

Performance and institutional dynamics of the Warehouse Receipt system in Tanzania: Evidence from Agricultural Cooperatives

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ABSTRACT

Purpose – This study examines the performance and institutional dynamics of the Warehouse Receipt System (WRS) in Tanzania, particularly in cooperative-managed crop markets. The study is important because WRS plays a strategic role in improving agricultural trade, market access, and farmers' bargaining power, yet its implementation still faces various institutional and operational challenges.

Design/methodology/approach – The study employed a mixed-methods approach by combining quantitative and qualitative data. Secondary data on crop production and sales were analyzed statistically, while qualitative information was collected through Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) to explore administrative, coordination, and institutional issues affecting WRS implementation.

Findings/Results – The findings reveal that the WRS has strengthened crop markets by increasing the volume and value of traded crops, especially cash crops such as cashew nuts, sesame, and coffee. The system also improved price stability and market credibility by connecting farmers with potential buyers. However, the benefits were uneven due to administrative weaknesses within cooperatives, power imbalances between buyers and sellers, weak institutional coordination, and limited participation of financial institutions in warehouse receipt financing.

Originality/Value – The study concludes that the effectiveness of WRS depends not only on market infrastructure but also on strong institutions, cooperative governance, and stakeholder coordination. The research highlights the importance of improving institutional quality and collaboration among stakeholders to ensure a more inclusive and effective agricultural marketing system in Tanzania.

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1. Introduction

Agricultural marketing systems play a critical role in enhancing food security, improving farmers' incomes, and promoting economic development in both developing and developed countries. However, in many parts of the world, especially in developing countries, agricultural markets are characterised by post-harvest losses, price volatility, limited access to finance and weak infrastructure (Tria et al., 2020; Akpa et al., 2023; Kaur & Watson, 2024; Benea & Ouko, 2025). These constraints often force small-holding farmers to sell produce immediately after harvest at low prices, thereby reducing their income potential (Channa et al., 2022; Rutta, 2022). In response to these challenges, structured marketing systems such as the Warehouse Receipt System (WRS) have been introduced to improve market access, efficiency, and the quality of produce, and to strengthen agricultural value chains (Riazi et al., 2024; Molela, 2025).

Globally, the WRS has been recognised as an effective tool for enhancing agricultural trade, stabilising prices, and facilitating access to credit (Martin, J., & Shikunzi, O., 2024). The WRS allow farmers to store their produce in certified warehouses and obtain receipts that can be used as collateral to delay sales until market conditions improve or for loans. Recent evidence shows that WRS contributes to improving price discovery, reducing post-harvest losses, and strengthening linkages between farmers and formal markets, thus have been used in both developed and developing countries as a tool for improving agricultural productivity, access to markets and promoting financial inclusion to farmers (Shao et al., 2023; Safo et al., 2023; Alawode & Chiamaka, 2024).

In developing countries, particularly in Sub-Saharan Africa, implementing the warehouse receipt system has presented both challenges and opportunities. Studies indicate that the warehouse receipt system can improve market access, reduce exploitation by intermediaries, and enhance farmers' bargaining power (Aboagye, 2023; Asare et al., 2025). However, other studies highlight that the effectiveness of WRS in Africa is often constrained by weak institutional capacity, limited awareness among farmers, high transaction costs, poor storage facilities and governance challenges within cooperatives (Stathers & Mvumi, 2020; Ndunguru et al., 2025; Olarewaju et al., 2025). As such, its use and implementation across the commodity value chain remain relatively limited in Sub-Saharan Africa, particularly among cash crop producers (Asare et al., 2025).

In Tanzania, the Warehouse Receipt System (WRS) was introduced in 2007 during the 2007/2008 cashewnut marketing season. In this context, a warehouse receipts system is a trade in which produce is stored in a licensed warehouse. The owner of the commodity receives a warehouse receipt that certifies the title of the deposited produce, including specific ownership, value, type, quantity, and quality (grades). The warehouse receipt system is an important component of cooperatives in marketing produce, in which cooperatives, as owners, deposit produce in licensed warehouses (Zakayo, E., & Ndiege, B. O., 2021). In Tanzania, the WRS has been increasingly recognised as a vital tool for promoting agricultural development, particularly among smallholder farmers. The WRS improves market access for farmers, especially those who often face challenges finding reliable buyers and securing fair, competitive prices for their produce. By providing a more structured and transparent market environment, the WRS enhances the bargaining power of smallholder farmers and enables them to achieve better market outcomes (Martin & Shikunzi, 2024).

Existing studies suggest that, despite WRS's role in improving farmers' incomes by securing good prices through the attraction of potential buyers, its effectiveness is constrained by operational and institutional challenges. Empirical evidence highlights delayed payments, lack of accountability, limited access to markets, weak cooperative governance, loss of produce, reduced loss, and others (Nangameta, 2022). Existing studies in Tanzania suggest a lack of integrated analysis that combines quantitative market performance indicators with qualitative institutional insights. Specifically, limited studies have examined how crop production volumes and market values under the warehouse receipt system relate to marketing stages, stakeholder roles, and operational challenges within cooperative systems. Understanding these interactions is essential for identifying inefficiencies and improving the overall effectiveness of warehouse receipt system.

Based on these gaps, this study provides a comprehensive analysis of the WRS in Tanzania by integrating various data sources and analytical viewpoints. The study utilises secondary data on production volumes and market values of crops marketed through the warehouse receipt system to assess system performance. In addition, qualitative data obtained from Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) with cooperative unions are used to identify key institutional and operational challenges. The study also examines the roles of different stakeholders and examines the stages involved in crop marketing under the warehouse receipt system framework to identify blockages and coordination concerns.

Therefore, the objective of this study is: (1) to assess the performance of the WRS in terms of production volumes and market values of crops marketed through agricultural cooperatives; (2) to identify key operational and institutional challenges affecting the implementation of WRS; (3) To analyze roles of stakeholders and the processes of crop marketing within the WRS. Therefore, this study contributes to the body of knowledge and provides a more wide-ranging understanding of controlled agricultural marketing systems in Tanzania, thereby enabling the findings to be replicated in other developing countries in a similar context.

2. Literature Review & Hypothesis Development

The study is guided by two theories, such as Transactions Cost Theory (TCT) and Institutional Theory. The Transactions Cost Theory, originally developed by Ronald Coase in 1937 and further expanded by Oliver Williamson in 1985, explains how economic actors organise transactions in ways that minimise costs such as search of markets, negotiations, and enforcement. In agricultural markets, transaction costs are typically high due to poor infrastructure, fragmented supply chains, and limited access to reliable market information (Rindfleisch, 2020). The WRS is used to reduce these transaction costs by providing structured mechanisms for grading, storage, and collective marketing. By allowing farmers to delay sales, have bargaining power and use warehouse receipts as collateral, the system reduces insecurity and improve price competitiveness. According to the World Bank, warehouse receipt system enables smoothing the supply and prices in the market, improving grower incomes, and reducing food losses (Otabor-Olubor, 2026). In this study, Transaction Cost Theory is used to explain how WRS improves market performance, mainly in terms of production volumes and sales, when there are reduced transaction costs, farmers are most likely to participate in structured markets and fair price outcomes.

Institutional Theory emphasises the role of both formal and informal rules, governance structures, and enforcement mechanisms in shaping economic behaviour (Magnano et al., 2024; Abigeal, 2026). The effectiveness of market systems depends on the strength and

reliability of the institutions that support them. In the context of WRS, institutions include agricultural cooperatives, regulatory authorities, market intermediaries and financial institutions. The performance of the system is influenced by how well these institutions coordinate and enforce rules, lack of transparency, weak governance, and poor coordination can reduce trust and depress participation. Aboagye (2023) notes that institutional weaknesses, including operational and governance challenges, limit the effectiveness of WRS in developing countries. In this study, Institutional Theory helps explain the challenges identified through FGDs, including financial constraints, governance issues, and coordination failures among stakeholders.

In addition, recent empirical studies on the WRS have increasingly focused on its effectiveness in improving agricultural access to finance and markets and farmers' participation, particularly in developing countries. A recent study by Aboagye (2023) examined the performance of warehouse receipt systems across several African countries, including Uganda, Ghana, Zambia and Malawi. The study found that while WRS has strong potential to improve smallholder farmers' incomes and market access, its efficiency is often constrained by inappropriate system design, high operational cost and institutional weaknesses.

A study by Asare et al., (2025) on perception and willingness to participate in warehouse receipt system: insights from cashew farmers in the Bono region of Ghana, found that farmers strongly perceived that WRS augmented credit and market access. In addition, household size, farm size, perception of collateral, annual income, and higher selling price determined farmers' willingness to participate in warehouse receipts system.

A study by Barkatullah et al., (2021) on opportunities and challenges of implementing the legal policy of the warehouse receipt system in improving farmers' welfare and food security. Found farmers receive legal protection, both in terms of guarantees from banks and other financial institutions and in terms of legal security for farmers using the WRS to obtain bank loans backed by guarantees, whereby it is possible to transfer warehouse receipts and security in the form of invoices raised.

Susiana et al. (2021), in their study on opportunities and challenges in the Utilisation of Warehouse Receipts for Coffee Farmers in Central Aceh District, found that farmers and farmer groups have the opportunity to obtain financing using Warehouse Receipts as collateral. However, some farmers and farmer groups still use the mechanism of selling coffee directly to collectors, which harms them in some situations. The farmers do not use this warehouse receipt system to obtain financing from the bank or to delay selling.

In the Tanzanian context, current studies offer more localised insights into the opportunities, challenges and performance of WRS. A study done by Molela (2025) found that while the warehouse receipt system enhances market linkages and improves returns for smallholder farmers, existing marketing structures do not adequately support value addition and efficient trading of processed agricultural products. Likewise, the study by Temba and Njau (2024) found that participation in WRS is positively influenced by access to extension services, education, price predictability and market accessibility, while factors such as limited access to credit and delayed payments negatively affect participation in WRS. The findings also indicate that market and institutional-related factors play an important role in influencing the extent of farmers' engagement in the warehouse receipt system.

Overall, recent empirical studies demonstrate that while warehouse receipt systems have the potential to improve access to finance, farmer income, and market efficiency, their effectiveness depends heavily on stakeholders' coordination, institutional arrangements, and

operational efficiency. Moreover, most existing studies tend to focus on either financial outcomes or farmer participation, with limited integration of market performance indicators, stakeholder's roles, and marketing processes within a single analytical framework. This gap underscores the need for broad study that combines qualitative institutional insights with quantitative performance data, as undertaken in the present study.

3. Methodology

Research Design and Approach

This study adopts a mixed-methods research approach, integrating both qualitative and quantitative techniques to examine the performance and institutional dynamics of the WRS in Tanzania. This design is appropriate because the study seeks to assess both measurable performance outcomes and, at the same time, explore the institutional arrangements, stakeholder interactions, and governance practices that shape these outcomes. The study employs a convergent research design of which both qualitative and quantitative data are collected during the same phase, analyzed separately, and then integrated during interpretation, which allows triangulation and enhancing the validity of findings (Saiful & Setyorini, 2023).

Study Area

The study is conducted in selected regions of Tanzania where the Warehouse Receipt System is operational and where agricultural cooperatives actively participate in crop marketing through licensed warehouses. These areas are characterised by the presence of certified warehouses, Agricultural Marketing Cooperative Societies (AMCOS), and arrangements with regulatory, market and market institutions supporting the warehouse receipt system. The selection of study areas reflects crop multiplicity and the practical operational of the warehouse receipt system across different agricultural value chains.

Study Population

The study population includes institutions and actors directly engaged with the Warehouse Receipt System. These encompass AMCOS participating in warehouse receipt procedures, warehouse operators, regulatory bodies such as the Warehouse Receipts Regulatory Board (WRRB), Tanzania Cooperative Development Commission (TCDC), Cereals and Other Produce Regulatory Authority (COPRA), Tanzania Mercantile Exchange (TMX), local government officials, and commodity buyers. Although various actors are involved, the agricultural cooperative society remains the primary unit of analysis, as it serves as the main link between smallholder farmers and the warehouse receipt system.

Sampling Techniques

The study employed purposive sampling to select agricultural cooperatives, as they play a key role in WRS. This technique was employed since the warehouse receipt system is employed in some crops. Likewise, purposive and criterion-based sampling was used to select participants for Key Informant Interviews and Focus Group Discussions. Group discussions was organized based on crop types traded through the WRS to capture crop-specific institutional and performance dynamics. Key Informants were selected based on their experience, professional roles, and involvement in decision-making and implementation of the warehouse receipts system.

Data Collection Methods

The study employed focus group discussions (FGD), key informant interviews (KII), and documentary review as methods of data collection. Documentary review involved gathering

data from annual reports, cooperative records, warehouse transaction statements, and institutional documents. These data include information on quantities of crops marketed through the warehouse receipt system and sales realised. Secondary data provided indicators of WRS performance at the cooperative level. FGDs were conducted with cooperative leaders involved in WRS operations. The discussions were organised by crop type to allow participants to share experiences related to storage, production, marketing, and institutional arrangements specific to each crop. The discussions examined perceptions of the benefits of the warehouse receipts system, trust, challenges, governance practices, transparency, and internal cooperative dynamics. These FGDs facilitated collective reflection and helped capture power relations and social norms within cooperatives. Additionally, KIIs were held using semi-structured interview guides with cooperative managers, representatives of financial institutions, regulatory officials, warehouse operators, and local government authorities. KIIs provided detailed insights into regulatory enforcement, institutional coordination, political influence, policy implementation, and systemic constraints affecting the performance of the WRS. These interviews were crucial for understanding the institutional dynamics beyond cooperative-level outcomes.

Variables and Units of Analysis

For the quantitative data, the performance of the Warehouse Receipt System was assessed using variables such as the volume of produce marketed through the WRS and the monetary value received compared. These variables are measured using monetary values and physical quantities as recorded in institutional records and cooperatives. For the qualitative data, the units of analysis included institutional arrangements and processes within and around agricultural cooperatives. These encompass leadership accountability, trust among members, governance structures, coordination between agricultural cooperatives and regulatory enforcement, external institutions, and perceived fairness and transparency of the WRS. These elements were examined to understand how institutional dynamics influence performance outcomes.

Data Analysis Techniques

The analysis of data considered types of data collected, quantitative data collected were analyzed using descriptive statistical techniques such as trend analysis. The analysis focuses on assessing different crops and marketing seasons, whereby, comparative analysis was conducted to examine variations in performance across crop types. Qualitative data from KIIs and FGDs were analysed using thematic analysis, whereby interview and discussion transcripts were coded to identify recurring patterns and themes related to power relations, institutional governance, trust, coordination, and regulatory effectiveness. Therefore, findings from qualitative and quantitative analyses were triangulated to provide a comprehensive and coherent understanding of the WRS's performance and institutional dynamics in Tanzania. Furthermore, to thematic analysis, world cloud analysis was employed as a complementary qualitative data visualization technique.

4. Result and Discussion

Result

Process and Stakeholders of Warehouse Receipts System

The following are processes of marketing agricultural produce through WRS: -

Farmers delivering produce to the cooperative

Farmers who are members of primary cooperatives in this context is called the depositor who deliver her/his produce to the primary cooperatives. According to the Cooperative Societies Act of 2013, the primary cooperative society acts on behalf of its members to assemble, manage, and market agricultural produce through approved institutional channels.

Primary cooperative society conducts preliminary handling procedures

The primary cooperative societies conduct initial handling procedures, such as inspecting quality, weighing, and storing in considering established crop standards stipulated in marketing guidelines of a specific season and crop also complying with specific cooperative by-laws. This stage ensures that crops meet minimum quality requirements before being stored into the primary warehouses to avoid refusing crops at warehouse.

Primary cooperative societies deliver the assembled produce to a licensed and bonded warehouse

Subsequent initial inspection, primary cooperative societies delivers the farmers produce to a licensed and bonded warehouses operating under the Warehouse Receipt Act. Only warehouses licensed by the WRRB are authorised to receive and store produce under the WRS. Transportation and delivering produce are done by complying to procedures set out by relevant crops boards, TCDC and cooperative unions.

Licensed warehouse operator undertaking official reception procedures of crops

The licensed warehouse operator receives produce, after verifying quantity and quality, grades and recording of the stored commodity. After accepting the produce, the warehouse operator issues a warehouse receipt. The Warehouse receipt creates legal evidence of ownership and specifies the type, quantity, grade, and condition of the stored produce, whereby this information are stored in the system.

Warehouse operator communicates details of the stored products to the cooperative unions and other relevant institutions

The warehouse operator formally communicates details of the stored produces to the specific cooperative union of which the primary cooperative is a member and other relevant institutions based on the specific crop. The aim of reporting is to facilitate central coordination of the record-keeping, marketing activities, and regulatory oversight within the WRS.

The cooperative unions announce the stored produces for sale

The cooperative unions act as the marketing agent, which announces the availability of the produce for sale. In line with organized trading schedules approved by the Government, cooperative unions prepare the produce for sale through transparent mechanisms and competitive. These include auctions conducted under recognized platforms such as the TMX, where applicable.

The sale of produce

Agricultural produce is sold through the auction in accordance with the Warehouse Receipts Act, the Commodity Exchanges Act and other related trading guidelines. This promotes competitive prices and transparency among buyers and stakeholders while ensuring that farmers and cooperative societies benefit from market access.

Payments

After the auction, the successful buyer pays all payment farmers and statutory obligations within the prescribed timeframe. After confirmation of payment and settlement of applicable charges, the cooperative unions provide a proof to the warehouse operator to release the agricultural produce to the buyer. The buyer then collects the agricultural produce from the

licensed warehouse where it was stored. In payment to farmers, financial institutions play a great role of facilitating payment from cooperative unions.

Power Relation within the Warehouse Receipt System

Power within the warehouse receipt system is unequally distributed between stakeholders. Regulatory power is concerted in the warehouse receipts regulatory board, which determines the licensing, compliance, and enforcement. This provides the regulator robust power over warehouse operators and, indirectly over cooperative societies that depend on licensed warehouses to access the system.

Market power is basically applied by buyers, particularly in crops with inadequate competition or limited buyers, while auctions are planned to ensure price discovery, buyers with more financial capacity can exercise influence over prices, especially where the cooperatives' bargaining capacity is weak.

Institutional power lies with cooperatives and warehouse operators, who control information flows on grades, sales timing, volumes, and market access. Primary cooperatives and farmers are basically dependent on these actors, which can create irregularities if accountability and transparency mechanisms are weak.

At the lowest of the power hierarchy are farmers, who have limited direct influence over the timing of sales, pricing, or institutional decisions. Their interest is mediated through cooperative societies, making cooperative governance an acute determinant of whether farmers benefit equitably from the warehouse receipt system.

Market performance of the warehouse receipt system

Table 1 shows that the WRS throughput increased from 493,038.36 tons (TZS 1.03 trillion) in 2023/2024 to 732,009 tons (TZS 3.03 trillion) in 2024/2025, demonstrating substantial expansion in both traded volumes and value. Cashew nuts remained the dominant produce, accounting for the largest share of total weight and value in 2024/2025. This is because it was the first crop to adopt the warehouse receipt system in Tanzania, followed by sesame and coffee. While some crops, such as pigeon peas and green grams, recorded strong increases in participation and traded value, others, such as soybeans, experienced declines. Notably, coffee and cocoa exhibited reduced tonnage but sharply higher traded values, suggesting improved price realisation and/or quality effects within the WRS.

Table 1. Crops marketed through the warehouse receipt system in Tanzania

Crops	2023/2024 Season		2024/2025 Season	
	Weight (Tons)	Value (TZS)	Weight (Tons)	Value (TZS)
Cashew nuts	240,099	450,913,729,030	406,362	1,461,679,068,454
Coffee	93,662	86,141,997,476	53,532	605,737,995,702
Sesame	103,771	277,917,432,861	145,297	534,429,302,261
Cocoa	11,499	129,085,758,200	8,841	190,172,687,188
Pigeon peas	38,883	79,098,382,311	96,044	190,803,447,143
Soybeans	5,023	4,479,676,110	1,204	1,812,093,471
Green grams	101	136,147,500	20,729	40,809,705,710
Total	493,038	1,027,773,123,488	732,009	3,025,444,299,929

In addition, the KIIs with TCDC, COPRA and WRRB officials revealed that the Warehouse Receipts System helps the government and its stakeholders to get correct statistics on produce stored and released from the warehouse after sales, with information on the type of crop, the area where the crops were produced, the level of crops, and the quality of the crops. These

statistics have helped the government develop plans to expand various sectors, including agriculture, and to address challenges arising in the relevant product sectors.

In addition, there is an increased collection of crop tax by the District Councils in specific areas where the warehouse receipts system is implemented. The system enables the collection of crops and makes it easier for the buyer to purchase them together. When selling crops, the government can collect tax directly after the buyer pays. Likewise, after the Warehouse Receipt System was implemented, crop prices have been increasing compared to before. For example, before their system, cashew nuts were sold for 350 Tsh in the 2006/07 season, and after the system, they reached 925 Tsh in the 2007/08 season.

In the green gram crop, the system was implemented in the 2019/20 season. The average price before the system was 400-700 Tsh for the 2019/20 season, and after the system, it increased to an average of 1,800 Tsh. In the 2020/21 season, sesame was sold outside the system at 900 Tshs per kilo, and through the system at an average price of 2,420 Tshs per kilo in Mtwara and Lindi Regions. In the cocoa crop, before the introduction of the Warehouse Receipts System, the average price was between 1,500 - 2,000 Tsh per kilo. After starting to use the system on this crop in the 2018/19 season, the price increased to an average of 4,644 Tshs. However, in the ongoing season (2023/2024) the price has continued to improve to a high of 10,000 Tshs per kilo. The Pea crop before 2023 was sold at an average price of 300 to 500 Tshs per kilo outside the system and after starting to use the Warehouse Receipts system for this crop, the price increased to an average of 2,081 Tshs in the Mtwara, Lindi, Ruvuma, Morogoro and Manyara Regions.

Administrative, Operational and Systemic Challenges of WRS

The results of the focus group discussions (FGDs) indicate that implementing the WRS faces various administrative, operational, and systemic challenges across different crops.

In the case of cashew and sesame, FGD participants stated that the major challenges include crop quality, product losses, and political issues in managing key information. In addition, there were reports of crop losses in warehouses and allegations of collusion among warehouse operators, which reduced farmers' confidence in the WRS system.

In the case of coffee, FGD participants noted that the main challenges were related to the market system and cooperative management. Participants explained that cooperatives have little freedom to seek alternative markets, which puts farmers at risk of exploitation by cartels. One participant noted: *"Cooperatives do not have the freedom to seek alternative markets, so farmers remain in the hands of cartels."*

Regarding peas and cocoa, FGD participants highlighted challenges in infrastructure, markets, and the weak management of marketing activities. It was stated that transportation costs are high relative to the small price differentials between crops, which reduces farmers' profits. As one participant explained: *"Transportation costs are high, but the price differentials are very small, like ten shillings."*

In addition, the presence of many brokers was cited as distorting market performance by reducing farmers' incomes. In addition, some cooperatives have poorly functioning marketing departments and lack the resources to conduct marketing activities.

In general, across all crops, participants identified common challenges in governance and accountability within cooperatives, including a lack of integrity among some AMCOS leaders. There was also a lack of effective legal mechanisms to hold buyers accountable for contract default. The Tanzania Mercantile Exchange (TMX) system and open auctions were also cited as having a negative impact on farmers, with some participants suggesting eliminating open

auctions because they appear to depress prices and benefit buyers more than sellers. Generally, these findings indicate that, despite the WRS's goal of improving crop markets, its implementation is hampered by administrative challenges, institutional weaknesses, and shortcomings in marketing systems and cooperative management.

Discussion

Process and Stakeholders of Warehouse Receipts System

The findings indicate that the marketing process under Tanzania's WRS follows a well-defined and legally embedded sequence, beginning with cooperative-based aggregation and ending with structured sale through regulated trading mechanisms. This alignment between practice and the Cooperative Societies Act (2013) suggests a relatively strong institutional foundation for WRS operations. Similar conclusions are reported by Aboagye (2023), who emphasises that WRS performance in African contexts depends on the credibility of receipt issuance, the role of producer organisations, and institutional enforceability. The Tanzanian case supports this view, showing that cooperative-led grading and licensed warehouse verification are central to building market confidence.

This issuance of warehouse receipts following independent verification by licensed warehouse operators emerges as a critical coordination mechanism. This finding aligns with recent studies indicating that farmer participation in WRS is strongly influenced by trust in institutional procedures, transparency of auctions, and reliability of payment systems. Thus institutions credibility, rather than price incentives alone, underpins sustained engagement with WRS marketing channels (Atmaja, 2020; Riazi et al., 2023; Fauzi, 2023; Asare et al., 2025). The study further supports empirical evidence that structured sale mechanisms-such as auctions coordinated by cooperative unions and commodity exchanges-enhance price discovery and reduce information asymmetry (Zakayo & Ndiege, 2021; Untari & Vellema, 2022; Patil et al, 2024).

The practice of WRS in Tanzania does not include farmers or cooperatives using the receipts provided in accessing finance from financial institutions, which is different from other countries including Indonesia (Tsary & Suryono, 2020), Malawi (Thunde & Baulch, 2020), Zambia (Aboagye, 2023) and Nigeria (Orji, 2024) using warehouse receipt as a collateral, processing the commodities. This has caused farmers to sell their produce soon after harvesting, instead of storing it and using the receipts as collateral to obtain financing from financial institutions to meet their needs.

Market performance of the warehouse Receipt systems

The results demonstrate a substantial improvement in the market performance of Tanzania's warehouse receipt systems (WRS), evidenced by the sharp increase in both traded volumes and transaction value between the 2023/2024 and 2024/2025 seasons. The expansion in throughout and value suggests growing confidence in structured community marketing and increased utilization of formal trading channels. Similarly, recent empirical studies across Sub-Saharan Africa have observed that WRS adoption is associated with higher marketed surplus, improved price discovery, and stronger integration of smallholder farmers into the formal market (Abogye, 2023).

The dominance of cashew nuts in both traded weight and value is consistent with existing evidence that export orientated and high value crops benefit most from WRS participation studies from Tanzania and comparable African contexts show that commodities with well-defined quality standards, strong institutions oversight and stable export demand tend to exhibit higher volumes and values under structured trading systems (Zakayo and Ndiege,

2021 & Molela 2025). Empirical analysis further suggests that the success of cashew under WRS reflects effective coordination among cooperatives, regulators, and buyers, which reduces opportunistic behaviour and enhances competitive bidding (Temba & Njau, 2025).

At the same time the heterogeneous performance across highlights structural differences within agricultural value chains. The rapid growth in pigeon pea and gram suggests expanding inclusion of legumes and non-traditional cash crops in WRS, consistent with recent policy efforts to diversify commodities traded through structured systems. However, the decline observed in soybean participation mirrors findings from other Empirical studies indicating that crops with weaker market coordination, limited processing capacity, or lower price incentives tend to attract less participation in WRS channels (Temba & Njau, 2025). These results underscore that WRS performance is commodity-specific rather than uniform across the agricultural sector.

Administrative, Operational and Systemic Challenges of WRS

This study supports other studies on constraints in WRS. This supports Molela's (2025) argument that existing WRS and exchange arrangements are optimized for bulk commodities rather than diversified value chains. Also, Maharani et al. (2025) & Hasan et al. (2025) revealed that despite the potential of auctions, there are also challenges, such as operational costs, limited digital literacy, and competition with local traders. Furthermore, allegations of crop losses and collusion among warehouse operators are consistent with the broader literature on the political economy of agricultural markets in Africa, which notes that where regulatory and accountability systems are weak, powerful groups can use information and infrastructure to manipulate market outcomes for their own benefit (Aboagye, 2023; Vilakazi & Roberts, 2018). In the case of coffee, cocoa, and beans, the FGD findings highlight challenges including limited cooperative autonomy, high infrastructure costs, price delays, and weak market coordination, which have also been reported in many recent studies. Studies on WRS in Africa show that when cooperatives lack the freedom to seek alternative markets or operate in environments with insufficiently competitive auctions, farmers remain vulnerable to exploitation by speculators or small-buyer groups (Aboagye, 2023; World Bank, 2024).

The participants' argument about the negative impacts of open auctions and TMX on farmers is also supported by existing research that shows that, while online markets like TMX increase transparency and competition for some crops, their benefits depend heavily on the number of buyers, the quality of information, and the ability of cooperatives to negotiate on behalf of farmers (TradeMark Africa, 2022). Furthermore, high transportation costs and weak infrastructure, particularly for peas and cocoa, have been identified in regional studies as major constraints that reduce farmers' profits even when price differentials increase (Kuteyi & Winkler, 2022; World Bank, 2024).

5. Conclusion and Suggestion

Conclusion

This study concludes that the WRS in Tanzania has remained an important institutional tool for improving agricultural commodity markets, enhancing trade transparency, and linking smallholder farmers to formal markets. The marketing process under the WRS is largely consistent with existing legal frameworks, indicating a strong institutional foundation that can be further developed. However, the study notes that the benefits of the WRS have not been spread evenly across all crops and stakeholders. Administrative and institutional challenges, such as weak governance within cooperative societies, poor coordination among institutions,

an imbalance in power between buyers and sellers, and limited participation by financial institutions, continue to affect the effectiveness and inclusiveness of the system.

In this sense, the effectiveness of WRS is determined not only by market outcomes, but also by the accountability of stakeholders, the quality of institutions, and the capacity of coordination systems to manage the complex relationships between farmers, warehouses, cooperatives, buyers, and policymakers. By integrating market performance analysis with institutional and social dynamics, this study contributes to the broader literature by providing evidence that the success of organized marketing systems like WRS in developing countries depends more on the strength of institutions and governance than on market infrastructure alone.

Suggestion

Based on the findings of this study, it is recommended that the Government and policy stakeholders, particularly through the WRRB, further strengthen the implementation of the WRS system by focusing on transparency, accountability and coordination of the various institutions involved. Policies should focus on strengthening the governance and capacity of cooperative societies through professional training and on leaders' accountability to ensure that farmers' interests are fully protected. In addition, there is a need to improve financial policies to encourage financial institutions to extend warehouse receipt-based loans to crops. At the market level, the Government and market regulators, such as the Tanzania Mercantile Exchange (TMX), should improve price discovery and market information access to reduce the power of a few buyers and increase fair competition. Finally, agricultural and trade policies should align WRS with value-addition strategies and transport and storage infrastructure to ensure that the warehouse receipt system not only improves the export of raw materials but also effectively contributes to the inclusive development of the agricultural sector and the incomes of smallholder farmers in Tanzania.

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