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Managing Institutional Innovations through Farmers Organizations in the Sugarcane Subsector in Tanzania: Potentials and Limitations

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Abstract

Institutional innovations such as contract farming are essential for facilitating agricultural transformation with smallholder farmers being key players. While contract farming (CF) provides smallholder farmers with access to production and marketing opportunities, the role of farmer organizations (FOs) that are entrusted to manage CF arrangement remains less understood. In this paper, the potentials and limitations of FOs in managing institutional innovations are assessed based on a qualitative study involving farmer organizations, Kilombero Sugarcane Company Limited and government institutions between June and October 2021. The study used thematic analysis to analyze the collected data in order to generate new insights and concepts. The findings suggest that proper management of CF enables smallholder farmers to access credit and improved agricultural inputs as well as extension services and improved infrastructure from the sugarcane companies. While access to output markets at reasonable prices remains a major incentive mechanism for improving technical efficiency and productivity, FOs strengthen social cohesion and hence, the social capital for smallholder farmers. The study indicates that, insufficient market facilities and information, inadequate extension services as well as bureaucracy in the distribution of input credit through FOs are some of the limitations facing smallholder farmers in CF. Based on the foregoing, it is pertinent to recommend that concerted efforts are needed from diverse stakeholders to strengthen FOs thus enabling them to effectively deliver services to the members. Limitations and avenues for further research are also discussed in the text.

Keywords: *Farmer organizations, Institutional innovations, Contract Farming, and smallholder Sugarcane Farmers*

1.0 Introduction

Sugarcane is an important commercial crop, and it is the main source of sugar produced for both export and domestic consumption. In Tanzania, most sugarcane is grown in estates, owned by sugar processing factories and out growers (Kuzilwa., *et al.,* 2017). Most of the out growers are smallholder farmers who encounter multitude and often complex constraints that hinder productivity and growth. Consequently, they are often caught in the vicious cycle of poverty. Most of the constraints are institutional, resulting from imperfections and failures of input and output markets. These manifests themselves in lack of access to agricultural inputs and output markets (Meemken & Bellemare, 2020; Ren *et al*., 2021; Tibamanya, Henningsen & Milanzi, 2022).

Contract farming scheme has emerged as an institutional innovation for addressing the problem of market failures. CF is understood as a preharvest agreement between a farmer and a buyer/processing and/or marketing firm. The scheme also calls for the purchaser to provide some technical production support such as the supply of critical agricultural inputs including fertilizers, improved seeds, and extension services. CF entails a commitment by farmers through their Farmer Organizations (FOs) to supply the agreed quantities of the agricultural outputs at the specified quality standards as determined by the purchaser.

On the other hand, the purchaser commits to support production and purchase the produced crop. CF accelerates capital inflow, technology transfer, and assured market for crop production hence, regarded as a mechanism for addressing agricultural production and marketing challenges (URT, 2013; Bahera & Swain, 2021) thereby reducing transaction costs and risks. Similarly, CF scheme integrates smallholder farmers and the private sector enabling them to participate in global agricultural value chains thereby contributing to yield and productivity enhancement (Vicol *et al.,* 2022; Bellemare & Novak, 2017). As such, CF scheme is one of the institutional innovations for agricultural transformation. In view of the importance of CF, government, non-governmental organizations, the private sector and the international community widely promote the adoption of CF.

Central to the discourse of contract farming schemes are the intermediary roles of Farmer Organizations (FOs). FOs are found in diverse forms and they play different functions depending on the purpose of their establishment such as coordinating production and marketing activities as well as advocacy and local economic development (LED). All FOs are designed on the principle of collective action of smallholder farmers (Shiferaw, Obare & Muricho, 2006).

While contract farming (CF) provides smallholder farmers with access to production and marketing opportunities, the role of farmer organizations (FOs) that are entrusted to manage CF arrangement remains less understood. Even though there is a plethora of studies on CF, scanty knowledge exists on potentials and limitations of FOs in managing CF. Makoye and Milanzi (2019) show that despite numerous benefits of CF, exit intention has been high and most smallholder farmers showed an interest of operating independently. This suggests there are limitations to CF especially as coordinated by FOs. In contrary, Armah *et al.* (2010); Wainaina *et al.* (2014)and Satish (2021) revealed that smallholder farmers enjoy the existence of CF through FOs. Nonetheless, the findings of different previous studies on managing CF through FOs have been mixed. Therefore, the current paper is an attempt to understand the potentials and limitations of FOs in managing institutional innovations in sugarcane contract farming in Tanzania.

The rest of the paper is structured as follows. Section 2 briefly presents a review of theoretical and empirical literature, section 3 describes the methodology of the study, section 4 presents results

and discussion. Section 5 concludes and highlights the implications of the study's findings for policy, practice and research.

2.0 Literature Review

2.1 Innovation, contract farming, and farmer organizations

Innovation is referred to as a process by which a domain, a product, or a service is renewed and brought up to date by applying new processes, introducing new techniques, or establishing successful ideas to create new value (AlMalki & Durugbo, 2017). The institutional innovation is based on the development and implementation of new or modified systems, structures, rules, policies, or practices within organizations, societies, or broader institutional contexts. Innovations aim to address existing challenges, improve efficiency, promote positive change, or adapt to changing circumstances (AlMalki & Durugbo, 2017). Institutional innovations can lead to shifts in power dynamics, decision-making processes, accountability mechanisms, and overall institutional arrangements, with the goal of achieving improved outcomes, sustainability, or responsiveness to emerging needs and demands.

Contract farming is indeed considered as an institutional innovation. It involves a contractual arrangement between farmers (often smallholders) and agribusiness firms or buyers. In this arrangement, the farmer agrees to produce a specific agricultural commodity based on predetermined terms and conditions, including quality standards, quantities, and pricing (FAO, 2013).

Worldwide, there are many forms of farmer organizations (FOs). These are organisations, associations, cooperatives, saving and credit societies, commodity farmer associations and rural farmers' organizations. FOs as farmers' institutions act as mouthpieces of smallholder farmers who are united to form an organization platform from which their issues are discussed within the range of common interests (FAO, 2020). The FOs are designed to represent the interest of farmers in the CF arrangement with regard to productivity and market.

2.2 Theoretical review

The study is based on collective action theory which was initially developed by Mancur Olson in 1965 and popularized by Olson (1965). The theory integrates group and rational choice theories to explain how individuals make collection decisions. The theory explains that any group of individuals attempting to provide a public good face a free ride problem emanating from group size. The group of individuals with a common interest is expected to act on behalf of their common interest much as single individuals are often expected to act on behalf of their personal interests (Vicol *et al.,* 2022). Olson goes further to explain that individual actions are based on the rational behaviour such that individuals tend to act collectively on issue that assures utility maximization. Although the reason behind the formation of collective actions goes beyond the individual utility maximization, to act collectively is essentially a voluntary action whereby an individual has to choose to either associate or dissociate.

The collective action theory also considers the construction of new institutions innovations through the social, economic and political behaviour of many actors who play diverse and partisan roles in the organizational field or network that emerges around a social movement or technical innovation. Behera and Swain, (2021) noted that the collective action theory is emerging primarily in the social movement and technological innovation movement. Collective action theory identifies novel institutional arrangements emerge to address a social problem or develop and commercialize a new technology. Collective action theory assumes that innovation originating from farmers and their FOs are blamed for its lack of response to the needs of

farmers. Rather, the farmers who do not adopt the innovation are blamed for their lack of response.

The study chooses this theory because FOs can be understood through the lens of collective action theory. FOs enables farmers to overcome collective action problems by developing a collective identity, forming shared goals and mobilizing collectively. By engaging in FOs, farmers can leverage their collective strength, negotiate better terms, and access markets that would be challenging to reach individually. Selective incentives offered by agribusiness firms motivate farmers to participate, and the power dynamics and bargaining process between farmers and firms can be analysed through the framework of collective action theory. Understanding the outcomes and impacts of FOs requires considering the strength of collective action, resource disparities, and the broader institutional context that shapes the dynamics of power, benefits distribution, and sustainability within these arrangements.

2.3 Empirical review

Theoretically, the main role of FOs is to manage human exchanges to a pattern of economic arrangement (Nazifi *et al.,* 2021). Nevertheless, FOs organize activities to a pattern of economic arrangement, many researches on agribusiness argue that exchange relationships are arranged not only by contracts, as agreed by theory of agency, but also via vertical integration and social networks (Dubbert & Abdulai, 2021). Such organization tends to be influenced by market concentration, asset specificity, small number situations, property rights, and trust (Adabe *et al.,* 2019). In this paper, a smallholder farmer is therefore defined as an agri-business enterprise in which the pattern of economic organization is influenced mostly by social networks (Dubbert & Abdulai, 2021). As such, smallholder farmers are subject to institutional factors such as market power, asset specificity, property rights, and trust, which influence the coordination of their production and marketing activities. For instance, when looking at technological innovations, property rights tend to internalize externalities thereby accruing the benefits to the innovator, which provides more incentives for further innovation (Adabe *et al.,* 2019).

However, this is different from institutional forms of innovation where the commercialization option of the innovation was often not feasible. The main challenge of innovation adoptions is the transactions costs, and when such costs are perceived to be high, formal institutions become important (Arouna, Michler & Lokossou, 2021). Societies developed informal institutions, such as culture, norms, trust and kinship, as well as formal institutions, to reduce the negative effects of transactions costs (Mishra *et al.,* 2018). Both formal and informal institutions had an influence on the innovation process and its adoption thereof. For instance, Bidzakin *et al.* (2020) analyzed panel data from developing and industrialized countries and found national culture to be a determinant factor affecting the intensity of adoption of research and development initiatives. In comparing countries with similar culture and norms, Bidzakin *et al.,* (2020) found the stability of the institutional environment to be an important factor explaining the propensity to patent an innovation.

The FOs as agents fulfill the demands of the smallholder farmers. Impliedly the efficiency and productivity level of sugarcane farmers are low due to mismanagement of the FOs. Yeshitila *et al.,* (2020) argue that FO are supposed to provide services that enhance capability, Innovations, networks making of the smallholder farmers as to increase the yield of produce. Mishra, Mayorga and Kumar, (2020) posited that the FOs are to link smallholder farmer to sources of agricultural produce and buyers of the agricultural produce. However, FOs were found to be weak and incompetent in discharging their duties and obligations to smallholder farmers. According to URT (2017), FOs play six major roles which are: organizational services,

production services, input supply roles, marketing services, financial services, and technological services. Despite of the establishment of FOs, in Kilombero the productivity of smallholder farmer is still low to the tune of 37 tons/hectare compared to global benchmark of 63 tons/hectare (Thibane *et al.,* 2023; URT, 2021). Similarly, Magongo (2018) revealed that Kilombero out-growers were facing some problems including; poor drainage, low levels of fertilizer and herbicides use, lack of extension services, lack of credits, food shortage, poor services from Kilombero Sugar Company Limited (KSCL), poor sugarcane pricing, poor road networks and inadequate farm machinery.

Despite many studies examining the role of CFs, the role of FOs in managing institutional innovations has rarely been examined. Few studies have done contract farming institutional innovation including Mishra, Mayorga and Kumar, (2020) and Yeshitila *et al.,* (2020). However, these studies are limited in terms of geographical, crop and methodological contexts and hence are not generalizable to the current context. The current study is an attempt to addresses such lacuna of knowledge through understanding the potentials and limitations of FOs in managing institutional innovations in sugarcane contract farming in Tanzania.

3.0 Methodology

The study was conducted in Kilombero valley, which is found in two districts of Morogoro region namely Kilombero and Kilosa districts. Kilombero valley is leading in sugarcane production, having more than 16,000 hectares of sugarcane. The Kilombero valley comprises 97% of smallholder sugarcane farmers (SHSCFs) in Tanzania most of them operating under CF arrangements (Kuzilwa *et al.,* 2017). The study used purposive sampling technique to select FOs leaders (chairperson, secretary, and treasurer), representatives from Kilombero Sugar Company Limited (out-growers manager and cane supply manager) and government officials (District Agriculture Irrigation and Cooperative Officer from Kilombero). The study selected those informants because they contain vital information concerning the potentials and limitations of FOs in managing institutional innovation. The study used primary data which was collected through interviews on 14 key informants. The interview method was used because it is a valuable and powerful method for collecting qualitative data as compared to observation and focus group discussion methods (Creswell, 2014).

The study used a thematic analysis technique to analyse collected data. This technique was used to generate new insights and concepts derived from data. In addition, the method provides a rigorous and comprehensive approach to analyze the qualitative data (Creswell, 2014). The researcher listened to the recorded interviews and read the written data numerous times to understand and translate the content. Thereafter, the researcher extracted and combined text about the potentials and limitations of FOs in managing institutional innovation to identify themes which were analysed by using NVivo data analysis software. The NVivo software was employed to condense and abstract the themes into codes, which were then categorized and applied to the entire set of collected data. The data was reviewed to ensure that the script's original meaning is maintained.

4.0 Results and Discussion

4.1 An overview

The purpose of the current study was to examine potentials and limitations of FOs in managing institutional innovation such as CF. For the past three decades, FOs have been managing and coordinate contracts between smallholder farmers and agro-processors via forward agreement, normally at pre-determined prices. In this section major potentials of FOs in managing CF are assessed.

Two themes were generated which are: potential in managing CF through FOs and limitation in managing CF through FOs. The layout of the findings is derived from the key informants through the in-depth interview. Supporting quotations from the study participants have been included to illustrate the messages being communicated. Findings are presented based on the identified themes. Table 1 shows the results with respect to the potentials of FOs in managing contract farming through FOs.

Table 1: Thematic analysis for compliance with potential in managing contract farming

Code	Sub-theme	Theme
Farm-level knowledge dissemination and training	Extension services and knowledge dissemination to smallholder farmers in CF	Potential in managing CF through FOs
Facilitation and distribution of agricultural inputs	Role of FOs in inputs supply	
Challenges in inputs supply		
Timely market information dissemination	Market information dissemination	
Importance of market information for farmers		
Role of FOs in accessing input credit	Accessibility of input credit to farmers	
Benefits of input credit accessibility for farmers		

4.2 Potentials of farmer organizations

Knowledge Services: Agricultural knowledge and skills are supposed to be spread and utilized in farming. The service is normally provided through the agricultural extension officers. In this, knowledge and skills in applying new farming techniques and agricultural innovation are disseminated at a farm level. The results of analysis suggest that, FOs are vested to ensure that the agreement between smallholder farmers and agro-processor to provide extension services is fulfilled. During the interview with Ruhembe AMCOS leadership, it was observed that provision of extension is central to the CF agreement as attested as follows:

> *"Farm extension service is one of the main parts in contract farming that is managed by FOs. FOs ensure processing and/marketing firms provide agricultural training and seminars to smallholder farmers in order to improve their knowledge and skills so as to improve quantities and quality standards determined by the purchaser. FOs ensure agricultural extension officers conduct farm visit, and train farmers"* (Leadership FGD in Ruhembe AMCOS, Oct. 2021)

Extension officers provide reliable and simply interpreted information to Small-Holder Sugarcane Contract Farmers (SHSCFs) on the preference of sugarcane demanded by KSCL, the quantity demanded at particular season and the price offered by KSCL. Similarly, the market information dissemination emphasizes using simplified means such as at meetings, displaying information on the notice boards available at the FO offices and in the villages offices where everybody can access. The finding is consistent with Dubbert, (2019) who revealed that, farm visits is a farm extension service that has been most unique, influential and successful in numerous aspects. In recent past, there has been an increasing demand for extension services owing to a strong interest by farmers to improve farming practices thereby, improving the quality, technical efficiency and productivity leading to high sugarcane price.

Inputs Supply: In the procedure of agricultural development, it is important to supply farmers with sufficient and advanced inputs such as fertilizer, improved seeds, and pesticides of sugarcane farming. Also, FOs have engaged in an effective role in the inputs purchase in the sugarcane production programme, FOs are responsible for facilitation of the purchase and distribution of

industrial fertilizer to farmers (URT, 2017). Nevertheless, actual supply is handled by the FOs as they are suitably distributed and well-equipped with warehousing facilities. Recently, to encounter the requirements for sugarcane production, FOs have made substantial efforts to develop self-initiated buying and distribution services. The distribution of pesticides, fertilizers, and farm implements, has increased yearly. However, it was reported that, Kilombero sugarcane Company Limited had planned program to collect fertilizer requirements of all SHSCFs from all FOs in the area in the year 2021 but the plan failed because farmers were engaged into other fertilizer supply contract with other companies.

Market Information: Recently FOs in Kilombero facilitated established of newly sugarcane commercialized system. As sugarcane production become more commercialized, FOs ensure all members know the current situation of sugarcane market including sucrose level measurement and price. Market information of the sugarcane and sugar is timely informed to the farmers/members by the respective FOs. Ruml, and Qaim, (2021) state that, in the procedure of agricultural development, it is important to supply farmers with sufficient and advanced information concerning market for their products (sugarcane) as interviewed with Ruhembe AMCOS Secretary states thus:

> "*SHSCFs take their sugarcane to the factory while they have priori information of selling price. It was found that market information dissemination is mainly done by displaying sugarcane price on the notice boards which are available at the FOs offices and in the villages offices where everybody can access*" (Interview with Ruhembe AMCOS Secretary, Oct. 2021)

Financial Services (Accessibility of input credit to Farmers): The use of improved farm inputs leads to increase in the cost of sugarcane production. Since majority of farmers are small scale farmers and who are still economically poor, the improved farm inputs become a heavy burden to them to buy them on cash basis, thus they need input credit. Before the application of farms transformation, about Tshs. 500 million worth of input credit to farmers was provided (Costales & Catelo, 2019). Currently, input credit of nearly Tshs. 900 million for sugarcane production is provided to the farmers and more than 50 percent of farmers have got input credit through FOs so as to meet their financial needs for sugarcane production (URT, 2021). FOs search input credit providers and act as guarantors to farmers to access input credit. Access to input credit enables the farmer to use mostly needed production inputs like improved seeds, industrial fertilizers, and pesticides.

The result from the survey shows that, access to input credit enables farmers to use advanced technology to improve land preparation, production, and harvesting. The largest part of the input credit provided is for the purpose of sugarcane production. The lending funds to FOs members mainly come from commercial banks and micro-financing companies to solve the problem of capital shortage for the particular farming season. FOs are trusted by financial institutions and they are believed as the most useful in facilitating accessibility of input to farmers and keeping in touch on the repayment schedule. This is facilitated by the structure and function of FOs. Also, the result from the field indicates that, FOs are custodian of all particulars of farmers and detailed information of the requirements of farmers and are able to connect the input credit providers with farmers so they provide agency and guarantee role to farmers. Again, on the other hand farmers normally feel more comfortable to disclosing their monetary problems to leaders of the FOs than with bank officers. FOs go with the total input credit amount needed by all farmers to the bank or micro-finance company. Input credits are directed through the FOs to make sure that the input credit provided is in safe hand. This has greatly influenced the successful application of agricultural development programs and improve sugarcane production. According to cane supplier manager;

"*The input credit could enable the farmers to have the capital to purchase inputs and to have resources to prepare their land on time before planting*" (Interview with cane supplier manager in KSCL, Oct. 2021)

Kilombero AMCOS Chairperson added;

"*Access to credit is an important source of capital to trigger socio-economic development in a country. Sugarcane farming is likely to be influenced by existence of finance support through input credit from financial institutions to enhance capital investment. This is particularly important because sugarcane farming requires capital investment to meet operations in production of sugarcane and other marketing cost obligation*" (Interview with Kilombero AMCOS Chairperson, Oct. 2021).

Furthermore, Table 2 shows the results concerning limitation in managing contract farming through FOs.

Table 2: Thematic analysis for compliance with limitations in managing contract farming

Code	Sub-theme	Theme
Limited access to extension services	Access to extension services	Limitation in managing CF through FOs
Training and efficiency of FOs leaders		
Bureaucracy and Unbalanced Distribution of Loans	Challenges in financial services	
Corruption and mismanagement of loans		
High production costs for smallholder farmers		
Inefficient distribution and transport services (networks)	Challenges in marketing services	
Insufficient market facilities and information		
Inability to realize profits		

4.3 Limitations of farmer organizations

Despite the importance of FOs for managing institutional innovations, the results of analysis suggest that there exists several are limitations. These are discussed below. -

Extension Services Access: The facilitation of extension services has been the most significant factor for agricultural development and improvement of sugarcane production. In provision of this service, the results show that few farmers access extension services. Studies have shown that being a member of FO can guarantee access to extension services (Bellemare, 2018), however, there has been heterogenous access to extension service in the study area. This is attributable to a number of reasons as follows. First, there are inadequate extension officers from the government and private entities. Second, FOs have inadequate power to influence neither the allocation of the extension officers in their respective areas nor their employment. One of the interviewed agricultural officers testifies as follows:

"*Here in Kilombero valley there are more than 16,000 acres of sugarcane owned by smallholder farmers, but there are only six extension officers"* (Interview with agricultural officer in Kilombero, Oct. 2021)

The finding is consistent with Prowse, (2018) whose study revealed that, only 15% of farmers receive extension services. The study further revealed that, on average farmers receiving extension services once in the entire farming season. This finding is also confirmed by Bijman, and Wollni (2018). Moreover, the study revealed that, many FOs leaders are generally less trained on

sugarcane production and management technologies hence less efficient in the management of FOs and hence, managing contract farming poorly.

Uneven distribution of Financial Services: In the field, it was revealed that there is bureaucracy in the distribution of loans received from the financial institutions. Despite great work done by FOs of guarantee loans to farmers, there is unbalanced distribution of loans to farmers. DAICO of Kilombero revealed;

> "*Some SHSCFs are facing challenges such as poor access to input credit arising from unbalanced distribution of loans to farmers*" (Interview with agricultural officer in Kilombero, Oct. 2021)

For example, Mishra, Mayorga and Kumar (2020) noted that there was corruption in the form of nepotism in the distribution of loans received from financial institutions. Also, Khan, Nakano and Kurosaki, (2019) found that, some FOs are featured with bribery, favouritism, unfair weighing system and poor planning of the mechanization coordination, and mismanagement of loans received from financial institutions. Therefore, many farmers (small scale farmers) face high costs in the production of sugarcane, making them unable to cover production costs.

Marketing Services: The purpose of establishing FOs is to enhance the bargaining power of weak small-scale farmers in dealing with agro-processors and contracted sugarcane transporters. Most of the key informants interviewed indicated that FOs fail to ensure efficient distribution output to market. In some cases, the transport services they coordinate offer poor services resulting in a delay in delivery and loss of quality of sugarcane hence, rejected at the factory. For example, the agricultural officer interviewed indicated that:

> "*In the 2020/2021 season late delivery of the harvested sugarcane led to more than 200 tons of sugarcane rejected by the factory"* (Interview with agricultural officer in Kilombero, October 2021)

The result in the current study confirms Bezabeh *et al.* (2020)'s findings which suggest that many FOs provide insufficient market facilities, insufficient market information and low prices to their farmers. Even those farmers who managed to produce sugarcane of good quality were not able to realize profits due to inefficiencies in the marketing role played by FOs.

5.0 Conclusion and Implications

The present study explored potentials and limitations of FOs in managing the institutional innovation such as contract farming (CF), which is important for improving access to critical input and output markets thereby enhancing sugarcane production and socio-economic welfare of the smallholder farmers. The study posited that increased sugarcane production beyond the production frontier, depends on efficient management of FOs in managing CF system. The results showed that proper management of contract farming indeed enabled farmer to access credit, improved inputs, extension services, strengthen social networks of farmers, improved transport and infrastructures, and better prices which all in in turn, would improve technical efficiency and productivity of smallholder farmers. However, the study revealed that FOs have several weaknesses that limit their ability to effectively deliver services to the members. These limitations include insufficient market facilities and information, as well as limited influence on extension service provision, and failure to manage bureaucracy and corruption in the distribution of critical inputs such as agricultural credits.

In light of the foregoing, it is reasonable to recommend continued strengthening of FOs to enable them to effectively deliver services to their members. The government should prepare and endorse favourable policies for financial institutions to continue providing input credit to FOs for smallholder farmers. The findings and conclusion of this study should be interpreted in the light of two limitations. First, the current study was conducted in the Kilombero valley Tanzania. Though the research setting provides a good testing ground for the validity of theories mainly developed in the context of industrialized economies, the current study's conclusions may be country specific and hence lacking external validity. Second, the study was based on a qualitative approach. It is difficult to determine the extent to which FOs performance affect the performance of smallholder farmers. Certainly, this entails conducting quantitative research to measure and test the argument of the present study. Nevertheless, the findings are still valid and provide relevant input for policy considerations.

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