Farmers' Integrated Agricultural Marketing in Tanzania: Can't the Digital Warehouse Receipt System Work?

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ABBREVIATIONS

AMCOS	Agricultural Marketing Co-operative Societies
COMEX	Commodity Market Exchange
FIFO	First In First Out
LOP	Low of One Price
REPOA	Research On Poverty Alleviation
TAM	Technology Acceptance Model
TCB	Tanzania Coffee Board
TMX	Trade Market Exchange (Tanzania)

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ABSTRACT

The Warehouse Receipt System implemented through the Agricultural Marketing Co-operative Societies (AMCOS) in Tanzania is optimistically viewed as one among the pro-poor strategies for farmers integrated agricultural marketing. Through inclusive agricultural marketing, small-scale farmers harness their collective strength in bulking of their produce for accessible markets, to participate and control in marketing of their produce for improved revenue, improved assets and capabilities of the poor - leading to improved productivity, especially in smallholder farmers, towards inclusive growth.

However, the following are observed in Warehouse Receipt System implemented through the AMCOS in Tanzania.

i. Avoidance of farmers' sense of ownership as evidenced by absence of a real mechanism for farmers' participation and control, and so low preference of the Warehouse Receipt System.

ii. Avoidance of checks and balances as evidenced by the cooperative leadership and management's perceptions on limited beneficiaries' participation; transparency and accountability; perceptions which account for reluctance to digital transformation in the Warehouse Receipt System, which translates to embracing of weak, inefficient and ineffective manual systems and processes; weak control;, breed of operations and performance challenges; and ultimately intensified low preference of the Warehouse Receipt System.

Low preference in the Warehouse Receipt System culminates in disserts and ruins of the central objective of the Warehouse Receipt System, exclusive agricultural marketing, low productivity in small holder farmers and so exclusive growth.

Although the manual systems and processes are embraced to the point that the impression is created that digital transformation is not possible and the strong, efficient and effective digital systems and processes in the Warehouse Receipt System cannot work through cooperatives - transformation and digital transformation in the Warehouse Receipt System implemented through the AMCOS in Tanzania is possible. The digital Warehouse Receipt System can work through the AMCOS, with consequent farmers integrated agricultural marketing - and so improved agricultural productivity and competitiveness in Tanzania. But with an external influence of the concerted and collaborative efforts from the three main economic agents, championed by the Civil Society, which should instigate the process and incorporate or put Cooperatives into action towards digital transformational change.

1. INTRODUCTION

1.1. Motivation

Agriculture employs more than 65% of the population. It is viewed as the backbone of the economy of Tanzania, and so expected to play a big role in poverty reduction in the country. It is among the expected 'game changer' sectors. Aligning to this, Tanzania is focused on attainment of trade competitiveness in the agriculture sector among other sectors, and so sustained human development and a need for uninterrupted distribution and supply chain and improved productivity in Agriculture, among other needs (Nchemba, 2021).

To ensure uninterrupted distribution and supply chain in agricultural trade along with improvement of agricultural productivity, especially with smallholder farmers, the government instituted a policy/strategy related change, namely the Warehouse Receipt System, implemented through the AMCOS, as among the attempts to transformation agriculture, but the following are evident (Nchemba, 2021).

- Low productivity in smallholder famers and so a difference in productivity between smallholder farmers and medium and large-scale farmers (NBS, 2019), and so exclusive growth. This contributes to low productivity and competitiveness in agriculture, as evidenced by its low contribution to GDP growth, as compared to other sectors, high levels of inequalities between agriculture and other sectors (Wineman, Jayne, Modamba, & Kray, 2020), (NBS, 2019). (WID-WORLD, 2019), (Ranieri & Ramos, 2013).
- The limited use of the Commodity Market Exchange (COMEX-TMX), despite the existence of the Warehouse Receipt System, which would be expected to facilitate the use of COMEX-TMX, and so a vulnerable distribution and supply chain in change in circumstances or a break out of crises likely to disrupt distribution and supply chains, like the COVID-19 crisis (Kidando & Venkatakrishnan, 2014).
- Smallholder farmers in Tanzania dissert the Warehouse Receipt System implemented through the AMCOS and opt for suboptimal disposal of their produce to middlemen, translating to exclusive agricultural marketing and exclusive growth (Mwandishi-Wetu, 2018), (Tunduru.D.C, 2018), (Afisa-habari, 2017), (Miruko, 2017), (Afisa-Habari, 2018), (Mwandishi, 2017).

Low productivity, limited use of COMEX-TMX and suboptimal disposal of produce to middlemen, implies the strategy (Warehouse Receipt System) is less useful and not preferred and this not only suggests incapability of grassroots institutions (at the finish line), to adapt to policy/strategy related changes and so unable to accommodate farmers integrated agricultural marketing towards the improved productivity in smallholder agriculture towards inclusive growth, but also inability to adapt to changes in circumstances like change related to climate, and so risking the distribution supply chain with consequent vulnerable agricultural trade (PytlikZillig, Hutchens, Muhlberger, Gonzalez, & Tomkins, 2018).

This further implies that grassroots institutions/organisations (at the finish line), specifically the cooperatives in this case, are not positioned to adapt policy/strategy related change and so unsuccessfully implement the policy/strategy as evidenced by smallholder farmers' detest of the Warehouse Receipt System, who opt for suboptimal disposal of their produce, implying exclusive farmers agricultural marketing, low productivity, exclusive growth and the ruined goal of the Warehouse Receipt System (PytlikZillig, Hutchens, Muhlberger, Gonzalez, & Tomkins, 2018).

According to Policy Preference Theories and the Policy Acceptance Model (PAM), the strategy/policy get disserted if the structure (system and processes) in respective implementing institutions or organisations are not suitable for implementation of the same strategy, or such organisation fails to transform in a manner that its systems and processes are not only capable of creating and maintaining farmers/users positive attitudes and preference, to at least the tolerance level, but also instilling and maintaining measures for 'stronger and more coherent, positive attitudes," and so maintained preference of same strategy, Warehouse Receipt System, in this case. The structure or systems and processes in cooperatives and the implemented Warehouse Receipt System are weak, inefficient and ineffective (PytlikZillig, Hutchens, Muhlberger, Gonzalez, & Tomkins, 2018).

As opposed to manually operated systems, the digital or automated system is consistent, interactive, capable of monitoring and control, inclusive and efficient, among other features, and *so "significantly associated with improvement of operational performance, productivity and profitability,"* Kromann & Sørensen (2019), Benjamin (2017). This suggests that automated systems and processes are more efficient and effective as compared to highly manual systems, and so allow for negligible operational challenges (Stone, 2019), (Trendov, Varas, & Zeng, 2019), (Ghosh, 2016) and (Pandey & Risal, 2020). Furthermore Juma (2015) argues that *"at its core, agriculture is knowledge-based and entrepreneurial"* and according to Trendov, Varas, & Zeng (2019), "Digital innovations and technologies may be part of the solution for productive, efficient, sustainable, inclusive, transparent and resilient systems".

For a period of more than 12 years since its institution embracing relevant *"new technologies by digitizing core business processes,"* (Luoga, 2019) and (Stone, 2019), and so the digital Warehouse Receipt System could have been created but cooperatives are reluctant as if cooperatives have gone ***"innovational/technological deaf"*** (Stone, 2019), and so embracing inefficient manual systems and processes as indicated by the Cashew Nut Board guidelines, whereby in (Part 3.3.3) directs that data regarding crops accepted from depositors at the warehouses should be entered/punched into the electronic system, daily, implying that data capture, storage and processing systems in cooperatives are highly manual as opposed to automated systems except for data collected by the Warehouse Licensing Board on behalf of the controllers. (CBT, 2021). Digital transformation could therefore serve the purpose of facilitating transformation in the AMCOS in a manner that farmers' positive attitude is created towards the Warehouse Receipt System, leading to its acceptance.

Had it not been adamant and being less adaptive with consequent innovational/technological deafness in cooperatives, the relevant digital transformation could have been opted for as among the best interventions that leads to improvement in systems and processes in both cooperatives and the Warehouse Receipt System - improvement that would institute named measures for stronger and more coherent positive attitudes of smallholder farmers towards the Warehouse Receipt System and so adaptive cooperatives. Adaptive cooperatives in this context means cooperatives capable of integrating smallholder farmers in marketing of their produce in the Warehouse Receipt System, automatic end of informal disposal, and so reasonable contribution to improved productivity, but in contrary adamant and less adaptive organisations at the finish line.

To contextualise the impact of adamant and less adaptive cooperatives with consequent suboptimal produce disposal out of the Warehouse Receipt System in Tanzania, consider the extract from the captured case of informal disposal of the sesame in 2022/2023.

Table 1:-Contextualising Suboptimal Disposal

INFORMAL SELLING BEFORE HARVESTING					
INFORMAL PRICE	AUCTION PRICE		AVERAGE PRICE	AV. PRICE MINUS INFORMAL PRICE	IMPLICATION
	LOWER PRICE	HIGHER PRICE			
1,000	2955	3184	3069.5	3069.5	2/3 = 89bln out of 134bln goes to the hands of few middlemen
INFORMAL SELLING AFTER HARVESTING					
No data found but the statement "This business earns me profit to three times of the invested capital" reflect similarity in data in informal sale before harvest.			2/3 = 89bln out of 134bln from sales of sesame in this season, of the farm income goes to the hands of few middlemen which translate to widened income inequalities		
CONSEQUENT OUTCOMES					
1	2/3 of farm income which equate to 89bln out of 134 billion from sesame sales in this season, translate to farmers being deprived of their abilities to build 3,466 houses each worth of 20,000,000, implying not only not only inequalities but also intensified poverty.				
2	If the lost 89bln had to buy food, implies inability to buy 59,555,555.56 kgs of maize at 1,500 per kg, which would feed 99,260 families for 6 months at an average consumption of 100kg of maize per month per family.				
3	If turning to charcoal production shall be the only alternative source of lost funds to buy food, then 8,933,333.33 bags of charcoal worth of 10,000 each shall need to get produced which translate to cutting of 893,333.33 trees under the assumption that one tree produces 10 bags of charcoal sold at 10,000 each.				
4	These occurs because of implementing the national policies and strategies are implemented through the less adaptive Co-operatives, notwithstanding (i) Cooperatives being widespread at the grassroots (at the finish line), (ii) Cooperatives being argued to be as old as civilization itself, and (iii) Co-operative model being argued to be suitable in formalizing informal business towards sustainable human development and inclusive growth. Won't these national policies and strategies, and international plans and strategies remain an illusion unless grounds for cooperatives adamancy get explored?				

Source: (Omary, 2022)

The impact of having adamant and so less adaptive institutions with consequent suboptimal disposal resulting from policy/strategy detest imply having national effective strategies and policies for sustainable human development, but such strategies and policies turn an illusion due to inefficient systems and processes in adamant institutions at the finish line. Intention to contribute to filling this gap motivated this study, towards digital transformation which:

- Is Safe to biodiversity and the ecosystem
- Sustains distribution and supply chain in agricultural trade, even when there is a change in circumstances or a breakout of crises likely to disrupt distribution and supply chain, like the COVID-19 crisis.
- Improve agricultural productivity with smallholder farmers

All these contribute to food security, adapting to climate change and alleviating poverty and inequalities in one way or the other, when the following core problem is addressed.

1.2. Problem Statement

Adamancy and being less adaptive with consequent reluctance or innovational deafness in digital transformation of the Warehouse Receipt System implemented through the AMCOS in Tanzania has been persistent to the point that it has created an impression that the **Digital Warehouse Receipt System cannot work through AMCOS (Agricultural and Marketing Cooperatives) in Tanzania,** and this is arguably attributed to the presence of factors that inhibit digital transformation in the Warehouse Receipt System.
In attempts to address this problem, the study aimed at the following:

1.3. Main Objective

To explore factors that inhibit digital transformation of the Warehouse Receipt System implemented through AMCOS in Tanzania.

1.4. Specific Objectives

1. To explore the justifiable and a support-worthy transformation need, and the digital transformation need in the Warehouse Receipt System, implemented through AMCOS in Tanzania.
2. To assess the possibility to craft the digitalisation model that could suit the digital transformation of the Warehouse Receipt System through AMCOS in Tanzania.
3. To explore the basic, missing conditions for digital transformation of the Warehouse Receipt System through AMCOS in Tanzania.
4. Pursue these objectives based on the theoretical background, with the same objectives.

2. THEORETICAL BACKGROUND

Inability of grassroots institutions to adapt changes results in exclusive farmers agricultural marketing, as evidenced by the farmers detest of the Warehouse Receipt System, and opt suboptimal disposal (Ranieri & Ramos, 2013), (Ianchovichina & Lundstrom, 2009), and (Alexander, Cardinal, & Armstrong, 2015). This calls for attention, but first a common understanding of the essence of farmers integrated agricultural marketing in the Warehouse Receipt System through AMCOS in Tanzania

2.1. The essence of farmers integrated agricultural marketing in the Warehouse Receipt System through AMCOS in Tanzania.

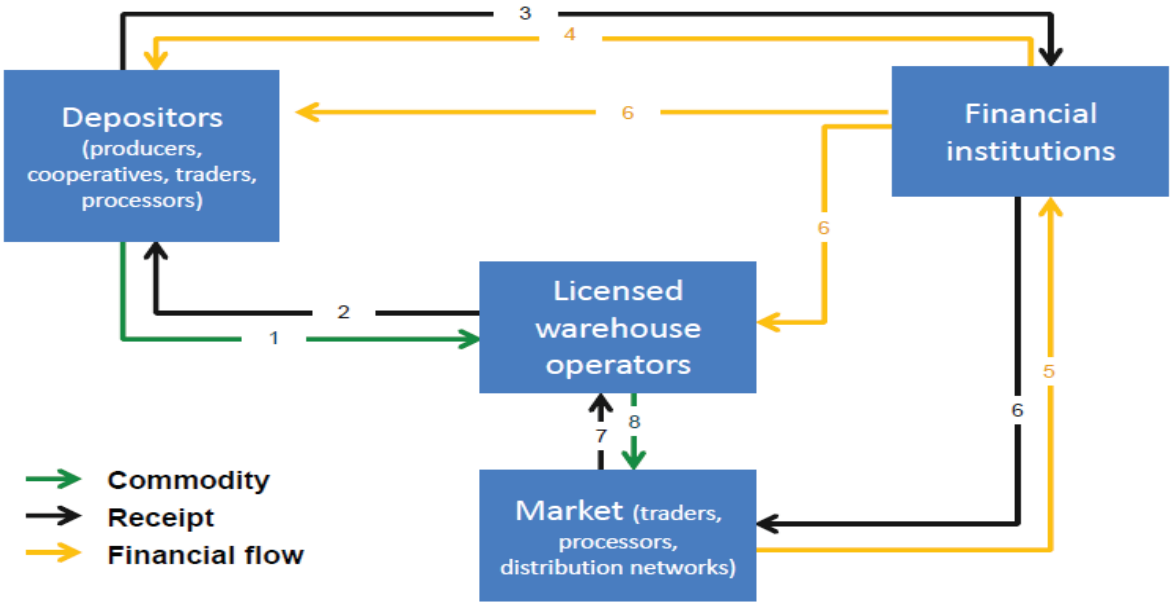
Agricultural Marketing: Is Performance, coordination and regulation of the marketing functions in a specified marketing channel/structure that forms the marketing system, whereby processes in such a system make the agricultural product available for consumption or use, at competitive prices (Crawford, 2006). In Agricultural Marketing, a warehouse is an important part in marketing and a number of arrangements are possible including the following:

i. An individual can own a warehouse and contain crops produced by the respective individual or procured from farmers by the respective entrepreneur (Vercammen, 2016).
ii. An individual can deposit crops at a warehouse owned and operated by an entrepreneur, whereby the crops are either produced or procured by the respective individual and be issued a Warehouse Receipt (Vercammen, 2016).
iii. A group of individuals can deposit crops at a warehouse owned and operated by an entrepreneur, whereby the crops are either produced or procured by the respective group of individuals and be issued a warehouse Receipt (Vercammen, 2016).

The Warehouse Receipt System: As part of agricultural marketing, the Warehouse Receipt System is a regulated, coordinated and efficiently functioning marketing structure/channel or strategy, whereby commodities (agricultural in this case), are communicated, traded and distributed by use of the Warehouse Receipt issued to the commodity depositor (farmer in this case), upon deposit and acceptance of the same commodity in the warehouse (Kidando & Venkatakrishnan, 2014), the theoretical structure is as illustrated in Figure 1 below.

Key features in the Warehouse Receipt System are farmers' ownership of crops deposited, and use of the Warehouse Receipt to access finance to meet immediate financial needs, while waiting for improved prices of their crops (Kidando & Venkatakrishnan, 2014).

Figure 1:- The Theoretical Warehouse Receipt System

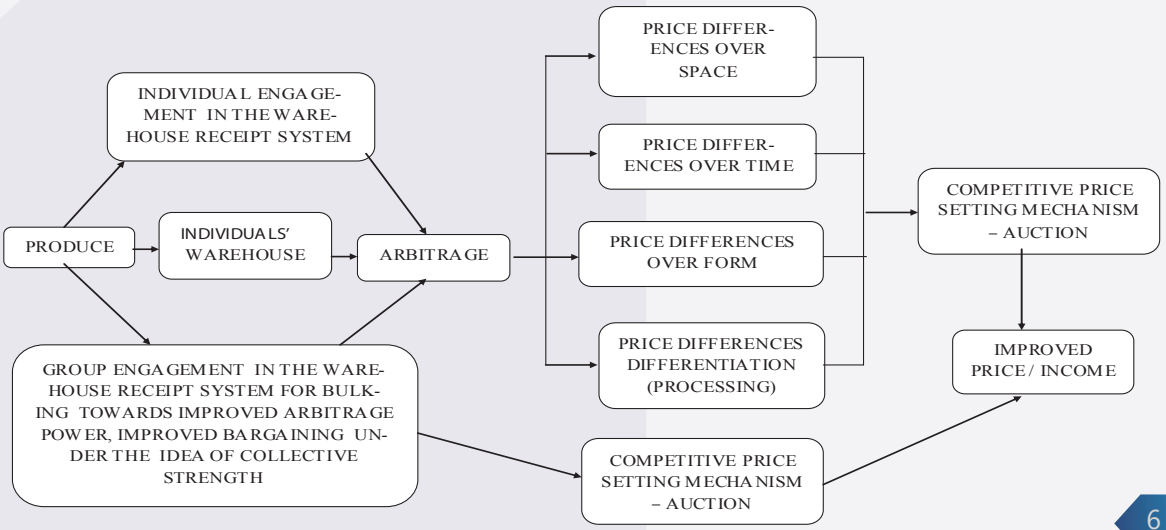


1: The depositor deposit the commodity at the Licensed Warehouse
2: The Warehouse operator issue a Warehouse receipt to the Depositor
3: The depositor uses the Warehouse receipt as collateral and secures a loan from the Financial Institution
4: The financial institution issue funds as a loan to the depositor
5: Upon sale of the deposited commodity, the buye rs deposit sales funds
6: The financial institution deduct the loan, pays the warehouse fee , issue the receipt to the buye r, and pays the balance to the depositor
7: The buye r presents the bought receipt to the Warehouse operator
8: The buye r secures the bought commodity

Source: (Kidando & Venkatakrishnan, 2014).

The position of the Warehouse Receipt System in Agricultural Marketing is illustrated below:

Figure 2: Position of the Warehouse Receipt System in Arbitrage for Improved Productivity Under the Law of One Price



(Vercammen, 2016).

The warehouse, therefore, facilitates holding of crops for a time to allow bulk selling or arbitrage by individuals or group of individuals in any affordable form, as determined by the Law of One Price (LOP), for improved income and productivity (Vercammen, 2016).
Among the groups under which the farmers organise themselves is AMCOS. In this context, AMCOS may be defined as *"an autonomous association of persons, united voluntarily to meet their common economic, social and cultural needs and aspirations, through jointly owned and democratically controlled enterprise"* (ICA, 1995), whereby farmers harness collective strength towards improved production, arbitrage and bargaining power under the competitive prices setting mechanism towards improved price and revenue, for productivity and competitiveness.

Although farmers do collect their crops under their organisations, namely AMCOS, and these crops are sold by the same AMCOS or their respective unions, the farmer must retain and exercise their individual rights to fully participate, control and make decisions regarding marketing and ownership transfer of their produce kept in the warehouse. Farmers' integrated agricultural marketing becomes necessary (Kidando & Venkatakrishnan, 2014), (Ranieri & Ramos, 2013), (Ianchovichina & Lundstrom, 2009) and (Alexander, Cardinal, & Armstrong, 2015).

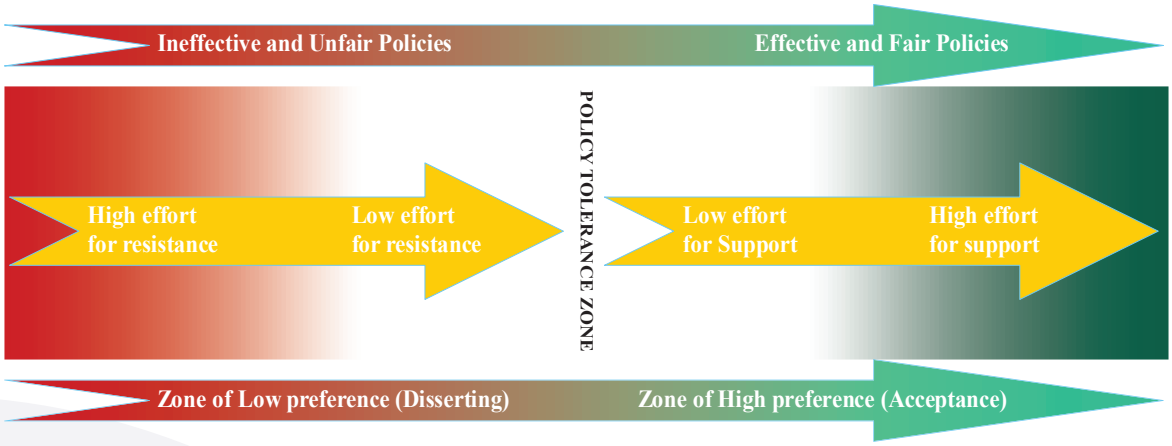
Farmers' Integrated Agricultural Marketing: Refers to marketing whereby smallholder farmers have full participation, control and decision-making in the marketing of their produce, through a specified strategy, the Warehouse Receipt System, in this case through AMCOS.

The core of farmers' integrated agricultural marketing therefore is the creation of a mechanism to ensure that farmers harness collective strength, address challenges related to smallholder farmers (including scattered and small-scale production, immediate disposal to meet immediate financial needs, limited ability to influence the market), remain owners of the commodities disposed through the Warehouses Receipt System, and thus farmers get integrated and fully participate in the management and control in marketing of their produce through the Warehouse Receipt System (ICA, 1995), (Ranieri & Ramos, 2013), (Ianchovichina & Lundstrom, 2009) and (Alexander, Cardinal, & Armstrong, 2015). To attain farmers integrated agricultural marketing through the Warehouse Receipt System implemented through AMCOS in Tanzania, AMCOS should be more adaptable to change and transformation, to become more effective.

2.2. Desirable Change in Cooperatives That Would Accommodate Farmers' Integrated Agricultural Marketing in the Warehouse Receipt System

With reference to transformation and Policy Preference Theories, cooperatives should therefore be adaptive to change so as to ensure attainment and maintenance of a positive attitude and so preference of the Warehouse Receipt System, at least beyond the policy tolerance level as illustrated in Figure 3, which translates cooperatives' ability to accommodate farmers' integrative agricultural marketing through the Warehouse Receipt System (PytlikZillig, Hutchens, Muhlberger, Gonzalez, & Tomkins, 2018).

Figure 3:-Policy Preference Continuum



(**PytlikZillig, Hutchens, Muhlberger, Gonzalez, & Tomkins, 2018**)

This can be possible if cooperatives can undergo transformation towards strong, effective, efficient structural mechanisms (systems and processes), which are capable of:

i. Allowing the full functioning of the Warehouse Receipt System in a manner that users or farmers derive utility, which was available in produce disposal at the farm gate price, namely sense of produce ownership to the point of ownership transfer, and instant access of funds for immediate financial needs, in addition to the new utility available in the Warehouse Receipt System, which is improved price. These create and maintain preference, at least at the policy tolerance level.

ii. Upholding measures that ensure implementation that follows appropriate processes, a mechanism for inclusive decision making and implementation, and a mechanism that ensures transparency and accountability (ensured sense of trustworthy implementing parties). These measures ensure *'stronger and more coherent, positive attitudes,"* and so maintain and move policy preference beyond the policy tolerance level and consequently full acceptance of the same policy/strategy, in this case the Warehouse Receipt System.

(PytlikZillig, Hutchens, Muhlberger, Gonzalez, & Tomkins, 2018)

The desirable change in cooperatives, therefore, is structural change in systems and processes, which would ensure creation and maintenance of positive attitudes, and consequently policy acceptance beyond the tolerance level.

As indicated in 1.1, theoretical evidence suggests that digital transformation can serve the purpose towards structural change in systems and processes in cooperatives, but under the willingness of the respective organisations, in this case the cooperatives.

2.3. Factors for Digital Transformation (Factors for Willingness to Initiate and Push the Digital Transformation) in the Warehouse Receipt System

The digital transformation of the Warehouse Receipt System means creation of a Warehouse Receipt System which serves as a *'unified platform, consisting of systems and processes which exploit digital technologies in a manner that fundamentally changes"* (Stone, 2019), how the respective users or administrators of the Warehouse Receipt System, namely unions and crop boards, 'collect and use data to positively influence" (Stone, 2019), interaction of the respective stakeholders, including the farmers as owners of the produce deposited. E-warehouse facilitates stakeholders', including farmers' interaction.

E-warehouse or Electronic Warehouse Receipt System may be defined as application of digital technologies in mediating governance processes (within a network of respective stakeholders, including farmers), including communication, interaction and coordination in governance of the Warehouse Receipt System as the marketing strategy, whereby information exchange, service delivery, decision making, control, efficiency in operations and transactions are improved, and principles of good governance are instilled (Ghosh, 2016), (Pandey & Risal, 2020), and (Puneet, Dharminder, & Narendra, 2014). Digital transformation is influenced by the following:

1. Absence of Justifiable and Support Worthy Transformational Needs and Digital Transformation Needs.

Digital transformation is the perceived systems and processes that need to get transformed towards addressing the observed performance and operational challenges to meet the perceived need for improved efficiency and effectiveness, otherwise reluctance. Relevant human capital with technological transformation talent, along with support from respective leadership and management is necessary in this (Stone, 2019).

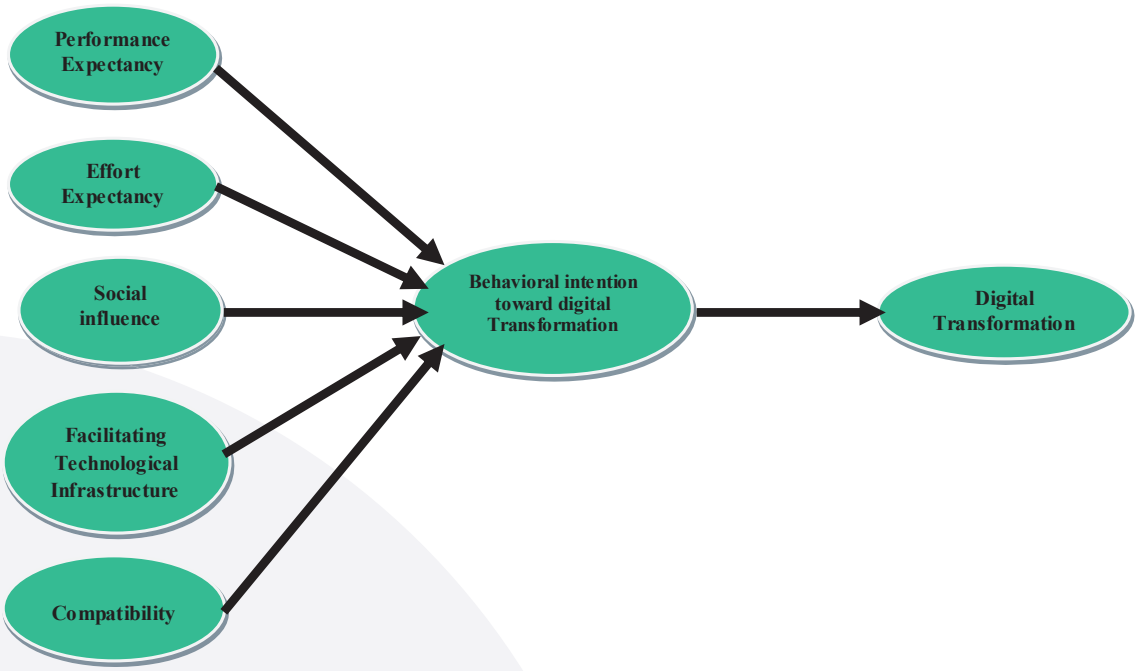
2. Absence of Relevant (Customized) Digital Transformational Model

The digital transformation should be made to fit the respective needs of transformation, and so warehouse digital transformation should be made to meet the perceived need. Following Stone's (2019), argument that "digital transformation is not an IT company," there is a possibility of halted willingness to transformation if the off-shelf digital transformation model is missing, unless there is a possibility to craft a model for the named digital transformation (Stone, 2019).

3. Absence of Basic Conditions for Digital Transformation of the Warehouse Receipt System

According to the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), and the Theory of Interpersonal Behaviour (TIB), *'Unified Theory of Acceptance and Use of Technology (UTAUT),"* which is a modified *"Technology Acceptance model (TAM),"* is derived and used to explain factors for technology acceptance (Taherdoost, 2017). UTAUT is of interest in this work because of its unifying feature as it has proved a successful synthesis of technology acceptance and use (Kashada & Ehtiwsh, 2020), and so its adaptability in explaining conditions for willingness for digital transformation. The relationship between these conditions is as follows:

Figure 4:- Factors for Digital Transformation



Source: (Lai, 2017), (Dadayan & Ferro, 2004) and (Kashada & Ehtiwsh, 2020.

i. **Performance Expectancy:** The user is willing to induce digital transformation, should there be positive perception on its usefulness, in terms of perceived benefits from the same digital transformation

ii. **Effort Expectancy:** The user is willing to induce digital transformation, should there be positive perception on its ease of use, in the sense that the user is capable or skilled enough to use the same respective technology from the same digital transformation.

iii. **Social Influence:** The user is willing to induce digital transformation, should there be encouragement on the use of the same technology from those close to the user.

iv. **Facilitating Technological Infrastructure:** The user is willing to induce digital transformation, should there be positive perception on availability of the facilitative technological infrastructure towards the use of the same technology.

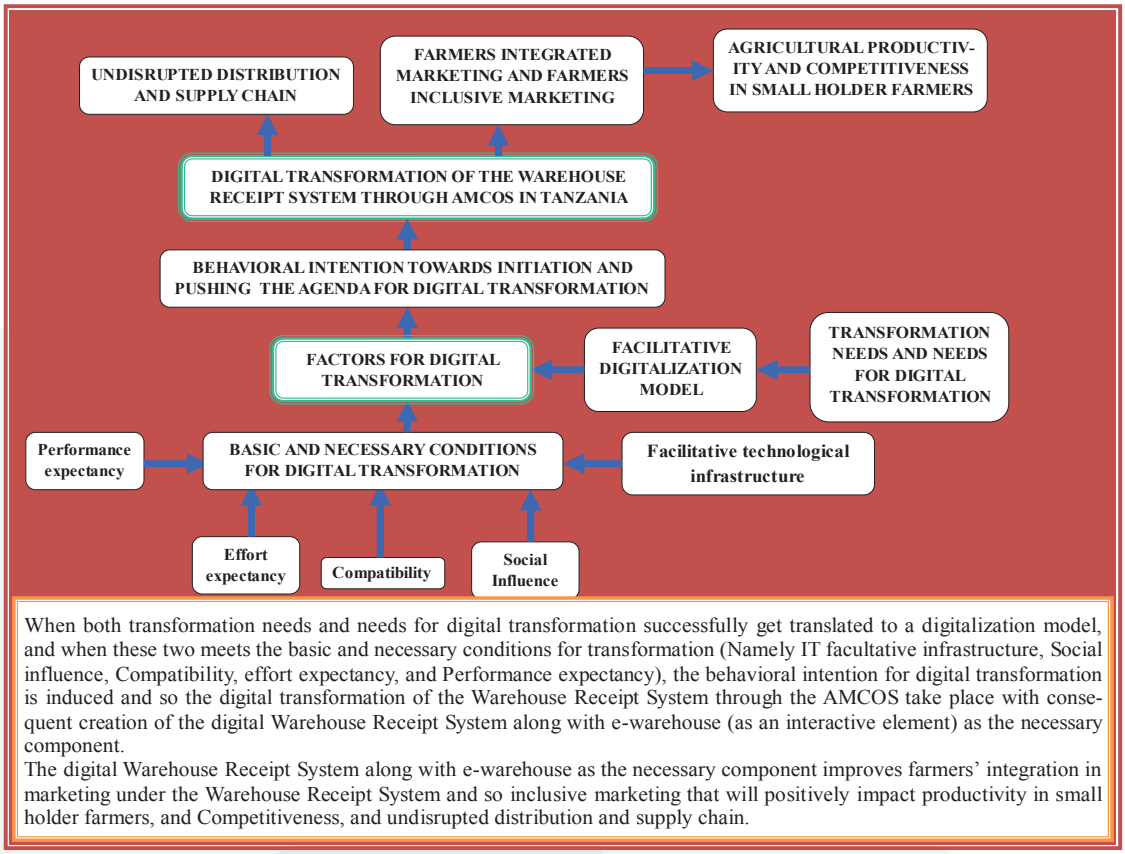
v. **Compatibility:** The user is willing to induce digital transformation, should there be positive perception on compatibility of the respective digital transformation to the interests and needs of the respective organisation.

(Lai, 2017), (Trendov, Varas, & Zeng, 2019), and (Kashada & Ehtiwsh, 2020).

Willingness to digital transformation is then studied under the following conceptual framework

2.4. Conceptual Framework

Figure 5:-Conceptual Framework



Source: (Lai, 2017), (Trendov, Varas, & Zeng, 2019), (Dadayan & Ferro, 2004)

Willingness or the influences of these factors are studied under the following methodology.

3. METHODOLOGY

This study was undertaken in 5 regions in Tanzania, namely Mwanza, Tabora, Mtwara, Kilimanjaro and Ruvuma, using the multiple and mixed model, consisting of explorative and descriptive research design, comparative analysis research design and correlation research design, through qualitative, quantitative approaches and mixed approaches. The purposive selection of the named regions is mainly because of its spatial distribution in the country, which would allow representation of the whole country, production of unique commercial crops disposed under the Warehouse Receipt System, as well as history of cash crops and cooperatives in these regions (Kothari, 2004), (Saunders, Lewis, & Thornhill, 2009).

Each region was divided into a number of groups of councils, depending on the number of unions available in the respective region, meaning that councils in each region are split into a number of groups, depending on the number of councils served by each union in a respective region.

In each group of councils, two societies were selected in a manner that one society is selected in a relatively rural area and the other relatively urban. In addition to being rural or urban, among the societies selected, one had a provocative (critical) feature, and the other one conciliatory (less critical) (Kothari, 2004), (Saunders, Lewis, & Thornhill, 2009), and (Pierce, 2008).

In each selected society, 5 farmers were selected under the condition that they are not members of a cooperative society, in addition to 5 farmers who are cooperative members but not board members in a respective Cooperative, and all these farmers are not engaging in business activities related to cooperative business activities. 4 board members selected at the level of the cooperative society were not on the board in the union.

With respect to specific literature review, the sample included all documents that give answers to review questions obtained by breaking down the research questions.
The sample selection and the sample size are as illustrated in Table 2 below.

Table 2:- Sampling and Sample Size

REGION	REGISTRAR	UNION	MANAGER	BOARD MEMBER	SOCIETY								TOTAL
					1st				2nd				
					MANAGER	BOARD MEMBERS	FARMERS		MANAGER	BOARD MEMBERS	FARMERS		
							MEMBERS	NON-MEMBERS			MEMBERS	NON-MEMBERS	
			No. OF RESPONDENTS										
MTWARA	1	TANECU	1	4	1	4	5	5	1	4	5	5	71
		MAMCU	1	4	1	4	5	5	1	4	5	5	
KILIMANJARO	1	KNCU	1	4	1	4	5	5	1	4	5	5	**36**
RUVUMA	1	TAMCU	1	4	1	4	5	5	1	4	5	5	**71**
		SONAMCU & MBIFACU	1	4	1	4	5	5	1	4	5	5	
TABORA	1	IGEMBENSABO	1	4	1	4	5	5	1	4	5	5	36
MWANZA	1	NYANZA	1	4	1	4	5	5	1	4	5	5	36
TOTAL	5		7	28	**7**	28	**35**	35	7	28	35	35	250

Permission to collect data was restricted in Mwanza, making respondents reached to be 204. Notwithstanding this restriction, results and conclusion were not affected because the Tabora and Mwanza Regions are in the same zone, making whole country's representation to remain effective. Moreover, the narration given by the officers in the regional office in a discussion triggered by the researchers' argument against denial of access to data collection showed that the reasons and grounds for abandonment of the Warehouse Receipt System in Mwanza are the same as in Tabora. The situation in Tabora therefore reflected the situation in Mwanza.

Qualitative (primary and secondary) and quantitative (primary and secondary) data were collected. Techniques for data collection and methods (qualitative, quantitative and mixed methods) were used in data analysis, as illustrated Figures 6 and 7 below:
(Kothari, 2004), (Saunders, Lewis, & Thornhill, 2009), and (Pierce, 2008).

Figure 6:- Data Collection and Analysis Techniques for 2nd and 3rd Research Questions

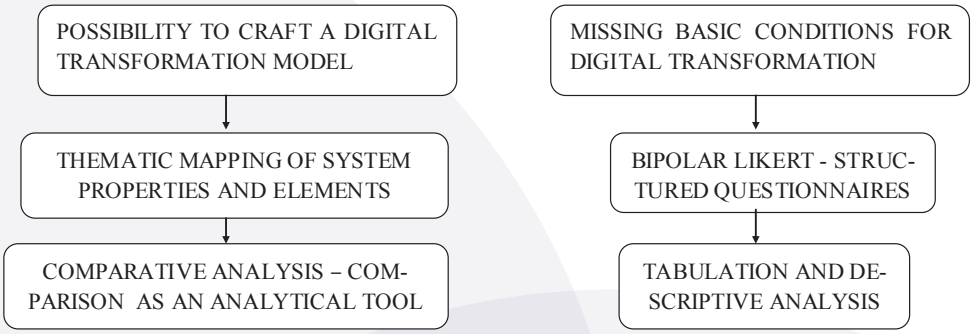
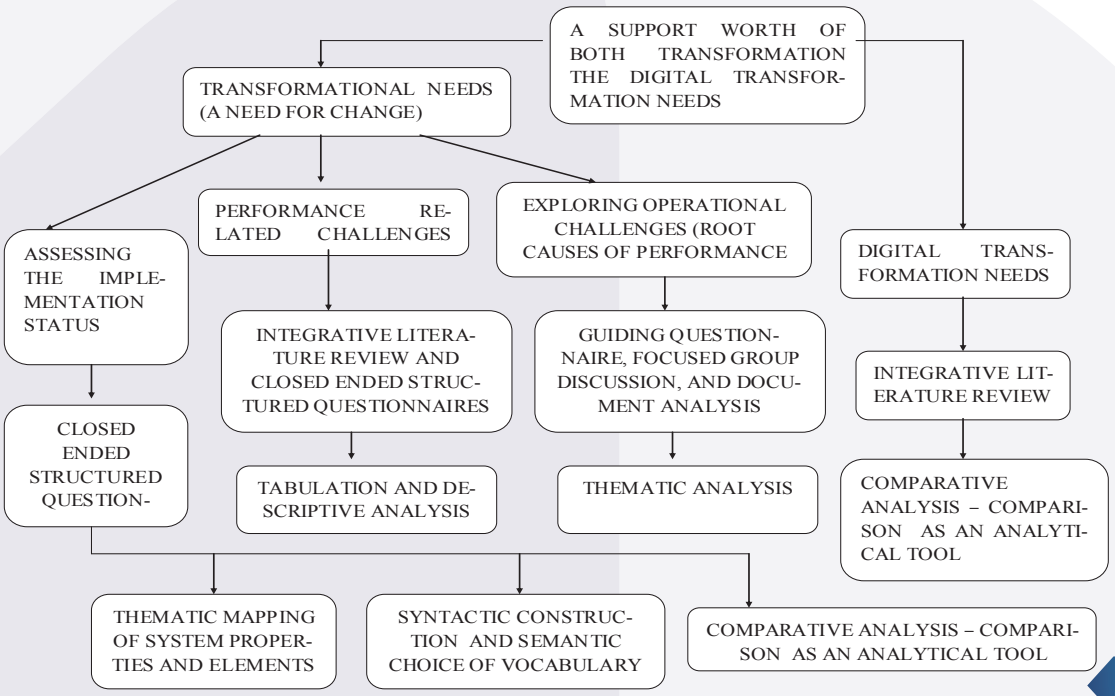


Figure 7:- Data Collection and Analysis Techniques for 1st Research Question



4. RESULTS

4.1.1. Justifying Transformational Needs

To ascertain ineffectiveness or efficiency of the structure (system and processes) in the Warehouse Receipt System, that would encourage transformation as per Policy or Strategy Preference Theory, implementation status in the selected regions was explored.

Figure 8:-Structure of the Ongoing Implementation of the Warehouse Receipt System

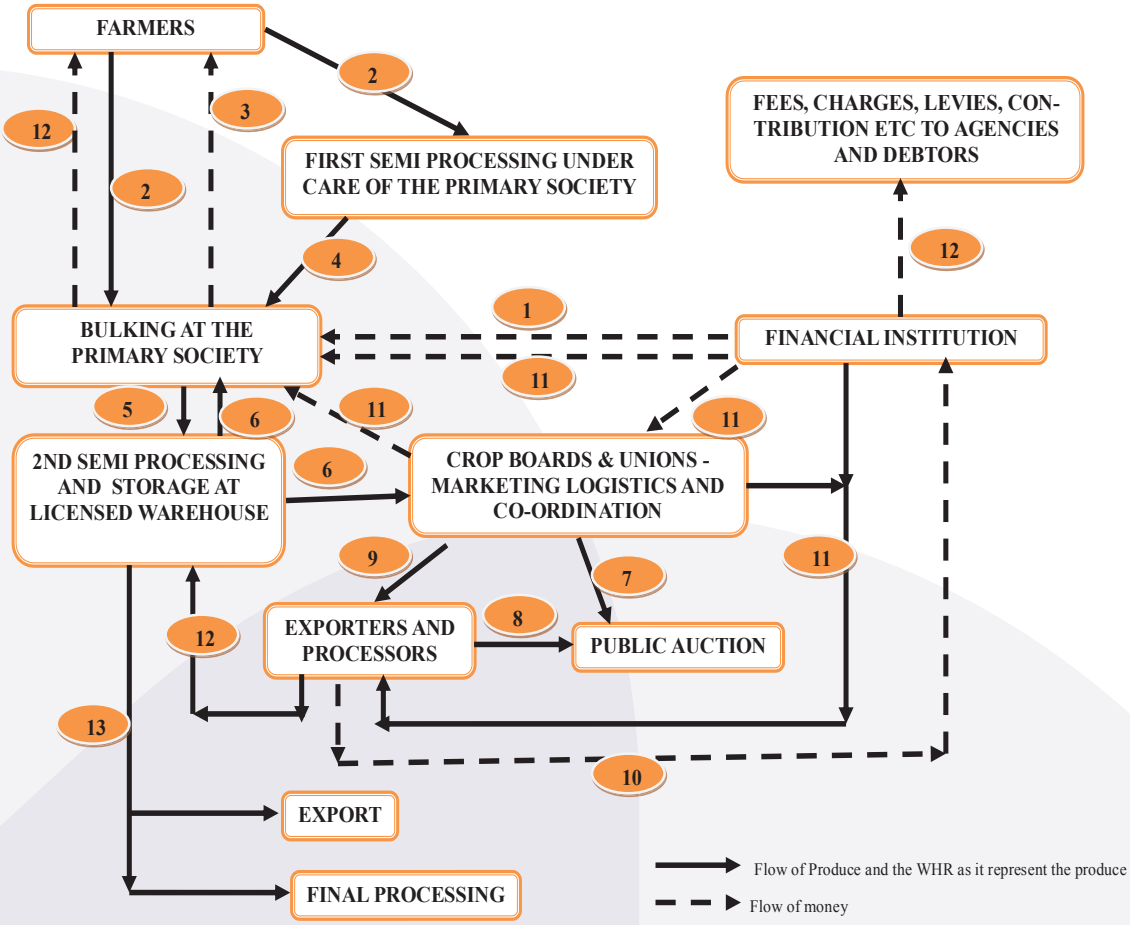


Table 3:- Explanations of the Above Warehouse Receipt System Structure

No	Explanations
1	The primary society secures a loan for advance payment before farmers deposit their produce at the primary society. The advance loan is taken in the coffee industry only
2	Farmers deposit their produce at the primary society, mainly for bulking, either with some first processing or without first processing. Semi-processing is done only in coffee
3	Farmers are paid an agreed amount of money per kg deposited as advance payment. Advance payment is done only in coffee
4	The primary society can process or bulk the crop unprocessed if the crop is coffee
5	The primary societies standardize weights in respective receiving bags and transport to licensed warehouses, where secondary processing is done. Secondary semi-processing is done only in coffee
6	The licensed warehouse issues a paper Warehouse Receipt to AMCOS, where the same is delivered to the Crop Board/Union and a copy retained by the primary society (owner).
7	The Tanzania Crop Board prepares the sales catalogue, makes advertisement, takes samples to the auction, prepares and takes care of tendering processes, coordinates and manages the public auction where the produce, either with or without semi-processing, is sold.
8	Buyers who are categorized as exporters and processors attend and participate in the auction where the produce is sold and bought (who process to a consumable level).
9	The Crop Board issues an invoice to the successful bidder
10	The bidder pays or deposits money into the Crop Board's or Union's account in the respective financial institution. For the case of G32 in Moshi, the bidder deposits money in the respective primary society's account.
11	Through Crop Board's bank account, the Crop Board or Union transfers money to the primary society's bank account after deduction of the advanced loan, and at the same time the buyer collects the bought warehouse Receipt from the Crop Board or from the respective bank. G32 in Moshi is exceptional in this, as money is paid directly to the respective society's bank account.
12	Farmers are paid the second payment through their bank accounts. Fees, charges, levies, contributions etc., are paid to the respective agencies and debtors, and the bidder or buyer presents the secured Warehouse Receipt to the respective warehouse and so collects the bought produce. In cashew, payments are not paid as secondary payments, but as a lump sum, as there is no secondary payment
13	The buyer collects the bought produce and transport for final processing or export
NB	Note that processed coffee (coffee bean) can be directly exported once the buyer is secured by the primary society and agrees to buy the produce, and money gets deposited in the same TCB account.

The illustrated in Figure 8 and explained in Table 3 is the ongoing implementation in the three regions, with minor differences, the structure in practice in three regions among the 5 surveyed. In the two regions among the 5 surveyed, implementation of the Warehouse Receipt System is not established in cash crops, but also its implementation in legumes has been abandoned.

When the structure in Figure 8 is compared with the theoretical Warehouse Receipt System in Figure 1, differences are negligible but aligning to observation in theory that maintain a sense of farmers' ownership of the produce or commodity in the Warehouse Receipt System, along with maintaining availability of finance by use of produce deposited in the Warehouse Receipt System as important aspects in maintaining preference, at least to a point of tolerance level, whereby words or statements such as "we sell/we lend our crops", "farmers are not interested in crops inspection", "we stay without any money until payment is made," which are used by the respondents in giving their explanations in their roles in implementation of the Warehouse Receipt System, suggest the following:

i. A sense of ownership of crops after deposit in the Warehouse Receipt System is blurred.
ii. Likewise, though missing in some regions, farmers perceive farmer's financing in the Warehouse Receipt System by use of the Warehouse Receipts at cooperatives level, as necessary.

If ownership is lost or gets blurred before ownership transfer, in addition to inaccessible finance using the Warehouse Receipts while farmers have immediate financial needs, then there is a likelihood that farmers' or users' preference towards the Warehouse Receipt System, through AMCOS in Tanzania, is low. By use of factors relating to ownership, finance and preference, the degree of preference was empirically explored, and results are as illustrated in Table 4 below.

Table 4:- Respondents Views on Their Preference on the Warehouse Receipt System

S/n	Factors argued to be making the Warehouse Receipt System burdensome to farmers	COOPERATIVE LEADERS		FARMERS	
		TRUE "V"	FALSE "X"	TRUE "V"	FALSE "X"
1	Trust in the system: The farmers lose control of the crops soon after depositing crops at the primary society, unless there are accessible reports on the progress regarding movement of the crops deposited by farmers at the primary societies	6	86	95	7
2	Trust in the system: The farmer feels that the produce might get lost and the farmer fears that part of or all payment after the sale of the farmers' produce might get lost.	6	86	95	7
3	Immediate financial needs (including financial needs for food, medical expenses) at the period the produce is stored to the time payment is made.	92	0	110	2

Aligning with the observation that the sense of ownership of crops after deposit in the Warehouse Receipt System is blurred, Table 4 above suggests that farmers' preference on the Warehouse Receipt System was below tolerance level at the onset, and this got intensified by the perceived but missing farmers' financing in the Warehouse Receipt System, by use of Warehouse Receipts at cooperatives level.

This implies that cooperatives couldn't transform to a strong, effective and efficient structure (systems and processes), capable of creating a sense farmers' ownership of their crops in the Warehouse Receipt System, and capable of facilitating access of finance by farmers by use of Warehouse Receipts.

Moreover, evidence from the assessment of implementation status suggests that the ongoing implementation is highly manual, implying tricky or problematic structure (systems and processes), with consequent implementation that neither follows appropriate processes nor is inclusive in decision-making and implementation. This further suggests a likelihood of performance-related challenges and so low performance in meeting the expected needs and wants of farmers in the Warehouse Receipt System, through AMCOS in Tanzania.

As indicated in theory, research-based performance challenges in the Warehouse Receipt System through AMCOS is scant, but complaints on different platforms, including political platforms, performance challenges were explored by documenting the same complaints and views from farmers and cooperative leadership and management were explored as whether such complaints are challenges or not. Respondents asserted that such complaints are in fact challenges in the Warehouse Receipt System, as illustrated in Table 5 below.

Table 5:- Respondents' Views on Their Preference on the Warehouse Receipt System

S/n	Complaint (Challenges in the Warehouse Receipt System)	TRUE	FALSE
		"V"	"X"
1	Payment delays	186	18
2	Less payment, deducted payment or reduced payment	185	19
4	Delay in packages procurement	110	94
5	Difference between the weight of the produce transported to the licensed warehouses and the weight of produce received at the licensed warehouses	182	22
6	Loss of farmers' produce at the licensed warehouse	120	84
7	Informal purchase and sales of the produce out of the Warehouse Receipt System	198	6
8	Payment done regardless of FIFO (favouritism)	116	88
9	Some farmers do not get paid at all	108	96

Although the above appear as complaints in theory, but with reference to farmers' and cooperative leadership and management, are performance related challenges to the Warehouse Receipt System in Tanzania.

As an outcome of both preference and performance related challenges is the disgusted farmers who lose trust, detest and default in their contractual obligation to deposit crops through the Warehouse Receipt System, as evidenced by dissert of the named system by smallholder farmers, along with abandonment of the Warehouse Receipt System in the two regions, namely Mwanza and Tabora. In search of how to reverse the situation, the root causes of the above preference and performance related challenges were explored.
Evidence reveals that in cooperatives and in the Warehouse Receipt System being implemented in the same cooperatives, there is a weak, negligible or absence of control mechanisms, including absence of or negligible continuing stock/data reconciliation, monitoring, feedback and participation, transparency and accountability and control, to the point that any fraudulent behaviour (including untrustworthy or unsecured handling of farmers' produce, intentional distortion of data and information, embezzlement and misappropriation of funds related to purchase/sales of farmers' produce), can sail through unnoticed, and if noticed, without any counter mechanism.

These operational challenges get manifested as complaints which are indicators of low performance or performance related challenges, since among the measures of performance is organisational related outcomes like service quality and public image (Singh.S, T.K, & Potocnik.K, 2016).

This implies that the cooperatives couldn't transform to a strong, effective and efficient structure (systems and processes), that would allow upholding or instilling of the named measures to ensure "stronger and more coherent, positive attitudes (PytlikZillig, Hutchens, Muhlberger, Gonzalez, & Tomkins, 2018), towards the established and practiced Warehouse Receipt System, consequently, because of implementation under low performance couldn't improve farmers' preference towards the Warehouse Receipt System.

It is due the weak, ineffective and inefficient structure (systems and processes), responsible for the weak control mechanism that it has made it tricky to instil a farmers' sense of ownership of their crops deposited in the Warehouse Receipt System, along with inability to prevent misappropriation and embezzlement of funds to the point that advance payment is abandoned, and as the outcome implementation of the Warehouse Receipt System couldn't improve negative attitudes from the perceived unfair and incompetent Warehouse Receipt System, but intensified negative attitudes and consequently worsened farmers' low preference.

This situation calls for reversal, should the intention of inclusive agricultural marketing and so pro-poor marketing strategies through the Warehouse Receipt System remain the same, and so a need of change, a justified transformational need in the Warehouse Receipt System, through AMCOS in Tanzania.

4.1.2. A Need for Digital Transformation

The root cause of both preference and performance related challenges has made evident that the observed operational challenges prevail mainly because of weak or negligible control mechanisms, to the point that undesirable acts or incidences can sail through unnoticed and if noticed, without any counter mechanism.

Evidence suggests that to address these control-related challenges, there is a need to transform cooperatives to systems capable of consistency, automation, possibility of being made secure, capable of logic, conditional and automated operations, interactivity, transparency, capable of monitoring and control, predictability, trans-formativeness, inclusiveness, resiliency, holisticness, sustainability and efficiency.

These features match the features of a digital system and so provide a justified need for the digital transformation. Both transformation and digital transformation are therefore justified in the Warehouse Receipt System implemented through the AMCOS in Tanzania.

4.2. Possibility of Crafting a Digitalisation Model

Theory suggests that mapping of the system elements of systems used by other economic agents in delivering their farmers' integrative services digitally, facilitate harnessing success factors in terms of successful system elements in the relevant, but different existing systems, and replication and adaption may be made possible towards creation of an improved Warehouse Receipt System. Mapping of basic system elements in the sim-banking and mobile money services in rural settings was done and system elements in the respective systems are summarized in Table 6 below. Comparison of these system elements with the structure illustrated in Figure 8, replication is made and system elements in the eventual Warehouse Receipt System is illustrated in Table 7 below. It is therefore possible to craft a digitalisation model with features that can accommodate members'/farmers' integration in AMCOS governance, and in governance of the Warehouse Receipt System, as well as the in marketing of their produce.

Table 6:- System Elements in Sim-Banking and Mobile Money Services

Stage / Activity	System element				
	Inputs	Processes and Processors	Outputs	Control	Feedback
Registration with service provider	POS, Equipped physical office	Registration Processes with service providers	Users IDs and accessible services	IDs with passwords, registration reports	Correspondence with customers through SMS
Service registration like M-pesa and sim - banking	POS, Equipped physical office	Registration Processes with service providers	Users IDs and accessible services	IDs with passwords, registration reports	Correspondence with customers through SMS
Use of the service registered in banking related activities like Deposit, Withdraw Receiving or Sending money	POS, Equipped physical office , Users IDs and password to access services	Processing banking related activities like Deposit, Withdraw Receiving or Sending money	Credited or debited bank account or mobile service account	Transactions with serial numbers, passwords for service access,Report on transactions made	Correspondence with customers through SMS

Table 7:- System Elements in Sim-Banking and Mobile Money Services

Stage / Activity	System element				
	Inputs	**Processes and Processors**	**Outputs**	**Control**	**Feedback**
Registration with a Cooperative	POS, Equipped physical office	Registration Processes with service providers	Users IDs and accessible services	IDs with passwords, registration reports	Correspond-ence with customers through SMS
Registering in collective marketing	POS, Equipped physical office	Registration Processes with service providers	Users IDs and accessible services	IDs with passwords, registration reports	Correspond-ence with customers through SMS
Crops deposit at the Primary society	POS, Equipped physical office	Processes involved in activities related to accepting / deposit of crops	Credited farmers crop account	Receipt with serial numbers, Transactio-ns with serial numbers, Report on transactions made	Correspond-ence with customers through SMS
Consignme-nt	Logistics related inputs, and Licensed Warehouse	Processes involved in activities related to logistics and accepting / deposit of crops at licensed Warehouses	Credited Societies' crop account at the licensed Warehouse	Receipt with serial N0s. Transactions with serial N0s, Report on transactions made, Consignment discrepancies within limits	Correspond-ence with customers through SMS
Stock recon-ciliation	Total collectio-n, Stock at hand, Total consignment	Processes related to ongoing stock reconciliation	Successful / Unsuccessful stock reconciliation	Use of vetted person-nel, Restricting sales catalogue but with successful, Reconciliation	Correspond-ence with customers through SMS
Auction	Sales catalogue, Registered buyers,	Processes related to the action prep-aration and execution	Ownership transfer	Explicit Auction report	Correspond-ence with customers through SMS
Payment and Disburseme-nt of farmers' sales funds	Payment spreadsheet	Processes related to payment and disbursement of farmers sales funds	Farmers are paid after ownership transfer	Disbursement reports from the bank	Correspond-ence with customers through SMS

4.3. Availability of Conditions Necessary for Digitalisation

Availability of conditions for digital transformation of the Warehouse Receipt System was assessed by using a bipolar Likert System with a higher mean score of 3 and a lower mean score of 1, the construct with an average weighted mean score below 1.5 is regarded as an absent condition. The Likert System was opted for because it is useful in quantifying or measur-ing perceptions, attitudes and opinions, and weighted mean score was opted for because "zero discriminating values are excluded, tend to satisfy condition of linearity, and tend to follow normal distribution" (Chakrabartty, 2014). Results are as illustrated in the following tables.

Table 8:- Effort Expectancy – Descriptive Statistics

CONSTRUCTS WITH SOME DESCRIPTIVE STATISTICS							
Construct	Item	Scale of agreement			Total (n)	Item Weighted Mean	Average Weighted Mean
		Strongly Diagree	There is a Possibiity	Strongly Agree			
		3	2	1			
Effort Expectancy (EE)	EE (L) 1	94	0	0	94	3	
	Percentage	100	0	0	100		
	EE (L) 2	94	0	0	94	3	
	Percentage	100	0	0	100		3
	TOTAL	188	0	0	188		
	Weights to Response Categories	1	0	0	1		
	EE (F) 1	120	0	0	120	3	
	Percentage	100	0	0	100		
	EE (F) 2	120	0	0	120	3	
	Percentage	100	0	0	100		3
	TOTAL	240	0	0	240		
	Weights to Response Categories	1	0	0	1		

Table 9:- Social Influence – Descriptive Statistics

CONSTRUCTS WITH SONE DESCRIPTIVE STATISTICS							
Construct	Item	Scale of agreement			Total (n)	Item Weighted Mean	Average Weighted Mean
		Strongly Diagree	There is a Possihaty	Strongly Agree			
		3	**2**	**1**			
Compatibity (CO)	**CO (L) 1**	14	0	80	94	0.7980709	
	Percentage	14.89362	0	85.10638	100		
	CO (L) 2	12	0	82	94	0.2081911	
	Percentage	12.36596	0	87.23404	100		**0.803131**
	TOTAL	**26**	**0**	**172.3404**	**198.3404**		
	Weights to Response Categories	**0.131088**	**0**	**0.868912**	**1**		
	CO (F) 1	120	0	0	120	3	
	Percentage	100	0	0	100		
	CO (F) 2	120	0	0	120	3	
	Percentage	100	0	0	100		3
	TOTAL	240	0	0	240		
	Weights to Response Categories	**1**	**0**	**0**	**1**		

Table 10:-Social influence

CONSTRUCTS WITH SOME DESCRIPTIVE STATISTICS							
Construct	Item	Scale of agreement			Total (n)	Item Weighted Mean	Average Weighted Mean
		Strongly Diagree	There is a Possibiity	Strongly Agree			
		3	2	1			
Social Infiluence (SI)	SI (L) 1	94	0	0	94	3	
	Percentage	100	0	0	100		
	SI (L) 2	94	0	0	94	3	
	Percentage	100	0	0	100		
	SI (L) 3	94	0	0	94	3	
	Percentage	100	0	0	100		3
	TOTAL	**282**	**0**	**0**	**282**		
	Weights to Response Categories	**1**	**0**	**0**	**1**		
	SI (F) 1	120	0	0	120	3	
	Percentage	100	0	0	100		
	SI (F) 2	120	0	0	120	3	
	Percentage	100	0	0	100		
	SI (F) 3	120	0	0	120	3	
	Percentage	100	0	0	100		3
	TOTAL	**240**	**0**	**0**	**240**		
	Weights to Response Categories	**1**	**0**	**0**	**1**		

Table 11:-Behavioral intention

CONSTRUCTS 1MTH SOME DESCRIPTIVE STATISTICS							
Construct	Item	Scale of agreement			Total (n)	Item Weighted Mean	Average Weighted Mean
		Strongly Diagree	There is a Possihaty	Strongly Agree			
		3	2	1			
Behavioural Intention (BI)	**BI (L) Al**	**8**	0	86	94	0.8560435	
	Percentage	0.085106	0	91.48936	100		
	BI (L) 2	5	3	86	94	0.8495926	
	Percentage	5.319149	3.19148936	91.48936	100		
	BI (L) 3	8	0	86	94	0.8538932	
	Percentage	8.510638	0	91.48936	100		**0.8538932**
	TOTAL	**21**	**3**	**258**	**282**		
	Weights to Response Categories	**0.074468**	**0.0106383**	**0.914894**	**1**		
	BI (F) 1	**120**	0	0	**120**	**2.8**	
	Percentage	**100**	0	0	**100**		
	BI (F) 2	**96**	10	14	**120**	**2.2491667**	
	Percentage	**80**	**8.33333333**	**11.66667**	**100**		
	BI (F) 3	**120**	0	0	**120**	**2.8**	**2.6163889**
	Percentage	**100**	0	0	**100**		
	TOTAL	**336**	**10**	**14**	**360**		
	Weights to Response Categories	**0.933333**	**0.02777778**		**1**		

Table 12:- Technological Infrastructure – Descriptive Statistics

CONSTRUCTS WITH SOME DESCRIPTIVE STATISTICS							
Construct	Item	Scale of agreement			Total (n)	Item Weighted Mean	Average Weighted Mean
		Strongly Diagree	There is a Possibiity	Strongly Agree			
		3	2	1			
Technological Infrastructure (TI)	TI (L) 1	94	0	0	94	3	
	Percentage	100	0	0	100		
	TI (L) 2	94	0	0	94	3	
	Percentage	100	0	0	100		
	TI (L) 3	94	0	0	94	3	
	Percentage	100	0	0	100		
	TI (L) 4	94	0	0	94	3	
	Percentage	100	0	0	100		
	TI (L) 5	94	0	0	94	3	
	Percentage	100	0	0	100		
	TI (L) 6	94	0	0	94	3	
	Percentage	100	0	0	100		3
	TOTAL	**564**	**0**	**0**	**564**		
	Weights to Response Categories	**1**	**0**	**0**	**1**		
	TI (F) 1	120	0	0	120	3	
	Percentage	100	0	0	100		
	TI (F) 2	120	0	0	120	3	
	Percentage	100	0	0	100		
	TI (F) 3	120	0	0	120	3	
	Percentage	100	0	0	100		
	TI (F) 4	120	0	0	120	3	
	Percentage	100	0	0	100		
	TI (F) 5	120	0	0	120	3	
	Percentage	100	0	0	100		
	TI (F) 6	120	0	0	120	3	
	Percentage	100	0	0	100		3
	TOTAL	**720**	**0**	**0**	**720**		
	Weights to Response Categories	**1**	**0**	**0**	**1**		

Table 13:-Performance Expectancy

Construct	Item	Scale of agreement			Total (n)	Item Weighted Mean	Average Weighted Mean
		Strongly Diagree	There is a Possihaty	Strongly Agree			
		3	2	1			
Performace expectancy (PE)	PE (L) 1	80	6	8	94	1.096967	
	Percentage	85.10638	6.32297872	8.510638	100		
	PE (L) 2	78	8	8	94	1.0745134	
	Percentage	82.97872	8.5106383	8.510638	100		
	PE (L) 3	12	6	76	94	0.5767316	
	Percentage	12.76596	6.38297872	80.85106	100		
	PE (L) 4	10	12	72	94	0.5399728	
	Percentage	10.6383	12.7659574	76.59574	100		
	PE (L) 5	12	8	74	94	0.569579	
	Percentage	12.76596	8.5106383	78.7234	100		0.7715527
	TOTAL	192	40	238	470		
	Weights to Response Categories	0.408511	0.08510638	0.506383	1		
	PE (F) 1	108	5	5	120	2.0100556	
	Percentage	90	4.16666667	5.833333	100		
	PE (F) 2	106	6	8	120	1.97575	
	Percentage	88.33333	5	6.666667	100		
	PE (F) 3	105	7	8	120	1.9581528	
	Percentage	87.5	5.23333333	6.666667	100		
	PE (F) 4	112	3	5	120	2.0786667	
	Percentage	93.33333	2.5	4.166667	100		
	PE (F) 5	12	10	98	120	0.4016111	
	Percentage	10	8.33333333	81.66667	100		1.6848472
	TOTAL	443	31	126	600		
	Weights to Response Categories	0.738333	0.05166667	0.21	1		

Performance expectancy and compatibility with consequent low behavioural intention were observed to have a score below 1.5. These are therefore the missing basic conditions necessary in digital transformation of the Warehouse Receipt System.

4.4. Findings

Transformation and digital transformation of the Warehouse Receipt System through AMCOS is justified and possible but given the negative attitudes of cooperative leadership and management on the performance expectancy and compatibility of the Digital Warehouse Receipt System, the fate of farmers integrated agricultural marketing through the Digital Warehouse Receipt System in Tanzania, remains uncertain.

4.5. The Fate of Farmers' Integrated Agricultural Marketing Through the Digital Warehouse Receipt System Implemented Through AMCOS in Tanzania

The survey suggests that the negative perception of cooperative leadership and management in performance expectancy and compatibility rest on participation, transparency and accountability, whereby as opposed to farmers, cooperative leadership and management feel that the existing farmers' participation mechanism, and mechanism for both transparency and accountability and so degree of control exerted by farmers, is satisfactory. This aligns with results and observations in Table 4 that as opposed to farmers, leaders expect farmers' trust in the Warehouse Receipt System. This implies cooperative leadership and management's obscured ability to realize the need to improve existing participation, transparency and accountability and so makes it tricky for cooperative management to realize the need to initiate the desirable change in cooperatives to transform to a structural change in cooperatives' systems and processes, which would allow implementation that follows appropriate processes, a mechanism for inclusive decision-making and implementation, as well as a mechanism that ensures transparency and accountability.

The consequent outcome is adamancy, evidenced by reluctance or unwillingness to initiate and push an agenda for digital transformation in the Warehouse Receipt System, implemented through AMCOS in Tanzania. The named negative perception, adamancy and consequent reluctance in initiating and pushing for digital transformation in the Warehouse Receipt System is explained by the following:

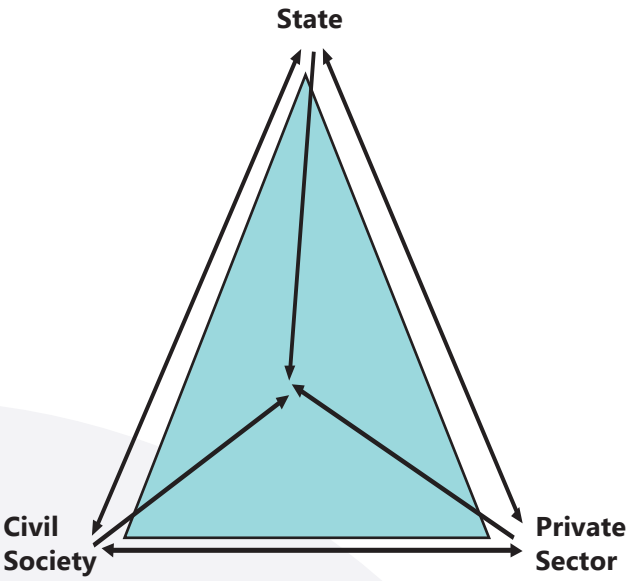
- **The Belief System in Cooperatives:**

Despite legally granted autonomy, there is an existing belief that cooperatives are still state-controlled institutions and so limited participation, transparency and accountability to members is desirable (Menard & Shirley, 2008), (Rutabanzibwa, 2020), (Chiyoge, 2020).

- **The Imbalanced Interaction Between Economic Agents**

There do exist three economic agents according to the classification in the Cotonou Agreement, and because of different ideologies of these agents, they are in competition and so when they interact in a competitive environment like the Warehouse Receipt System, a free exploitation environment is the outcome of the balanced interaction, as illustrated in Figure 9 below.

Figure 9:-Relationship Between Tripartite Economic Agents



The private sector represents all private organizations (relatively wealthy) meant for profit, Civil Societies represents all organiza-tions between the state and the private sector (relatively poor) and different from the state since the claims political leadership (power).

The diagrammatic representation of the three development agents forms a triangle, and according to the triangular law of vector addition, the resultant sum of the three vectors with the same mag-nitude is zero, and if the vectors repre-sented by the sides of the triangle are force vectors, then the resultant force is zero, meaning that the three forces represented by the sides of the triangle in sequence is a balanced force system.

The above illustrates the need for a balanced interaction for the exploitation free zone to align with the Lewis (2002), argument that that "*f the state is too strong, it will strangle Civil Society at birth, too weak a state, the private sector will compete for its roles as provider of order, and with a weak Civil Society, the state and the private sector will collude and squander resources*" (Lewis, 2002).

This desirable balanced force system between development agents implies that economic agents should have equal capabilities and competence in both governance and economic avenues to resist a free ride and maintain members or agents of respective members in central, decision-making positions in their respective organisations, for the benefit of the respective members.

However, in cooperatives, the mechanism and technology, among others, are missing and so unable to create a barrier to prevent a free ride and consequently:

- For various reasons or backgrounds, varying from state control by use of the policy and regulatory framework for control in meeting state interests, rent seekers in government and in the private sector attempt to manipulate the state with motives and interests to compete and exploit the cooperatives, cooperatives are suffering the elites capture and consequently the central leadership and management positions in cooperatives are invaded by uncooperative characters with questionable motives, resulting exploitation and control (Chiyoge, 2020), (Rutabanzibwa, 2020) and (Arnail, Thomas, Twayman, & Leverman, 2013).
- As explained by behavioral economic theories, conflicts and competition are inherent in cooperatives, absence of a technology and mechanism to prevent a free ride has led to cooperators in central leadership positions to turn out of their way and default their commitment and turn exploiters to their fellow Cooperative members, and facilitators of exploitation from other economic agents like businessmen and others. (Danielson, 2002).

The consequent outcome of the inability to prevent a free ride in cooperatives is the absence of genuine leadership and management, absence of checks and balances, weakness in governance and economic avenues, and ultimately weak cooperatives, leading to imbalanced interaction between economic agents.

In the situation of weak cooperatives resulting from prevalent free ride, with consequent invasion of leadership positions by people of questionable motives along with commitment defaults of cooperators in leadership and management positions, fertile ground for exploitation in cooperatives is created. This created fertile ground for exploitation in cooperatives make limited participation, limited transparency, and absence of accountability get desirable to those unfaithful and rent seeking leaders, as this further creates room for the same well positioned cooperative leadership and management to turn exploiters of the cooperative members.

In this situation then, there is no way the cooperative leadership will be willing to initiate and push a digital transformation in the Warehouse Receipt System. Reluctance and adamancy are therefore obvious, as they sail through without checks and balances (Chiyoge, 2020), (Rutabanzibwa, 2020) (Menard & Shirley, 2008) and (Danielson, 2002).
Digital transformation of the Warehouse Receipt System through AMCOS under the care of cooperatives leadership and management is vulnerable to neglect, as it is an uphill task, following desirability for exploitation and an interest to sabotage and abandon the Warehouse Receipt System, as in the case of legumes in Tabora, Mwanza and Mtwara.

Section 8(2)(b)(xii) of the Cooperative Societies Act No.13 of 2013, worsens the situation. According to this section, it is the function of the Cooperative Development Commission *to "conduct research as may be necessary for the development of Cooperative Societies."* Research and Development in cooperatives is done by the TCDC. Research and Development are activities meant for innovation and introduction of new or more improved products and services and it helps an organisation stay updated and ahead of its competitors in meeting the needs and wants of its respective members and customers in a competitive marketplace. This means that the cooperatives, specifically secondary cooperatives, can get back seated under the guise of a research role of TCDC, as stated in the law and justify their reluctance for the sake of their exploitative interests in the highly manual system.

Although Section 8(2)(b)(xii) in the Cooperative Societies Act does not imply restriction of cooperatives, especially secondary cooperatives, from doing Research and Development, arguably had it not been the named section, the secondary cooperatives through Research and Development, could have initiated the digital transformation of the Warehouse Receipt System, as the '*Plains Cotton Cooperative Association of Lubbock,Texas, did* (Kovačević, Zakić, Milovanović, Subić, & Jeločnik, 2016). This association of Lubbock, Texas, led to the setup of the electronic system which is currently functional in cotton and grains and so issued a patent for such electronic system. The role played by the Cotton Council and the cotton industry in Texas was to push for the establishment of that system *'to introduce significant efficiencies into an antiquated system of handling commodity sales transactions'* (Kovačević, Zakić, Milovanović, Subić, & Jeločnik, 2016).

Technology and mechanisms are available to prevent or address the elites capture in cooperatives and for integrating members/users in matters and affairs of their cooperatives, and so prevent a free ride in cooperatives with the consequent bringing back of members to central decision-making in their cooperatives, towards the end of exploitation in cooperatives, but willingness to change is missing. Adamancy and reluctance to change in cooperatives is mainly because like most of Civil Society organisations at the finish line, cooperatives suffer from the elites' capture, with consequent:

i Avoidance of farmers' sense of ownership, evidenced by absence of a real mechanism for farmers' participation and control, and so low preference of the Warehouse Receipt System.

ii Avoidance of checks and balances, evidenced by cooperative leadership and management perception on limited beneficiaries' participation, transparency, accountability and perception which account for reluctance to digital transformation in the Warehouse Receipt System, which translates to embracing of weak, inefficient and ineffective manual systems and processes, weak controls, breeding of operations and performance challenges and ultimately intensified low preference of the Warehouse Receipt System.

Low Preference in the Warehouse Receipt System culminates in dissert and ruin of the central objective of the Warehouse Receipt System, exclusive agricultural marketing, low productivity in smallholder farmers and so exclusive growth.

To rescue the situation, there therefore arises a need for external initiation and pushing of the digital transformation of the Warehouse Receipt System, but neither from the state nor from the private sector, following the risk of intensifying elites' capture and external control and exploitation of cooperatives, thereby worsening the situation.

The fate of farmers integrated agricultural marketing through the digital transformation in the Warehouse Receipt System in Tanzania is therefore in the hands of collaborative and concerted efforts between the three main economic agents, (the state for policy related roles), championed by Civil Society, which should instigate the process and incorporate or spur cooperatives into action towards a digital transformational change.

5. CONCLUSION & RECOMMENDATIONS

5.1. Conclusion

Transformation and digital transformation in the Warehouse Receipt System implemented through AMCOS in Tanzania is possible, and the Digital Warehouse Receipt System can work through AMCOS, with consequent farmers integrated agricultural marketing and so improved agricultural productivity and competitiveness in Tanzania, but with external influence of the concerted and collaborative efforts from the three main economic agents, championed by the Civil Society.

5.2. Policy Recommendations to the State

The state needs to develop policy intervention aimed at:

i Influencing and directing cooperatives to consider digital transformation to improve efficiency and effectiveness, along with overcoming operational challenges.

ii Instituting effective provision of advance payment in areas where it is not given, to temporarily address the finance challenge to both farmers who are the Cooperative members, and farmers who are not Cooperative members but users of the Cooperative services.

5.3. Policy Recommendations to the Civil Society

i Sustainably help in improving cooperatives' economic competence.

ii Create and demonstrate the performance usefulness of the Digital Warehouse Receipt System to the cooperative leadership and management, to the government and to other influential stakeholders, an attempt to influence acceptance for the sake of farmers' improved livelihood.

iii Capacity building initiatives aimed at imparting positive attitudes and right knowledge regarding cooperatives' business nature and cooperative governance.

5.4. Recommendations for Further Research

i What it takes to ensure efficient and sustainable financing in the Warehouse Receipt System implemented through AMCOS in Tanzania.

ii How feasible is the Digital Warehouse Receipt System through AMCOS in Tanzania?

iii What it takes to sustainably improve cooperative governance and economic competence.

iv How adaptive are organisations at the finish line in facilitating accessibility to other services (like extension services at reduced costs), necessary for improving agricultural productivity, poverty alleviation and inequality reduction, food security and adapting to climate change.

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