4567
Sanct	-0.1654	0.0394	-4.20	0.000	-0.2429 – -0.0878
Constant	0.9357	0.3192	2.93	0.004	0.3074 – 1.5641

Source: Output from STATA 14

Table 4 presents the estimated regression coefficients showing the individual contribution of each independent variable to Internally Generated Revenue (IGR) in cattle markets in

Adamawa State. The coefficient of Facilities (FCLT) is 0.1813 with a p-value of 0.000. This indicates that facilities have a positive and statistically significant effect on internally generated revenue. Specifically, a one-unit increase in facilities (such as improved infrastructure, water supply, fencing, loading bays, and market structures) leads to an average increase of 0.181 units in IGR, holding other factors constant. This result suggests that better infrastructure enhances market efficiency and revenue collection.

The coefficient for Cattle Market Management Committee (CMMC) is 0.2992 and statistically significant (p = 0.000). This implies that effective management structures significantly improve revenue generation. A one-unit improvement in management effectiveness increases IGR by approximately 0.299 units. Among the institutional variables, this is one of the strongest predictors, showing the critical role of transparent administration, supervision, and accountability in revenue performance. Motivation (MTVT) has a positive coefficient of 0.1090 and is statistically significant at the 5% level (p = 0.020). This indicates that improved motivation of staff and stakeholders contributes positively to revenue generation, although its effect is relatively smaller compared to facilities, management, and security. Motivational mechanisms such as incentives, recognition, and improved working conditions likely enhance performance and compliance.

Security (SCRT) shows a positive coefficient of 0.3615 and is significant (p = 0.000). This means that security has the strongest positive impact on IGR among all the explanatory variables. A one-unit increase in security measures increases IGR by approximately 0.362 units. This finding indicates the importance of safeguarding livestock, traders, and market assets, as improved security increases traders' confidence and transaction volumes. In contrast, Sanction (SANCT) has a negative coefficient of -0.1654 and is statistically significant (p = 0.000). This suggests that stricter or possibly poorly implemented sanctions are associated with a reduction in revenue. While sanctions are necessary for compliance, excessive or improperly applied penalties may discourage participation in market activities, thereby negatively affecting revenue generation. The constant term (0.9357) is statistically significant (p = 0.004), indicating that even when all explanatory variables are held constant at zero, there is a baseline level of revenue generation. In the state.

The extent to which modern cattle market infrastructures significantly boost revenue generation from cattle markets in Adamawa State of Nigeria

The regression results show that Facilities (FCLT), which represent modern cattle market infrastructure, have a positive and statistically significant effect on internally generated revenue (B = 0.1813, p = 0.000). This implies that improvements in infrastructure such as better market stalls, fencing, water supply, loading ramps, and administrative offices significantly increase revenue generation. Specifically, a one-unit improvement in facilities leads to approximately a 0.181-unit increase in IGR, holding other factors constant. Although the magnitude of the effect is moderate compared to some other variables, the result confirms that modernizing cattle market infrastructure plays an important role in boosting revenue in Adamawa State.

The extent to which management of cattle markets significantly boosts revenue generation from cattle markets in Adamawa State of Nigeria

The findings indicate that Cattle Market Management Committee (CMMC) has a strong positive and statistically significant influence on revenue generation (B = 0.2992, p = 0.000). This suggests that effective management through proper supervision, accountability, transparent revenue collection, and organized market operations substantially increases internally generated revenue. With a coefficient of 0.2992, management is one of the strongest predictors of IGR in the model. Therefore, strengthening the structure and efficiency of market management committees significantly enhances revenue performance in cattle markets.

The extent to which motivation of cattle market management significantly boosts revenue generation from cattle markets in Adamawa State of Nigeria

The regression results reveal that Motivation (MTVT) has a positive and statistically significant effect on IGR (B = 0.1090, p = 0.020). This means that increased motivation—through incentives, improved working conditions, recognition, and performance rewards—contributes positively to revenue generation. However, compared to other variables such as security and management, the magnitude of its impact is relatively smaller. This indicates that while motivation is important and statistically significant, it plays a supportive rather than dominant role in boosting revenue from cattle markets.

The extent to which cattle market security significantly boosts revenue generation from cattle markets in Adamawa State of Nigeria

Security (SCRT) shows the strongest positive effect on internally generated revenue among all the explanatory variables (B = 0.3615, p = 0.000). This indicates that improved security measures such as protection against cattle theft, conflict control, monitoring systems, and safe trading environments significantly increase revenue generation. A one-unit increase in security results in approximately a 0.362-unit increase in IGR. This finding underscores the critical importance of security in cattle markets, as traders are more likely to participate actively in markets where their livestock and financial transactions are safe.

The extent to which sanction of corrupt and fraudulent personnel significantly boosts revenue generation from cattle markets in Adamawa State of Nigeria

The regression results show that Sanction (SANCT) has a negative and statistically significant effect on IGR (B = -0.1654, p = 0.000). This implies that the current sanction mechanisms may not be effectively boosting revenue; instead, they are associated with a reduction in revenue generation. This could suggest that sanctions may be excessively harsh, inconsistently applied, or poorly implemented, thereby discouraging participation in market activities. While sanctions are necessary for ensuring compliance and accountability, the findings indicate that they must be properly structured and fairly enforced to avoid negatively affecting revenue performance.

Discussion of the Findings

This study examined how developing effective strategies can boost internally generated revenue (IGR) from cattle markets in Adamawa State, Nigeria. The descriptive statistics show that Internally Generated Revenue (IGR) has a mean score of 3.83 (SD = 1.14) on a 5-point scale, suggesting that respondents generally perceive revenue generation in the cattle markets to be moderately high. Among the explanatory variables, Security (mean = 4.04, SD = 1.11) and Motivation (mean = 4.00, SD = 1.13) recorded the highest average scores, indicating that respondents perceive security conditions and staff motivation to be relatively strong in the markets. Facilities (mean = 3.19, SD = 1.21) and Sanctions (mean = 3.39, SD = 1.32) show moderate ratings, suggesting room for improvement in infrastructure and disciplinary systems. Cattle Market Management Committee (mean = 3.28, SD = 1.32) also reflects a moderate perception of management effectiveness. The standard deviations, all slightly above 1, indicate some variation in respondents' opinions but not extreme dispersion.

The regression result found that facilities ($\beta = 0.1813$, $p < 0.05$) have a positive and significant effect on IGR. This implies that improvements in infrastructure such as holding pens, loading ramps, water supply, access roads, drainage systems, and veterinary services enhance market efficiency and increase revenue. This finding is consistent with Adeyinka et al. (2016), who emphasized that modernization and proper planning of market facilities improve operational efficiency and economic value. Similarly, Njoku and Oladosu (2025) argued that reliable infrastructure enhances market accessibility and reduces transaction bottlenecks. In the livestock context, Denis and Raymond (2025) observed that inadequate facilities were among the major constraints limiting optimal revenue generation in Adamawa cattle markets. Furthermore, Atser et al. (2023) identified inadequate infrastructure and illegal levies as key challenges affecting cattle marketing efficiency in North-Central Nigeria.

The coefficient for Cattle Market Management Committee ($\beta = 0.2992$, $p < 0.05$) shows a strong positive and significant effect on IGR. This indicates that effective management structures through accountability, monitoring, supervision, and coordination substantially increase revenue collection efficiency. This finding corroborates Uddin (2017), who emphasized that market management committees enhance coordination between stakeholders and improve regulatory enforcement. It also aligns with Yahaya (2018), who found that Mubi Cattle Market significantly contributed to local government revenue when management structures were functional. The strong coefficient suggests that governance and institutional efficiency are critical determinants of revenue outcomes.

Motivation ($\beta = 0.1090$, $p < 0.05$) has a positive and significant effect on IGR. This suggests that incentives, recognition, improved working conditions, and performance rewards contribute to better revenue outcomes, though not as strongly as infrastructure, management, or security. This result supports Nyinyimbe (2020), who asserted that employee motivation enhances workplace performance and organizational effectiveness. Yang and Ai (2020) similarly emphasized the role of intrinsic and extrinsic motivation in improving productivity.

In a related study, Asadullah et al. (2019) found that reinforcement and punishment mechanisms significantly influence employee performance and decision-making.

Security ($\beta = 0.3615$, $p < 0.05$) emerged as the strongest positive predictor of IGR. This indicates that improved security measures protection against cattle rustling, conflict management, secure transaction environments, and surveillance significantly enhance trader participation and revenue collection. This finding is strongly supported by Gambo (2020), who identified insecurity along cattle trade corridors as a major challenge affecting livestock marketing in Nigeria. Dzarma and Hamawa (2020) also identifed theft and insecurity as major constraints in Mubi cattle markets. Denis and Raymond (2025) similarly found that transport security and safety significantly influence revenue generation. Given the fragile nature of livestock markets in Northern Nigeria, security serves as a foundational condition for market operations. Without adequate security, transaction volume declines, trust diminishes, and revenue falls.

Interestingly, sanctions ($\beta = -0.1654$, $p < 0.05$) showed a negative and significant relationship with IGR. This suggests that the current implementation of sanctions may not be yielding the intended positive outcomes. Instead, it may discourage participation or create resentment among stakeholders. While literature supports the importance of discipline and sanctions for organizational effectiveness (Akpan & Awu, 2022; Onubuleze, 2023), the negative coefficient suggests possible issues in implementation such as inconsistency, selective enforcement, excessive punishment, or lack of transparency. Yakubu et al. (2024) and Hoffmann (2025) emphasized that anti-corruption measures must be systematic and transparent to build trust. If sanctions are perceived as unfair or politically motivated, they may undermine market confidence and reduce compliance.

Conclusion

The study concluded that developing effective strategies in Adamawa State cattle markets significantly boosts internally generated revenue, with security, effective market management, and modern infrastructure being the most influential factors, while motivation also contributes positively though to a lesser extent, and current sanction mechanisms, if improperly applied, may discourage participation and reduce revenue.

Recommendations

Based on the findings, the following recommendations are proposed:

i. Adamawa State Government and relevant local authorities should prioritize security in cattle markets by deploying trained security personnel, installing surveillance systems, improving perimeter fencing, and enhancing collaboration with local security agencies. Since security has the strongest impact on revenue, improving safety conditions will encourage trader participation and increase revenue inflow.
ii. Government should restructure and strengthen management committees through capacity building, financial transparency mechanisms, digital revenue collection

systems, and regular monitoring.

iii. There is a need to upgrade facilities such as loading ramps, water supply systems, drainage, veterinary clinics, access roads, and holding pens. Modern infrastructure will improve market attractiveness, reduce operational bottlenecks, and increase transaction volumes, thereby boosting revenue.

iv. Authorities should introduce performance-based incentives, training programs, recognition systems, and better working conditions for market officials. Motivated personnel are more likely to enforce regulations effectively and ensure proper revenue collection.

v. Sanction systems should be reviewed to ensure fairness, transparency, and consistency. Rather than relying solely on punitive measures, authorities should combine sanctions with corrective training and monitoring. This will promote compliance without discouraging trader participation.

vi. Introducing electronic payment systems and digital record-keeping can minimize corruption, enhance transparency, and reduce revenue leakages in cattle markets.

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