



## **THE ROLE OF CO-OPERATIVE SOCIETIES IN SUPPLY CHAIN OF AGRICULTURAL PRODUCTS: A REVIEW OF LITERATURE**

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### **Abstract:**

*Co-operative societies and the agricultural sector have emerged among the important activities that contribute significantly towards socio-economic transformation in many countries. Generally, the agricultural sector is dominated by smallholder farmers who depend on middlemen in supplying and marketing agricultural products due to the long marketing chain. This paper examines the role of co-operative societies in strengthening operations of the agricultural supply chain through an extensive literature review. The study reviewed and connected co-operatives' activities with the operational requirements at each node of agricultural supply chain. To have the latest set of data, the study reviewed articles published between 2017-2021 with a focus on co-operative societies and agricultural supply chains. From the literature, the study revealed a significant role of co-operative societies in the supply chain of agricultural products. Co-operatives provide operational, technical, financial and support services to agricultural supply chain actors. These include provision of agricultural inputs and loans to farmers, production, processing, transportation, storage and marketing of agricultural products. This study advances the body of knowledge by linking co-operative's activities with the agricultural supply chain model and offers managerial implications to co-operatives societies, policymakers and agricultural supply chain actors. Further research is needed to determine the challenges facing practical integration of co-operatives societies with agricultural supply chain.*

### **Keywords:**

Co-Operative Societies, Agricultural Supply Chain, Agricultural Products

### **1. Introduction**

The agricultural sector and co-operative movements play notable a role in socio-economic development in many governments and societies. Integrating the agriculture sector with co-operatives activities paves the way towards agriculture sector transformation and development through improved access to agricultural inputs and markets, income enhancement and improved access to social services (Kumburu and Pande, 2020; Mhagama et al., 2021). Co-operative movements and the agriculture sector create wealth for the government and the public at large by offering employment, reducing poverty and ensuring sustainable food supply and security. Evidence shows that about 67% of the global population are employed and depend on agriculture activities for their livelihood sustainability (ILO, 2019; World Bank, 2019). Moreover, about 80% of global farmers are smallholder farmers who own and operate an average of 1-5 acres and generate about 80% of the world's food (Mchopa et al., 2020; ILO, 2019).

Similarly, co-operative societies have revealed immersed impact in various sectors of the world's economy. It is estimated that co-operative societies account for 3 million worldwide and employ about 10% of the global workforce in diverse sectors of the economy (ILO, 2019). The ILO (2019) and Karakas (2019) define co-operative societies as autonomous groups of people who voluntarily join together with common purposes and objectives to meet socio-economic needs and goals through democratically managed and owned associations. On African continents, co-operatives movement started early in the 1920s. The core objective of co-operatives societies on the African continent was to produce and process agricultural cash crops to meet the colonial demand (Lyimo, 2012). The movement made a step forward in 1895 after the establishment of the International Co-operative Alliance (ICA). The ICA is a non-governmental and independent unit established for the purpose of uniting and serving co-operative societies worldwide. Among others, ICA provides a forum under which co-operative societies share knowledge, experience, expertise and co-ordinates actions to improve their operations across all sectors of the economy.

As a result of these efforts, there have been some success stories in various countries pertaining to the co-operatives movement in various sectors of the economy. Kenya has recorded up to 22,883 co-operative societies, being one of the countries with the highest number of co-operative societies in Africa after Nigeria and South Africa (Otieno, 2019; SDC, 2018). In Kenya particular, dairy co-operatives have contributed substantial impact in terms of cost-effective, timely delivery and reliable markets among dairy farmers and supply chain actors (Bolton, 2019). Moreover, experience shows that Mali and Ethiopia have achieved substantial improvement in the production, processing, distribution and marketing of better-quality cotton and coffee products through agricultural co-operative societies (ILO, 2019; Bolton, 2019). Co-operative movements have been viewed by policymakers as an important platform for the transformation of various sectors of the economy at local and global levels.

The core objectives of supply chain are to ensure delivery of the right quantities and quality of goods or services to the ultimate customers at the possible minimum cost and time. The key objectives of agricultural supply chain extend to increased productivity and continued access to agricultural inputs and outputs at a better price (Mhagama et al. 2021; Rwekaza, 2018; Anania et al. 2020). Despite the stated objectives, the agricultural supply chain faces several complexities that impede its efficient operations and realisation of its goals. Shirima (2021), Hong et al. (2021) and Nade (2020) spotted limited access to the markets, agricultural inputs, low productivity and low value of agricultural products as the major contemporary issues along the supply chain of agricultural products. These issues face all agricultural supply chain actors including farmers, processors, distributors and retailers. Evidence shows that only 35% of agricultural products have access to reliable markets and about 98% are sold through informal marketing channels. Moreover, less than 10% of farmers have access to reliable agricultural inputs and financial services (URT, 2018; World Bank, 2019). Anania et al. (2020) and Msuya (2020) connected the barriers that impede the agricultural supply chain with financial constraints and lack of formal platforms that link and integrate the agricultural supply chain with other sectors of the economy.

Certainly, there is no clear understanding of the role of co-operative societies in the supply chain of agricultural products among scholars, policymakers and researchers. This creates little understanding of the subject matter. Previous studies have focused on discussing and addressing the role of co-operative movements in poverty reduction (Hong et al., 2021; Kazungu and Machimu, 2021; Msuya, 2020), co-operatives challenges and benefits (Anania et al., 2020; Katundu, 2018), functional roles and performance co-operative societies (Kumburu and Pande 2020; Shirima, 2021). The pertinent question in this study is, what role do co-operative societies play in the supply chain of agricultural products? It is from this base; this study enriches the literature by examining the role of different types of co-operative societies in enhancing sustainable operations of the agricultural supply chain. Practically, this study provides policy insight in reviewing and re-forming the position co-operative societies in the agricultural supply chain in Tanzania's economic setting.

### 1.1. Trends and Types of Co-operatives Movements in Tanzania

Like in other African countries, the co-operative movement in Tanzania started in the 1920s with a similar objective and purpose, that is producing and processing cash crops for export to fulfil colonial demand (Lyimo, 2012; Anania et al. 2020). To date, the focus of the co-operatives has been diversified from cash crops to food crops and financial co-operatives. Until 2021, Tanzania had 9,678 co-operative societies operating in various sectors of the economy including in agriculture industry, trade, transport and communication, insurance, fishing, livestock, financial and health services (TCDC, 2021). The common types of co-operatives that are active in Tanzania are savings and credits co-operative societies (SACCOS), Agricultural Marketing and Co-operative Societies (AMCOS), livestock co-operatives, fishing co-operatives, consumer co-operatives, industrial co-operatives, transport co-operatives, service co-operatives and mining co-operatives. Table 1 presents the types and trends of co-operative societies for the last five years (2017-2021).

SACCOS and AMCOS form a substantially large number of co-operative societies in Tanzania compared to other types of co-operative societies. The express functions of co-operatives are determined by the objectives and the policies set forth by their members (Hong et al., 2021; Msuya, 2020). For example, credit co-operatives provide financial services to their members while agricultural co-operatives produce, process, distribute and market agricultural products. The core objective of consumer co-operatives is to purchase higher quality products and services at the least cost on behalf of their member or other customers. Nevertheless, transport co-operatives deal with the physical distribution of goods. To ensure sustainable co-operative movements, the Tanzania co-operative

society act (2013) mandates the Tanzania Co-operative Development Commission (TCDC) the role to monitor, develop, regulate and promote co-operative societies and their activities in Tanzania.

**Table 1: Trends of co-operative societies by sector in Tanzania**

Types of Co-operatives	Year				
	2017	2018	2019	2020	2021
<b>SACCOs</b>	5640	5918	4,770	6,178	3,946
<b>AMCOs</b>	3403	3413	2105	3,835	4,538
<b>Beekeeping</b>	57	56	20	56	57
<b>Livestock</b>	214	217	181	238	200
<b>Consumer Co-operatives</b>	113	137	7	98	67
<b>Industry</b>	120	118	11	91	46
<b>Housing</b>	27	33	4	31	110
<b>Irrigation</b>	80	78	15	82	95
<b>Mining</b>	202	208	81	98	186
<b>Fishing</b>	86	94	615	121	110
<b>Service</b>	179	196	41	121	189
<b>Transport</b>	30	24	11	17	22
<b>Others</b>	314	361	15	566	112
<b>Total</b>	<b>10465</b>	<b>10853</b>	<b>7876</b>	<b>11,532</b>	<b>9,678</b>

Source: Tanzania Co-operative Development Commission (2021).

## 1.2. Agricultural Supply Chain

Supply chain is a set of activities linked upstream and downstream involved in the flow of goods, funds and information from the producer to the ultimate customer (Matopolous et al., 2007; Zhang et al., 2021). For the purpose of this study, supply chain refers to the network and interconnected activities and parties involved to facilitate efficient flow of agricultural products from the farmers to the end-users. The agricultural supply chain is linked by a network of inputs suppliers, farmers, collectors, processors, wholesalers, distributors, retailers and customers. Mostly, the agricultural supply chain is involved by a number of intermediaries acting between the customers and farmers. The agricultural supply chain strives toward delivering the right quality and quantities of the products within the right time and at a reasonable cost from the producer to the ultimate customers (Zhang et al., 2021). The need to minimise overall supply chain operational cost, keep customers satisfied and maximise profit along the agricultural supply chain also form an integral part of supply chain objectives.

One of the critical problems that impede the express objectives along the supply chain of the agricultural product is the long marketing and distribution channel. Basically, farmers depend on supply chain intermediaries in collecting, marketing and distributing agricultural products from the farm to market or to the final consumers. The major deficiencies associated with the use of intermediaries along the supply chain of agricultural products are unfair dealing with farmers, delays in delivery, high supply cost to customers and lack of supply chain control (Anania et al., 2020; ILO, 2019). Usually, intermediaries purchase agricultural products at very low prices from farmers and sell the same at a higher price to the customers. Since many intermediaries are involved, the chain generates less return to farmers and high prices for consumers. Heavily depending on intermediaries along the supply chain of agricultural products is connected with farmers' inability to transport agricultural products from the farm to the market due to long distances and high transport costs (Msuya, 2020; Nade, 2020; Shirima, 2021). Inefficient storage facilities, knowledge gaps and financial problems also impede farmers from processing, marketing and distributing agricultural products directly to the customers. Knowledge gaps stem from lack of access to market information which is essential for effective operations of agricultural supply chain (Otieno, 2019; Rwekaza and Anania, 2021).

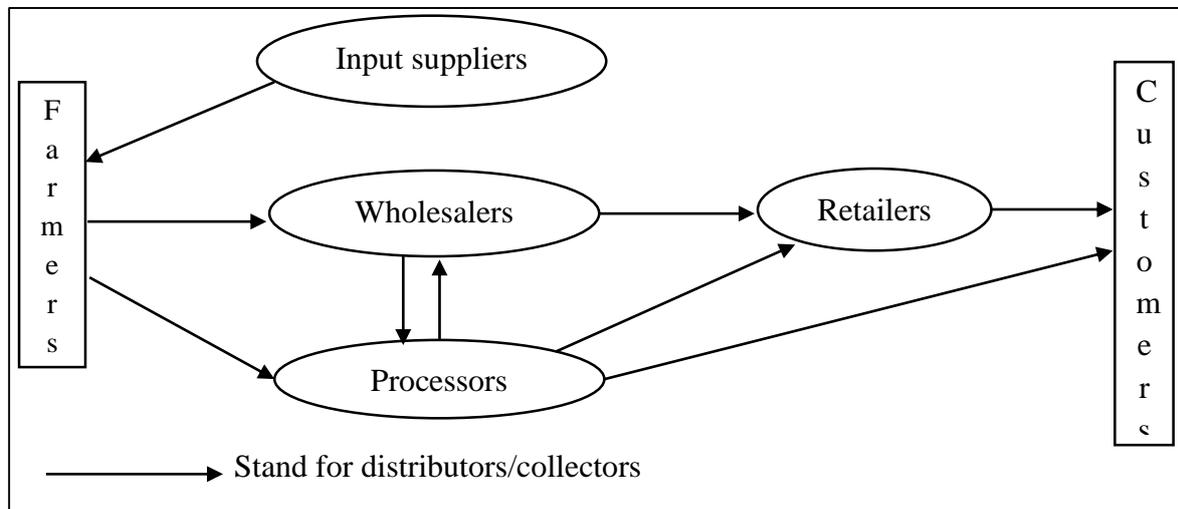


Figure 1: Agricultural supply chain network: Adopted and Modified from Matopolous et al. (2007).

Integrating co-operative activities with agricultural activities reduces intermediaries' role along the supply chain of agricultural products. This is due to the fact that co-operatives serve the functional role of intermediaries along the agricultural supply chain. Supply chain activities, which on the other hand are co-operatives' activities include the supply of agricultural inputs, production or farming, processing, storage and distribution of agricultural products to the final customers. Having the co-operative societies in place helps in eliminating the deficiencies caused by intermediaries and returns the profit accrued along the supply chain back to the members. Co-operative societies provide a platform for technical and financial support services and provide access to transportation, agricultural inputs and market information along the supply chain of agricultural products (Kingu and Ndiege, 2018; Shirima, 2021; Zhang et al., 2021).

## 2. Methodology

There has been a substantial body of knowledge on the subject matter pertaining to operations and the functional role of co-operative societies in various sectors of the economy with little focus on the agricultural supply chain. In a view of this knowledge of the co-operative's movement, this study conducted an extensive literature review to examine the role of co-operative societies in the supply chain of agricultural products in Tanzania's economic setting. In order to obtain quality and recent data, the study reviewed the most recent research articles published in quality journals in the last five years (2018-2022) with a focus on co-operatives studies in Tanzania. Grey kind of literatures were not considered. Data less than five years after publication are deemed most current and relevant for presentation, discussion and making an inference. It is from this base; twelve (12) articles with a specific focus on co-operatives societies in Tanzania context being published in the specified time frame (2018-2022) (see table 2) were retrieved and reviewed. From the reviewed 12 articles, the study managed to spot eleven (11) roles of co-operative societies in the supply chain of agricultural products (see tables 2 and 3).

Articles reviewed under this study were accessed through google scholar using the advanced search engine. This database was preferred since it is easily accessible and is connected to various research publishers and databases. The keywords used to search and retrieve the articles for review were "co-operatives" OR "co-operative societies" OR "co-operatives' role" OR "co-operatives' functions" OR "co-operative model" OR "co-operative movements" AND "supply chain" OR "agricultural supply chain" AND "Tanzania". The identified eleven (11) co-operatives' roles were tabulated and analysed using descriptive statistics (frequencies and percentages). Each role was counted and assigned a frequency based on its mentions in the articles reviewed. The total frequencies for each role were divided by the total number of reviewed articles (12) before being multiplied by 100% to determine the significant role. The role that scores at least 50% was considered significant in strengthening the operation of the agricultural supply chain (Mohammed et al., 2013).

### 3. Findings

This study ascertained the role of different types of co-operative societies in fostering an efficient supply chain of agricultural products in Tanzania’s context by reviewing different sources of literature. From the reviewed literature, the study revealed multifunctional roles of co-operative societies in the supply chain of agricultural products in urban and rural areas. Based on the study focus, the study findings spotted 11 significant roles of co-operative societies in enhancing the efficient supply chain of agricultural products as summarised and presented in tables 2 & 3 and in figure 1.

**Table 2: Empirical Literature on Co-operatives’ Role in Agricultural Supply Chain**

Author(s)	1	2	3	4	5	6	7	8	9	10	11
	SA I	PAP	MAP	CM I	CB S	PR C	PK G	TP D	SD T	CF S	PG S
<b>Shirima, (2021)</b>	√	√	√	√	√		√	√		√	√
<b>Rwekaza, (2018).</b>	√		√			√					
<b>Hong et al. (2021)</b>	√	√		√				√		√	√
<b>Kingu &amp; Ndiege, (2018)</b>		√	√			√		√		√	
<b>Kazungu &amp; Machimu, (2021)</b>	√	√	√	√	√	√	√	√	√		√
<b>Rwekaza &amp; Anania, (2021)</b>			√	√							
<b>Kumburu &amp; Pande, (2020)</b>	√	√				√					
<b>Nade, (2020)</b>	√	√	√	√			√	√		√	√
<b>Mhagama et al. (2021)</b>		√	√		√	√		√		√	√
<b>Katundu, (2018)</b>			√			√	√	√			
<b>Msuya, (2020)</b>	√		√	√				√	√	√	√
<b>Anania et al. (2020)</b>	√	√	√	√	√	√	√	√	√	√	√

Legends: SAI = Supply of agricultural inputs, PAP = Production of agricultural products, MAP = Marketing of agricultural products, CMI = Centre for market information, CBS = Capacity building to smallholder farmers, PRC = Processing of agricultural products, PGS = Packaging and storage, TPD = Transportation and distribution, SDT = Safety during transportation, CFS = Credit facilities and financial services and PSA = Purchasing and selling agency.

Marketing, transportation and distribution of agricultural products were revealed as the most significant role played by the co-operative societies in the supply of agricultural products. The marketing role of co-operative societies is undertaken by AMCOS where agricultural products are produced, processed and marketed directly to customers or through wholesalers and retailers in domestic or global markets. In line with this finding, Shirima (2021), Anania et al. (2020) and Mhagama et al. (2021) asserted that AMCOS solicit markets and links its members to reliable and stable markets. On the other hand, transport co-operatives play a significant role in the supply chain of agricultural products by offering logistics and transportation services. Transport co-operatives help in moving agricultural products from the producers to the ultimate customers as one of the important activities of the supply chain (SDC, 2018; Msuya, 2020; Rwekaza, 2018). With its role, transport co-operatives’ systems enhance the safe and timely delivery of agricultural products along its chain. The study highlighted significant role of co-operative societies in enhancing production and supply of agricultural products. Producers’ co-operatives help farmers integrate supply chain activities, pull together their resources and operate jointly in production and supply of the identified agricultural products (Kingu and Ndiege, 2018; Kazungu and Machimu, 2021; Anania et al. 2020). These will in turn help in meeting the express objectives of agricultural supply chain objectives by reducing production cost, increasing production, members’ income and customer service level.

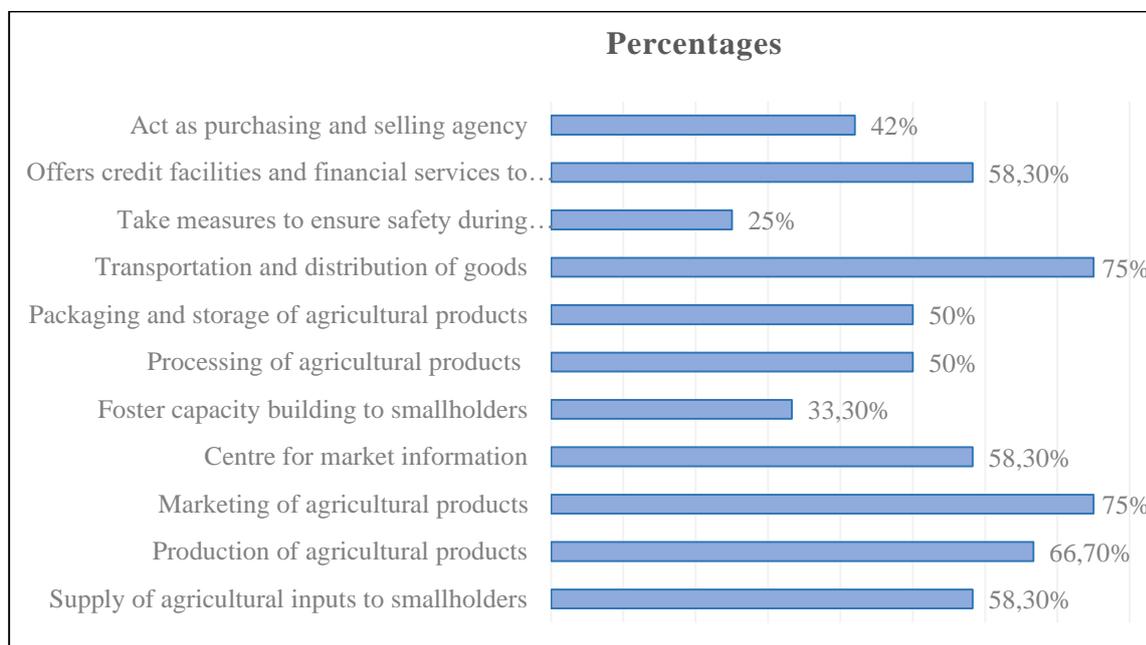
Table 3: Frequencies of Co-operatives' Role in the Supply Chain of Agricultural Products

Sn.	Perceived roles of Co-operative societies	No. of literature cited the role	Percent (%)	Ranking
1	Supply of agricultural inputs to smallholders	7	58.30**	4
2	Production of agricultural products	8	66.70**	3
3	Marketing of agricultural products	9	75.00**	1
4	Centre for market information	7	58.30**	4
5	Foster capacity building to smallholders	4	33.30	10
6	Processing of agricultural products	6	50.00**	5
7	Packaging and storage of agricultural products	6	50.00**	5
8	Transportation and distribution of goods	9	75.00**	1
9	Measures to ensure safety during transportation	3	25.00	11
10	Offer credit facilities and financial services to farmers	7	58.30**	4
11	Act as purchasing and selling agency	5	42.00	6

Legend: \*\* Indicates significant role

Source: Literature Review (2022).

Co-operatives play a significant role in the timely and adequate availability of agricultural inputs to smallholders as one of the express objectives of the agricultural supply chain. This is in line with Kazungu and Machimu's (2021) and Msuya's (2020) findings who asserted that co-operatives provide farmers with a better link to agricultural inputs such as seeds, fertilizers and equipment. Increased access to agricultural supplies through co-operatives eliminates the deficiencies caused by supply chain intermediaries and guarantees reliable and quality inputs at economic purchasing cost. One of the critical issues that face a traditional supply chain of agricultural products is the problem of information distortion. To uncover this problem, this study revealed and asserts that co-operative societies serve as a hub for market information along the supply chain of agricultural products. In line with Shirima (2021), Kumburu and Pande (2020) and Nade's (2020) findings, this study regards co-operative societies as a modern platform where supply chain information pertaining to sources of agricultural inputs, market opportunities, price and finances are shared among customers, retailers, distributors and producers. The study further revealed a significant role of co-operatives, specifically SACCOS in offering credit facilities and financial services along the supply chain of agricultural products. Msuya (2020) reported SACCOS as the most significant form of the financial institution available in rural Tanzania that provides loans that support smallholder farmers in purchasing agricultural inputs, finance production, transportation and marketing activities of agricultural products.



**Figure 2: Percentages of co-operatives' role in the supply chain of agricultural products**

Source: Literature Review (2022).

The study revealed a significant role of co-operative societies in processing and value addition of agricultural products. Co-operative societies such as AMCOs, beekeeping, livestock, industry, mining and fishing produce agricultural products, sort and process them to add value before being packed, stored in a conducive environment and distributed to the customers. This finding concurs with Hong's et al. (2021), Kingu and Ndiege's (2018) and Anania's et al. (2020) findings who reported processing, packaging and storage of agricultural products as one of the functional roles undertaken by agricultural and industry co-operatives, which on the other hand are an integral part of supply chain activities. Despite being insignificant, the study found that co-operative societies extend training and capacity-building initiatives to agricultural supply chain actors. Producers, wholesalers and retailers of agricultural products use co-operative societies to enhance their production and operational capacities, marketing skills and post-harvest management techniques through seminars and workshops (Shirima, 2021; Rwekaza and Anania, 2021; Nade, 2020). Nevertheless, co-operative societies, specifically consumer co-operatives serve an important role in purchasing and selling agricultural products. Acting as purchasing and selling agency, consumer co-operatives procure quality goods and services from suppliers at the lowest cost on behalf of customers. By so doing, consumer co-operatives eliminate the exploitation nature of intermediaries along the supply chain of agricultural products, link customers with suppliers and foster timely delivery.

#### 4. Conclusion and Recommendations

This study discussed the role of co-operative societies in the supply chain of agricultural products through an extensive literature review in Tanzania's context. The review spotted different types of co-operative societies that perform different functions in different sectors of the economy. These range from financial co-operatives (SACCOs), agricultural co-operatives (AMCOS), transport co-operatives, fishing co-operatives, livestock co-operatives and consumers co-operatives, among others. The study found and concludes that co-operative societies are important platforms with significant roles in the supply chain of agricultural products. Co-operative societies perform essential activities along the supply chain of agricultural products towards achieving cost-effective, timely delivery and customer satisfaction. These include production, processing, packaging, storage, distribution, transportation and marketing of supply agricultural products. Nevertheless, co-operative societies provide opportunities for smallholder farmers to easily access agricultural inputs, market information, capacity building,

financial loans and facilities. Based on the study's findings, the study recommends the need for practical integration of agricultural sector with co-operative societies. These might include forming horizontal integration between co-operative societies, farmers, wholesalers and retailers. To agricultural extension officers, the study calls for regular training among agricultural supply chain actors on the realised role and the perceived benefits of co-operative societies in the agricultural sector. Nevertheless, farmers, wholesalers and retailers can choose to improve supply chain performance by choosing to join their efforts in producing, processing, transporting and marketing agricultural products through co-operative societies.

## 5. Limitations of the Study and Future Research

The major limitation of this study is that it is confined only to the role of co-operative societies in the supply chain of agricultural products in Tanzania's context. Other factors that affect the supply chain of agricultural products were not addressed. Therefore, the findings of this study should neither be generalised elsewhere nor regard other factors than co-operatives in nature. However, further research is needed to address the following issues: (1) determine the challenges facing practical integration of co-operative societies with the agricultural supply chain, (2) address other factors than co-operatives that affect the supply chain of agricultural products and (3) examine the role co-operatives in the supply chain of services. This will enrich the literature on the understanding of different aspects affecting different types of supply chains.

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