LIVESTOCK INFORMATION GENERATION FOR DOCUMENTATION AND CATTLE RUSTLING PREVENTION BY MARKET OFFICIALS IN KATSINA STATE LIVESTOCK MARKETS, NIGERIA

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Abstract

This study investigated the types and sources of livestock information for documentation and cattle rustling prevention by market officials in Katsina State. A quantitative research methodology was employed, utilizing a cross-sectional survey design to find out the types and sources of livestock information being generated for documentation and cattle rustling prevention by market officials in Katsina State. A proportionate sampling technique was used to sample 198 market officials from a population of 539 across eighteen livestock markets in Katsina State. The data collected for the study was analyzed using frequency, mean and standard deviation. Key findings indicated that market officials in Katsina State generated various types of livestock information for documentation and cattle rustling prevention, including animal information, pictures/sketches of animals, information about animal sellers/producers, animal buyer information, animal broker/trader information, and transaction information. The sources of livestock information generated for documentation and cattle rustling prevention comprised of formal internal, formal external, informal internal and informal external sources. Recommendations arising from this study include incorporating animal permits as well as establishing standardized procedures for documenting livestock information from all sources and promote collaboration among formal institutions, informal sources, and market officials to build a more comprehensive information network.

Keywords: Documentation, Cattle Rustling Prevention, Livestock Information, Market Officials, Katsina State

Introduction

Information stands as one of the world's most valuable asset essential for responding promptly to changes triggered by economic, social, and security influences impacting both

the present and future. In any organization, information supports daily operations, decision-making and facilitates the achievement of strategic goals in competitive environments. In livestock markets, information is pivotal for maintaining sustainability, enabling market officials to achieve and sustain agility in decision-making. Essentially, when livestock information, such as animal identification information, animal owner and buyer details, are generated for documentation in the livestock market pertaining to animal check-in, check-out, sales, slaughter, and animal offenses, the quality and impact of decisions can be significantly enhanced (Unuegbu & Adeleye, 2022). Additionally, it is essential for verifying animal sources and ownership, allowing markets to respond effectively to economic, social, technological, security, and legislative changes. Therefore, livestock information is indispensable for proper documentation and cattle rustling prevention in livestock markets, making it a critical asset that must be diligently generated.

Livestock information generation refers to the process of obtaining or creating livestock information (FAO, 2019). This involves gathering and producing animal-related information through various methods and sources. Effective livestock information generation for documentation are crucial, as they allow for the accurate tracking of the origin and movement of livestock, ensuring traceability and preventing cattle rustling. This is vital for maintaining quality control and building consumer trust. Additionally, livestock information generation enhances documentation efficiency in livestock markets, eliminating inefficiencies and improving overall traceability. Cattle rustling prevention in livestock markets refers to the strategies and measures implemented to protect livestock from theft and to ensure the security and traceability of animals being traded. Given the economic impact of cattle rustling, especially in regions dependent on livestock markets like Katsina State, Nigeria, prevention is crucial to safeguarding the livelihoods of livestock owners, traders, and communities. cattle rustling prevention in livestock markets requires a combination of proper documentation, technology, security measures, legal enforcement, and community involvement. These efforts are essential to maintain the integrity of livestock markets, protect traders, and reduce economic losses associated with rustling. According to Guzman and Verstappen (2003), documentation in the livestock market refers to the process of recording and tracking the source, ownership, and movement of animals being bought, sold, or transported. This includes documentation such as check-ins, check-outs, animal offenses, sales, slaughter documentation, and other legal information required by local and national regulations.

Livestock market operations depend heavily on comprehensive and accurate livestock information generation which is crucial not only for the smooth functioning of markets but also for maintaining the trust of market participants, stakeholders, and consumers. Furthermore, it plays a critical role in preventing cattle rustling activities, such as the trading of stolen livestock, which can undermine market integrity and lead to significant economic

losses. Mannir, et al. (2024) indicate significant challenges in the livestock information generation practices within Katsina State livestock markets. Issues such as the inability to trace the origins and movements of livestock have facilitated the trading of rustled animals, contributing to market inefficiencies and undermining the credibility of the entire livestock trading system. This article aims to explore the types and sources of livestock information for documentation and cattle rustling prevention in Katsina State. The investigation will enhance documentation and livestock information generation that can mitigate cattle rustling and support the sustainable development of regional livestock markets.

Statement of the Problem

The success of a livestock market depends on effective documentation that tracks key activities like animal check-ins, check-outs, sales, slaughter, and offenses. Comprehensive documentation of animal transactions, ownership, and movements are essential for markets to function well. However, the availability of such documentation largely depends on the generation of livestock information from credible sources. This documentation helps maintain trust among market participants and stakeholders, reduces the risk of cattle rustling, and ensures that relevant information is readily available for decision-making, thereby improving efficiency and reliability in the market.

The researcher observed that a large number of live animals are transported to livestock markets in Katsina State for trade, where they are quickly purchased and moved to various destinations, including other states and abattoirs. This rapid turnover made it difficult for market officials to verify the source and ownership of the animals, potentially enabling the trade of rustled animals. As a result, in September 2021, the Katsina State Government closed 14 major livestock markets due to officials' inability to track the origins and movements of traded animals, leading to job losses and hardships for those involved in the livestock business (Bashir, (2021)

Despite market officials' inability to provide adequate information on traded livestock, the Katsina State Government reopened all livestock markets in January 2022 without implementing a comprehensive strategy to improve documentation (Oyelude, 2022). This lack of proper livestock information generation poses a serious problem, as it facilitates the potential trade of rustled animals by failing to verify the sources, ownership, and movement of livestock. Therefore, there is a critical need to investigate the types and sources of livestock information generated by market officials to ensure successful documentation in Katsina State.

Objectives of the Study

The study was designed to achieve the following objectives:
1. Find out the types of livestock information being generated for documentation and cattle rustling prevention by market officials in Katsina State?

2. Reveal the sources of livestock information generated for documentation and cattle rustling prevention by market officials in Katsina State?

Literature Review

Information generation in livestock markets involves creating or obtaining data by market officials or receiving it from external sources like sellers, buyers, security personnel, and government agencies (Zanetti & Miraglia 2019). Livestock markets are required to generate information for their transactions that fully disclose the true ownership of the animals (Veer, Kundu & Mehta 2017). This information must correctly and fully disclose all purchases, sales, or transfers involving livestock. Bowling et al. (2008) found that 100% of livestock markets in Indiana collect information, including: a description and identification of each animal or group/lot received for sale or consignment, notes on livestock sold, the seller's or consignor's name and address, the date the animals were received, the buyer's or consignee's name and address, a description of each animal or group/lot sold to each buyer, the price paid for each animal, the number and live weight of each animal sold, records of individual animal identification (such as ear tags, ear notches, back tags, tattoos, or brands), and health certificates.

Moreover, a study by Moreki, et al. (2012) revealed that 72% of livestock markets in Tanzania agreed that when an animal is sold for slaughter, the dealer must mark "for slaughter only" on the bill of sale given to the buyer and maintained in the dealer's records. Tagging, tattooing nose prints, pictures, painting, and drawing animals are some of the different forms of identification that have evolved over the centuries. The Food and Agriculture Organization (FAO) (2017) emphasizes the importance of information such as muzzle/nose prints, pictures/sketches, tattooing, tagging, hair clipping, notching, painting, toe clipping, neck chaining, health status, sex, and genetic parentage, which are used by a Brand Inspector to record any stolen or missing cattle reported by a producer.

Sources of information in livestock markets are crucial for effective documentation and decision-making. They can be categorized as formal or informal, both playing a significant role in influencing livestock trading efficiency and competitiveness (Thapa & Murshed-e-Jahan, 2018). Formal sources are regularized or legally constituted, including trade associations, universities, government agencies, and market research organizations, which provide structured information. Informal sources, on the other hand, include business colleagues, external professionals, and personal contacts, offering valuable insights through less formal channels (Unuegbu & Adeleye, 2022). A study by Laudon & Laudon (2019) found that a significant proportion of respondents obtain information from external sources, such as mass media and government, while internal sources include community meetings and village traders.

In summary, the type of information generated refers to the information initially created by livestock market officials or obtained from external sources. It broadly encompasses the

details collected, recorded, or generated to track the origins, ownership history, and movements of animals within a livestock market. The categorization of information in livestock markets includes animal information (such as species, breeds, age, gender, health status, ear tags, radio frequency chips, tattoos, hair clipping, toe clipping, notching, and details indicating the source, breeder, or farm from which the animals originated), buyer, seller, and trader information (such as names, addresses, contact numbers, identification references, details of previous purchases, preferences, buyer behavior within the livestock market, and sales history), and transaction information (such as transaction specifics including date, type, quantity, price, identification details of animals, photographs or sketches, and animal sale permits required for trading animals within the market for legal sales).

By and large, Sources of information encompass various channels, containers, and origins that compile comprehensive documentation in livestock markets. The efficiency of livestock markets is significantly influenced by accessing accurate information from appropriate sources at the right time and place. Categorizing the channels or origins that provide essential information includes formal internal sources, such as district authorities, village heads, market chairpersons, and brand inspectors; formal external sources, such as sellers, buyers, veterinarians, security agencies, and butchers; informal internal sources, like colleagues, superiors, and subordinates; informal external sources, such as vigilant groups, drivers, *miyetti*-Allah (Fulani's group) representatives, and the general public. A trusted source of information fosters confidence in decision-making.

Methodology

The type of Survey research design adopted was cross sectional survey. The population of this study consisted of market officials from eighteen (18) livestock markets spread across sixteen (16) Local Government Areas in Katsina State amounting to five hundred and thirty-nine (539) respondents. The population of market officials in the livestock markets studied in Katsina State was divided into three (3) locations representing the senatorial zones in the state: Daura, Funtua, and Katsina zone. The researcher opted for a proportionate sampling method, selecting 30% of the livestock markets using a simple random sampling technique from each senatorial zone, A total of five (5) livestock markets, constituting of all the one hundred and ninety-eight (198) market officials, were selected as the sample for this study, as shown in Table 1. A questionnaire was used as the research instrument for data collection in this study. The data collected for the study was analyzed using descriptive statistics with a benchmark of 0.50.

Table 1. Sample Distribution of Selected Livestock Market officials in Katsina State

Location	No. of livestock markets	30% of livestock markets	Livestock markets selected	No. of market officials
Location1 Daura Zone	04	1	Mai'adua livestock market	**38**
Location 2 Funtua Zone	04	1	Sheme livestock market	**49**
Location 3 Katsina Zone	10	3	Kagadama livestock market	**36**
			Charanchi livestock market	**43**
			Dankama livestock market	**32**
Total	**18**	**5**	**5**	**198**

Findings and Discussion

The researcher distributed 198 copies of the questionnaire to market officials in various livestock markets. Of these, 142 questionnaires (71.8%) were returned, completed, and deemed useful for the analysis. The data collected with respect to the study's objectives were analyzed and discussed using the mean, with interpretations to clarify the findings. A benchmark of 0.50 was used for acceptance, as the data collected were binary, with values represented as "yes" or "no" (or 1 and 0). The benchmark was determined by averaging these binary values (1+0÷2 = 0.50). The following analysis and discussions are based on this approach.

Types of Livestock Information Generated for Documentation and Cattle Rustling Prevention by the Market Officials in Katsina State

A list of types of livestock information was provided for the respondents to tick the types of information they generate for documentation and cattle rustling prevention as shown in table 2

Table 2. Types of Livestock Information for Documentation and Cattle Rustling Prevention by the Market Officials in Katsina State

S/no	Types of Livestock Information	Mai'adua Livestock Market		Sheme Livestock Market		Kagadama Livestock Market		Charanchi Livestock Market		Dankama Livestock Market		Total Mean	Std
		F	Mean	F	Mean	F	Mean	F	Mean	F	Mean		
1	Animal information (breed, brand mark, colour, gender)	31	0.97	29	0.97	23	1.00	32	0.97	23	0.96	0.97	0.17
2	Picture/sketch of animal	18	0.56	22	0.73	14	0.61	17	0.52	12	0.50	0.58	0.49
3	Animal seller/producer information (Name, Address, National ID/NIN, Contacts)	32	1.00	30	1.00	23	1.00	31	0.94	24	1.00	0.99	0.12
4	Animal buyer information (Name, Address, National ID/NIN, Contacts)	31	0.97	30	1.00	23	1.00	33	1.00	24	1.00	0.99	0.08
5	Animal broker/Trader information (License, Name, Address, National ID/NIN, Contacts)	30	0.94	29	0.97	21	0.91	32	0.97	20	0.83	0.93	0.26
6	Transactions information (Price, Quantity, destination, mode of payment)	32	1.00	30	1.00	23	1.00	32	0.97	24	1.00	0.99	0.08
7	Permits (Animal sale permit, Movement, Loading, Offloading permit)	2	0.06	9	0.30	5	0.22	12	0.36	4	0.17	0.23	0.42

The analysis in table 2 shows that market officials in Katsina State prioritize information about animal sellers, traders, and buyers, each with a high mean score of 0.99. Animal information also holds significant importance with a mean score of 0.97, followed by transaction information at 0.93. Although pictures or sketches of animals are considered useful with mean score of 0.58. These results emphasize the strong preference for animal information, essential for effective animal identification and tracking. Pictures or sketches assist in visual documentation and help reduce disputes about animal attributes. Collecting data on animal sellers and producers is crucial for verifying ownership and determining the source. Recording buyer details is important for tracking transactions and maintaining records, while information about brokers and traders enhances transparency, accountability, and compliance. Lastly, transaction information is essential for accurate financial records.

Permits such as sale, movement, loading, and offloading are less favored, scoring only 0.23. This suggests that the continued exclusion or disregard of animal sale permits will likely facilitate the trade of rustled animals in these markets. This observation aligns with Veer, et al. (2017) findings, which emphasize the importance of sale permits issued by native authorities, who have traditional knowledge about community members and their livestock. Therefore, markets that do not generate animal sale, movement and loading permits during transactions risk allowing illegally obtained animals to enter and be traded in their markets.

Sources of Livestock Information Generation for Documentation and Cattle Rustling

Prevention by the Market Officials in Katsina State

A list of several sources of livestock information were outlined for the respondents to indicate the sources of information generation in their respective markets as shown in table 3

Table 3. Sources of Livestock Information Generated for Documentation and Cattle Rustling Prevention by the Market Officials in Katsina State

S/no	Sources of Information	Mai'adua Livestock Market		Sheme Livestock Market		Kagadama Livestock Market		Charanchi Livestock Market		Dankama Livestock Market		TotalMean	Std
		F	Mean	F	Mean	F	Mean	F	Mean	F	Mean		
1	Formal Internal (District, Village Head, Market Chairman, Brand Inspector)	28	0.86	30	1.00	22	0.96	30	0.91	19	0.79	0.91	0.28
2	Formal External (Seller, Buyer, Veterinarian, Security Agencies, Butcher)	31	0.97	30	1.00	23	1.00	32	0.97	24	1.00	0.99	0.11
3	Informal Internal (Colleague, Superior, Subordinate)	28	0.86	29	0.97	20	0.87	30	0.91	21	0.88	0.90	0.29
4	Informal External (Vigilant Group, Driver, Miyetti Allah, Public)	28	0.86	30	1.00	22	0.96	29	0.88	20	0.83	0.91	0.28

The results in table 3 show that formal external sources are the most critical for livestock market documentation, scoring the highest mean of 0.99. Formal internal and informal external sources both have a mean score of 0.91, highlighting their importance in the documentation process. Informal internal sources are also valued, receiving a mean score of 0.90.

These findings suggest that the trust and frequent utilization of formal external and internal sources of information in Katsina State's livestock markets may be attributed to the standardized nature of information collection methods. Additionally, formal external and formal internal sources of information are often associated with established institutions known for their integrity and expertise. Therefore, market officials are more inclined to trust information from sources with a proven track record of providing unbiased and accurate information. This observation aligns with the findings of Unuegbu & Adeleye (2022) highlighted that small and medium enterprises (SMEs) in Ekiti State, Nigeria, favor formal internal and external sources of information as they uphold a professional and systematic approaches to decision-making and market analysis, crucial in sectors where accuracy and reliability are paramount.

The acceptance of informal internal and external sources by market officials in Katsina State is likely due to their ability to provide quick, real-time updates through interpersonal interactions. These sources are valuable for immediate insights into rapidly changing situations, as they can offer unique perspectives and local contexts that formal

sources might not cover. This aligns with Veer, et al. (2017), who noted that informal discussions among industry insiders can reveal emerging trends and niche market dynamics. Informal sources also help in understanding community sentiment and public perception, and personal interactions with colleagues, superiors, and subordinates are seen as reliable for on-the-spot fact verification.

Conclusion

Based on the findings of this study, it is evident that market officials in Katsina State prioritize various types of livestock information for documentation and cattle rustling prevention, including information on animal sellers, traders, buyers, livestock, and transactions. The findings highlight the balanced reliance on both formal and informal sources to ensure comprehensive and effective documentation. However, animal permits, which are crucial for verifying animal ownership and legality, were notably excluded from the types of information considered by market officials. The consistent disregard for these permits poses a significant risk, as it may facilitate the entry and trading of animals acquired through illegal means. Integrating animal sale permits into the documentation process is essential for enhancing market integrity, preventing cattle rustling within livestock markets.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Livestock markets should include animal permits as the type of livestock information to be generated for verification purposes. District head can play a crucial role in issuing and validating animal permits to deter individuals from attempting to sell animals obtained through illegal means. By implementing this recommendation, livestock markets can reduce the risk of illegal animals entering the market.

2. Prioritize and enhance the use of formal external and internal sources for documentation. Also, leverage informal sources for real-time updates on market changes. Implement standardized procedures for documenting information from all sources and promote collaboration among formal institutions, informal sources, and market officials to build a more comprehensive information network.

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