Agricultural Production Services and its Impact on Choice of Marketing Channels among Smallholder Sesame Farmers in Tanzania

Mhagama, J.K.[1] and J.J. Mmasa[2]

[1]RUCODIA, P.O. Box 617 Songea, Tanzania
[2]Department of Economics, The University of Dodoma, Tanzania

*Corresponding author e-mail: *joelmmasa@gmail.com; mhagamaj@gmail.com*

Abstract

The study examined the relationship between agricultural production services and choice of marketing channels among smallholder sesame farmers in Tanzania. The study employed cross-sectional research design; whereas a sample of 392 smallholder sesame farmers was randomly drawn through probability sampling techniques. Data were collected using survey questionnaire, interview guide and checklist. Analysis of quantitative data was done using Generalized Structural Equation Modelling (SEM) method. The study found that agricultural production services were associated with increase in chance of Smallholder sesame farmers to use Warehouse Receipt System (WHRS) channel; the odds ratio associated with selecting of WHRS marketing channel instead of other market channels for unit increase in production services was 1.59. This implies that the odds of using WHRS market channel increased by 1.59 for unit increase in agricultural production services. These results indicate that there is a relationship between the agricultural production services and choice of market channel. Hence, hypotheses was rejected, and concluded that agricultural production services had a significant influence on the choice of market channel. Hence, the increase in agricultural production services associates with higher probability of Smallholder sesame farmers to use WHRS channel instead of the other market channels by 61 percent. However, there is generally low provision of agricultural production services to Smallholder sesame farmers in the study area. The Smallholder sesame farmers in the study area have low access to education and training, agricultural inputs and agriculture support services. Low provision of production services implies low productivity in agriculture. The study provides important insights into understanding of the effects of agricultural marketing cooperative societies on the influence of agricultural production services on the choice of marketing channels, and recommends enhancing the capacity of the agricultural marketing Cooperatives Societies for agricultural service delivery

Keywords: Marketing Channels, Sesame, Production, Agricultural Services

Introduction

Sesame is one of the highest oil content of any other seeds (Linn, 2013). Its rich and nutty flavor makes it a common ingredient in cuisines across the world. Sesame is grown for its seeds, and the primary use of the sesame seed is as a source of oil for cooking. According to study done by FAO (2017), Sesame is among highly demanded crops in the world market having global demand of 250 million ton per year in 2016, with largest importers being Japan, China, US, Canada, the Netherlands, France, and Turkey. World production of the sesame in 2016 amounted to 6.1 million ton with Tanzania, Myanmar, India, China and Sudan ranking top producing countries in the world (FAO, 2017). Furthermore, total production of Sesame in Africa in same year 2016 was 3.3 million tons, which constituted about 50% of global production (FAO, 2017). The data showed that African's top producers of sesame were Tanzania, Sudan, Ethiopia and Uganda (FAO, 2017). African yield levels are quite low, about one third of Asian yields (ILRI, 2007) indicating

huge potential for future growth. In East Africa, only Uganda, Sudan and Tanzania are in the front line with respect to sesame production (FAO, 2017).

In Tanzania, sesame is grown in several regions including Manyara, Morogoro, Ruvuma, Songwe, Dodoma, Lindi and Mtwara. However, the major sesame producing regions are Lindi and Mtwara. According to TanTrade (2016), Mtwara and Lindi regions alone could export up to 400,000 tons of sesame seed a year to Japan at a world market price of US$ 900, to earn a total of US$360 million (Tshs 720 billion). However, the potential for the sesame export in the country is poorly exploited. For example, in 2014 Lindi and Mtwara regions produced only 34,000 tons of sesame, being only 8.5% of its potential export (Tan Trade, 2016). Most production of sesame in Tanzania is carried out by small-scale farmers as a source of income and is characterized by low productivity (TanTrade, 2016). In the overall, a ten years trend from 2008 to 2018 indicate sesame production in Tanzania was rising (Fig. 1). Production and productivity of sesame was highest for 2013, 2014 and 2015 farming seasons.

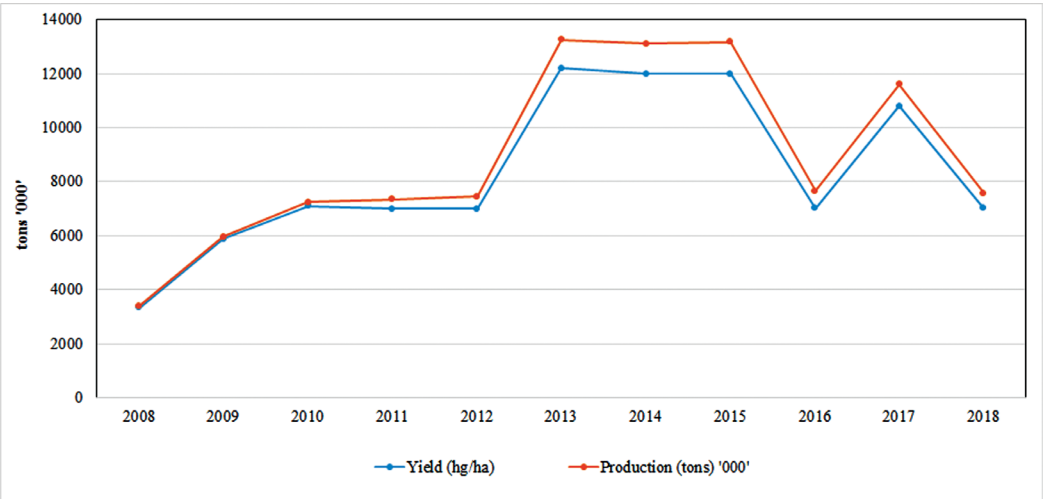

Figure 1: Sesame Production and Yield (2008-2018) in Tanzania

Smallholder sesame farmers in Lindi and Mtwara are constrained by higher transaction costs resulting from higher unit costs of procuring inputs and costs related to access to financial services, extension services and marketing services (Mashindano & Kihenzile, 2013a). As a result of these challenges, smallholder sesame farmers in Lindi and Mtwara are subject to low productivity (ILRI, 2007) that in turn affects their choice of formal market as marketing channel (Nyaupane & Gillespie, 2010). As a result of low productivity, the smallholder farmers choose informal markets such as the middlemen who unfortunately pay low price; therefore, decreasing their income and potentially contribute to prevailing poverty levels. Low productivity implies less likelihood of choosing formal market as marketing channel. According to Nyaupane & Gillespie (2010), surplus production is associated with the choice of formal market that offer better prices as marketing channel.

Smallholder sesame farmers in Lindi and Mtwara face serious income problems due to limited choice of market channel (FAO, 2017; Mashindano & Kihenzile, 2013b; TanTrade, 2016). Choice of Market channel could be improved if provision of marketing services is offered that help to decrease transaction costs and potentially raise productivity (ILRI, 2007). This lead to smallholder farmers to produce surplus and have capacity to chose formal market channel and when to sell their produce (Nyaupane & Gillespie, 2010); transaction costs include higher unit costs of procuring inputs and costs related to financial services, extension services, marketing services (Wiggins *et al.,* 2010) . According to utility maximization

theory, farmers are assumed to use formal market channel if it maximizes their expected utility of net returns (Fischer & Qaim, 2012; Ito *et al.,* 2012; Ma & Abdulai, 2016).

Despite the efforts of the government and other stakeholders to create supportive environment in production and marketing through the Tanzania Development Vision 2025, ASDP I, ASDP II, AMP, National SME policy, Regional Sesame marketing guides (URT, 2018, 2019), and engagement of various private and NGOs programs to remove the constraints such as limited access to agricultural inputs, extension services, market information, and financial services; yet production of sesame in the Lindi and Mtwara is still low and the smallholder sesame farmers are still economically poor (FAO, 2017; TanTrade, 2016).

The cooperative were established in Tanganyika by peasant in 1925 with the purpose of enabling indigenous peasant to capture part of the profit, which would otherwise occupied by traders for example in traditional export crops like coffee (Maghimbi, 2010). Cooperatives increased rapidly in the country with firm support from the government and development partners. Agricultural marketing cooperatives (AMCOS) were dominant, but different types of cooperatives were encouraged by the government.

Cooperative societies may collectively provide access to inputs, output market, value addition services, market information, collective production, financial services, technical services, welfare services, policy advocacy, and managing common property resources (Shrestha *et al.,* 2016). Cooperatives are key in the provision of price information, price stabilization and adoption of improved technology that may result into market participation (Harrizon *et al.,* 2016; Moustier *et al.,* 2010; Shrestha *et al.,* 2016; Wiggins *et al.,* 2010). Further, according to Transaction Cost theory, farmers' choice of cooperatives is based on their desire not only to have low production costs and larger revenues, but also to have low transaction costs (Bonus, 1986; Hendrikse & Eerman, 2001). Agricultural cooperative is institutional arrangement designed to reduce the transaction costs and enhancing ability of farmers' market participation (Chagwiza *et al.,* 2016).

Basing on this, the study hypothesized that availability of agricultural production services have influence the choice of marketing channels among smallholder sesame farmers in Tanzania. Therefore, the contribution of this study was to establish a link between AMCOS, agricultural services and choice of marketing channel among smallholder sesame farmers in Lindi and Mtwara.

Methodology

The study sampled 392 randomly selected farmers from Lindi (Liwale & Kilwa DC), Mtwara (Masasi and Nanyumbu DC). Selection of the study districts was based on their prominence in sesame growing and productivity (Tan Trade, 2016). The study used mixed method research approach. Mixed method research involves the collection and analysis of both quantitative and qualitative data, integrating the results at some point in the research and make inference basing on both quantitative and qualitative methods in a single study (Tashakkori and Creswell, 2007). This study adopted a cross-sectional study design where data were collected at a single point at a time. This design enabled the researcher to obtain a general picture that stood at the time of the study then analyzed to determine the pattern of association for the variables to test the hypothesis.

A multi-stage sampling involving a combination of purposive and random sampling procedures were used to select a representative sample of respondents. Selection of regions and respective districts; was purposive on the basis of higher production of sesame. Selection of villages and farmers; it was by a multistage sampling method with two stages i.e random sampling of 5 participating villages from each district, and random sampling of 18 to 20 smallholders farmers (SHFs) from each village. Note: Exclusion criteria was used for those who sold to more than one market channel.

In this study the dependent variable was Marketing Channel. Choice of Marketing Channel by a sesame farmer was viewed as a binary choice. The marketing channel being a

binary choice, it was expected that binary logistic regression model would be used. However, this would only be possible if both independent and dependent variables were observed. Since in this study, the independent variables are unobserved (latent) and the dependent variable is binary, and hence cannot be assumed to be normally distributed, the study adopted Generalized Structure Equation Modelling (GSEM). In other words, the selection of GSEM was due to the fact that the independent variables were latent while the dependent variable (choice of market channel) was binary and hence cannot be assumed to be normally distributed. This method is an alternative to binary logistic regression model when both dependent and independent variables are observed. A sesame farmer indicated in the survey questionnaire either a choice of WHRS as marketing channel of preference where he sold his produce or otherwise. The choice 'otherwise' represented all other marketing channels apart from the WHRS such as processors, middlemen, and street markets.

Random Utility Maximization Theory assumes that the decision maker has full discrimination capability to choose and alternative with the highest utility (Greene, 2003). It postulates that a consumer will make a rational choice to maximize utility subject to a set of constraints (ibid). For analytical purposes, the study assumed that the decision of a farmer on whether to use WHRS or other marketing outlets as a marketing channel depended upon the utility difference (U_i^*) between the expected utility of net returns (U_i^1) derived from using the WHRS and that (U_i^0) obtained from using other market outlets such as open markets and Middlemen. A farmer choose to use WHRS as a marketing channel, only if $U_i^*=U_i^1-U_j^0>0$. This means that the decision of a farmer to participate in WHRS marketing channel was predicted to be higher in anticipation of higher expected utility than the otherwise. However, the decision maker (a farmer) seldom has perfect information implying that uncertainty has to be taken into account. Nevertheless, U_i^* cannot be observed directly, but can be expressed as a latent variable function:

$$U_i = \varphi X_i + \mu_i, U_i = 1 if\ U_i^* > 0 or\ 0 if\ otherwise \quad (1)$$

Where U_i is an observed dummy variable, indicating whether or not famers choose to use WHRS as marketing channel. In particular, U_i takes the value of one, if a farmer uses WHRS as marketing channel, and Zero otherwise. Xi is a vector of agricultural services (marketing services, production services and ICT Utilization); φ is vector of parameter to be estimated; μi is an error term, which is assumed to be independently and identically distributed with a zero mean.

To link the relationship between using WHRS as marketing channel and agricultural services, we assume that the indicators of latent variables of agricultural services (indicators of marketing services, production services and ICT Utilization) can be expressed as a function of a marketing channel using dummy (U_i), a vector of explanatory variable (X_i), and an error term (δi):

$$Y_i = \beta U_i + \chi X_i + \delta_i \quad (2)$$

Where Y_i represents market choice, X_i represents agricultural services (market services, production services and ICT Utilization), β and χ are vectors of parameters to be estimated.

Theoretical framework

This study was framed in the utility theoretical framework. According in to Fischer & Qaim, (2012); Ito *et al.,* (2012); Ma & Abdulai, (2016), the choice of Marketing Channel by a sesame farmer in the study area can be viewed as a binary choice resulting from maximization of utility. Farmers are assumed to use agricultural cooperatives WHRS as a marketing channel if this maximizes their expected utility of net returns. This theory has also been adopted by Harrizon *et al.* (2016); Liu (2018); and Rao and Qaim (2010) in similar study of determining market channels. A farmer frequently face economic choices to make such as of selling products give the potential costs and benefits which may be perceived differently by different households (Liu, 2018). In this study the sample farmers consist of famers who belong to AMCOS (AMCOS members) and who do not belong to AMCOS (non-members)

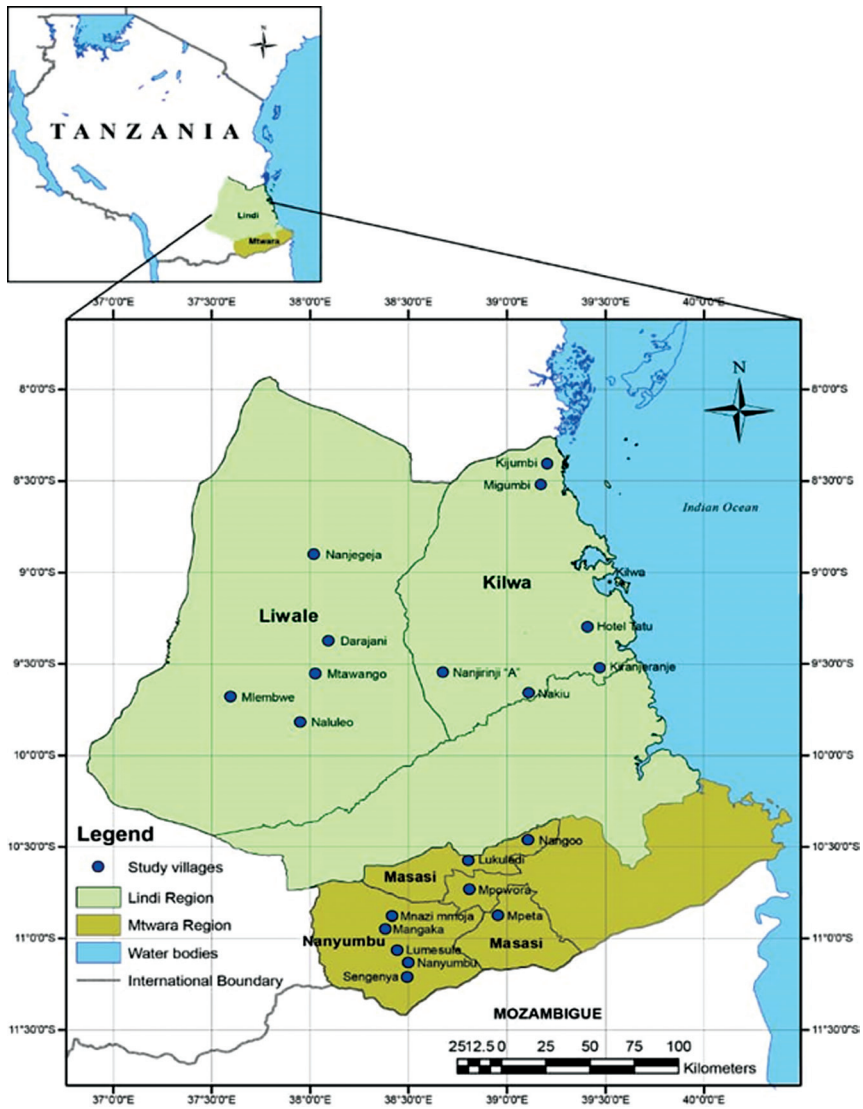

Figure 2: Map Showing Study Location

and that both can access services (marketing services, production services and ICT utilization) through any means at their disposal, including government support services and AMCOS. In this respect, the benefits of the farmer are mostly in terms of better access to marketing services, production services and ICT utilization.

Random Utility Maximization Theory underpins the choice models used in a wide range of academic and practical situations to model choice processes (Ben-Akiva & Lerman, 1985; Mcfadden, 2001). Recently, there has been interest in extending choice models by including ideas and methods from Structural Equation Models (SEMs). For example, Ashok *et al.,* (2002), Morikawa *et al.,* (2002) and Walker (2001) show how to combine covariates with factor analytics to create latent variables that form part of the model specification in explaining discrete choices. The observed variables in SEMs reflect variation in underlying latent variables, known as theoretical constructs, in the measurement sub-model. By including latent variables in this way, one can use SEMs to evaluate and test substantive theory.

The latent variables in a structural choice model might represent preferences for the objects studied, including higher-order

preferences which capture unobserved sources of heterogeneity. Like SEMs, the fit of the models and competing models allows a researcher to evaluate and test substantive theory. A study of a farmer' hypothetical choices of market channel involve choices of agricultural services attributes. SEM provides a model that describes how individual farmer's preferences for market choice reflect their access to agricultural services namely marketing services, production services and extension services. The three agricultural services (Marketing services, production services and ICT Utilization) become the constructs. The constructs are operationalized, each separately, by aggregating different combinations of the more tangible attribute levels. In this case, the constructs are weighted aggregations of covariates representing the levels of attributes.

The utility maximization theory assumes that all farmers including members of AMCOS and non-members act on the basis of socio-economic aspects they drive from the particular marketing channel. It does not take into consideration other factors such as membership commitment or loyalty. Membership commitment or loyalty may also determine the direction of choice of a member in favour of the cooperative (Lang & Fulton, 2004; Marcos-Matas *et al.,* 2018; Morfi *et al.,* 2015). Further, utility measure was designed to convey information about psychological state of the customer, the magnitude of his desires, and the psychic gains and losses incurred by the alternative actions which are available to him. This means other factors such as transaction costs may not be well explained. For those two reasons, this study, in addition to the utility theory, adopted transaction cost theory and membership commitment as other key assumptions underpinning the research.

Results and discussion

This chapter provides presentation, analysis and discussion of the research findings. It also, gives the background characteristics of the respondents, and, has covered specific results and discussion of availability of agricultural production services have influence the choice of marketing channels among smallholder sesame farmers in Tanzania.

Respondents' Choice of Marketing Channel

The findings show that about 52.55% of Smallholder sesame farmers interviewed used WHRS as their marketing channel. Among those used WHRS as marketing channel, 62.50% were AMCOS members and 45.09% non-members. The results indicate two things; first of all they indicate that about 47.45% Smallholder sesame farmers do not sell directly through WHRS, but through other channels, and second they show that membership in cooperatives contributes into farmers choice of market channel. Fig.3 shows distribution of main marketing channels of sesame in Lindi and Mtwara region.

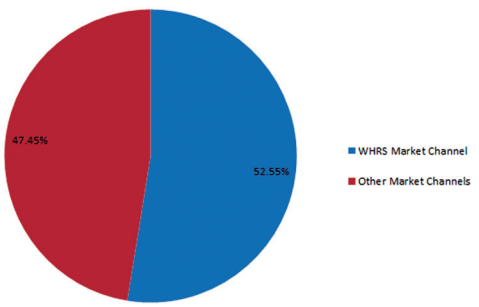

Figure 3: Distribution of respondents on the main marketing channels of sesame in Lindi and Mtwara regions of Tanzania

Effects of Agricultural Production Services on the Choice of Market Channel

The findings with respect to access to production services by smallholder sesame farmers presented in Figure 4 in which revealed that there is generally low provision of agricultural production services to smallholder sesame farmers in the study area, and AMCOS members have more access to agricultural production services than non-members. Low provision of agricultural production services implies low productivity in agriculture (FAO, 2017).

Education and Training

The study found that, the overall on average sesame farmer who is a member of AMCOS and attended education and training the score

on good agricultural practices (GAP) was 3.10 higher than non-members (2.51) or other farmers in the village (2.77). Table 5 presents summary statistics of education and training indicators by AMCOS membership. The findings show that training of GAP to Smallholder sesame farmers was low and potentially affecting improvement in production (Rutatora & Mattee, 2001). Therefore, it implies that farmer is less likelihood to sell their sesame through WHRS. Surplus production is associated with the choice of formal market as marketing channel (Nyaupane & Gillespie, 2010). The findings are in consistence with ILRI (2007).

Access to Agricultural Inputs

Overall mean score of farmer's access to agricultural inputs was 2.85, whereas those who were members of AMCOS the mean score was2.92 larger than non-members mean score was2.80. Mean score of famer's bulk procurement of inputs was 3.08, whereas members of AMCOS mean score was 3.33 large than non-members mean score was2.90. Overall collective credit arrangements for procurement of inputs' mean score was 2.21, whereas members mean score was2.28 large than non-members mean score of 2.17, and overall collective credit arrangement for procurement of farm machinery scored 2.25, whereas members mean score was2.25 and non-members mean score was 2.25. The findings show that access of Smallholder sesame farmers to inputs in the study area was low irrespective of AMCOS membership though farmers belonging to AMCOS scored relatively high for agricultural inputs access, bulk procurement of inputs, and credit arrangement for bulk procurement of inputs. According to Fischer and Qaim (2012), farm size and farm machine are two important physical assets for agricultural production (Fischer & Qaim, 2012). Farm size and farm machine ownership variables are expected to have a positive effect on the probability of using cooperatives as a marketing channel.

Agriculture Support Services

The results show that, the overall mean of access to support services by Smallholder sesame farmers was 2.68, whereas AMCOS members mean score was 2.68 and non-members mean score was 2.67. The study examined four indicators, namely access to technical assistance, access to support for compliance in quality standards, access to farm machinery, and access to credit. The underlining assumption was that access to agriculture support services by Smallholder sesame farmers would influence the farmers to choose formal marketing channel as their marketing channel. Overall mean score of access to technical assistance was 3.20 while AMCOS members mean score was3.22 and non-members was3.17., Quality standards mean score was 2.83 while AMCOS members means score was 2.92 and non-members was 2.77, access to farm machinery means score was 2.00 while AMCOS members means score was 1.98 and non-members score was 2.01, and access to credit mean score was 2.21 while AMCOS members mean score was 2.14 and non-members mean score was 2.25. This indicates that Smallholder sesame farmers in the study area had generally low access to agriculture support services, irrespective of AMCOS membership. Low access to agriculture support services, irrespective of AMCOS membership means two things: first of all it means low productivity and production (Rutatora & Mattee, 2001), and second it means that AMCOS are not providing agriculture support services to their members, which in turn decreases the likelihood of the farmers' choice for formal market as marketing channel (Girma & Abebaw, 2012; Nyaupane & Gillespie, 2010; Saarelainen & Merten, 2011). This argument is also supported by findings made from documentary review, key informant interview and focus group discussion. It was found that, the average sesame yield in the study area was at 800kg per hectare (URT, 2018, 2019), while according to Naliendele Agricultural Research Institute (NARI) standard average recommended yield per hectare is 1,500kg (NARI, 2011). According to FAO (2007) and ILRI (2007), world yield of sesame was recorded at 5,778 kg/ha and African yield levels are quite low, about one third of Asian yields. The reasons for the low productivity include among others: small farms size, distance from markets, use of poor seeds, lack of agronomic knowledge and seasonality. According to Rutatora & Mattee

(2001), there is a significant correlation between falling productivity of smallholder farms and reduced provision of technical training, inputs and infrastructure support.

CAF model for agricultural services presented in Figure 4 fits well to the data.

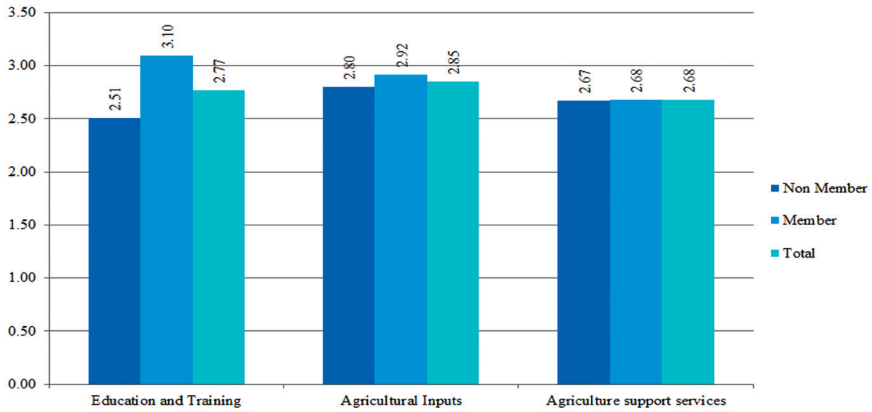

Figure 4: Distribution Descriptive Statistics of Production Services

Results of Inferential Analysis

As presented in methodology section, Confirmatory Factor Analysis (CFA) was carried out with the aim of confirming the explored factor structure, testing of the model, and evaluating of reliability and validity of indicators.

Model fit: the Goodness of Fit of the proposed CFA Model of Agricultural Services

SEM has several fitness indexes that reflect how fit is the model to the data at hand. Four measurements of the Goodness of Fit Indices (GOF) were adopted namely; chi-square/df ratio, Adjusted Goodness of Fit Index (AGFI), Goodness-of-Fit Index (GFI), and Root Mean Square Error of Approximation (RMSEA). The four GOF have been frequently used in the literature (Hooper *et al.,* 2008; López-Cabarcos *et al.,* 2015; Oney *et al.,* 2017; Ráthonyi, 2016). Table 1 displays the fit statistics of the proposed model for agricultural services. The/df index of the proposed model is 3.64 which is less than the cutoff point of 5 indicating that, the proposed model fit well to the data. Besides, the obtained value of CFI (0.921) and GFI (0.910) indexes were greater than recommended value of 0.9. Moreover, the value of RMSEA (0.046) is less than the recommended cut off point of 0.05 (Hair *et al.,* 2010). Therefore, the proposed

Table 1: Fit Statistics of the CFA Model for Services Delivery

Fit statistic	Recommended	Obtained
χ^2	-	149.400
df	-	41.000
χ^2/df	<5	3.640
CFI	>0.90	0.921
GFI	>0.90	0.910
RMSEA	<0.05	0.046

Reliability, Convergent and Discriminant Validity of a Measurement Model

Tests for validity convergent and reliability were computed before modelling of the structural model. To ensure that the instrument measure what was supposed to be measured for a latent construct, three types of validity were tested namely construct validity, convergent validity, and discriminant validity. Table 2 presents the summary statistics for indicators of reliability, convergent and discriminant validity of agricultural services instruments. For reliability, the proposed model for agricultural services (CR=0.802). The values of CR index for all constructs of agricultural services were greater than 0.7 which is indication of good reliability for all constructs.

Table 2: Indicators of Reliability, Convergent and Discriminant Validity for Agricultural Services

Construct	Construct Reliability (CR)	Average Variance Extracted (AVE)	Maximum Shared Variance (MSV)
Production Services	0.802	0.542	0.456

Moderating effect of AMCOS on Influence of Agricultural Services on Choice of Marketing Channel among Smallholder Sesame Farmers

Table 3 shows that, among members of AMCOS, the use of WHRS channel for selling the products was positively associated with Agricultural services. However, the magnitude of effect of Agricultural services on choice of AMCOS channel among members was almost twice (β=0.2784, p=0.01) that of non-members group (β=0.1765, p=0.040). This means that the association between Agricultural services and choice of market channel was moderated by AMCOS membership, and the strength of the effect of Agricultural services on choice of AMCOS channel was noted to be higher among AMCOS members than non-members.

The results of the fitted model presented in Table 3 revealed that the use of WHRS market channel was significantly positively associated with production services (β=0.4617, p=0.008). This means improving in production services was associated with increase in chance of Smallholder sesame farmers to use WHRS channel instead of the other market channels. Conversely, the odds ratio associated with selecting of WHRS marketing channel instead of other market channels for unit increase in production services was 1.59. This implies that the odds of using WHRS market channel increased by 1.59 for unit increase in production services. These results demonstrate that there is a relationship between the production services and choice of market channel. Hence, hypotheses two was rejected, and concluded that production services had a significant influence on the choice of market channel.

The analytical model of the agricultural services (for both, AMCOS members and Non AMCOS members is presented as follows:

$$\log\left(\frac{\pi(x)}{1-\pi(x)}\right) = 0.11 + 0.29 * Marserv + 0.46 * \Pr odserv + 0.61 * Infcomtec \quad (3)$$

The findings were supported by descriptive analysis which demonstrated that increase of access to production services (education, training, agricultural inputs, and agriculture support services, including credit services, technical assistance, quality and standards and transport services) resulted into surplus production which in turn influenced the choice of marketing channel (Chile & Talukder, 2015; National Bureau of Statistics, 2007; Nyaupane & Gillespie, 2010). FGDs and key informant interview indicated that Smallholder sesame farmers had access to some technical training related to farming practices, though as shown in; the training was only at minimum.

Given the relationship shown above between increased agriculture production (surplus) and choice of market channel (Nyaupane & Gillespie, 2010), the claim by Rutatora and Mattee (2001), by extension, it confirms the findings of this study. According to Rutatora and Mattee (2001) there is a significant correlation between falling productivity of smallholder farms and reduced provision to technical training, inputs and infrastructure support, which by extension influences the choice of market channel (Nyaupane & Gillespie, 2010). Further, adoption of improved seeds is key, as improved varieties are more resistant to disease and drought and hence have higher yield, which could encourage farmers to sell the surplus (Nyaupane & Gillespie, 2010). Extension services is pivotal under the

Table 3: Influence of Agricultural Services on Choice of Marketing Channel

Effect	Estimate(β)	Standard Error	Odds Ratios (OR)	Z-Value	P-value
Intercept	0.105	0.1036		1.01	0.311
PRODSERV	0.4617	0.1745	1.59	2.65	0 .008

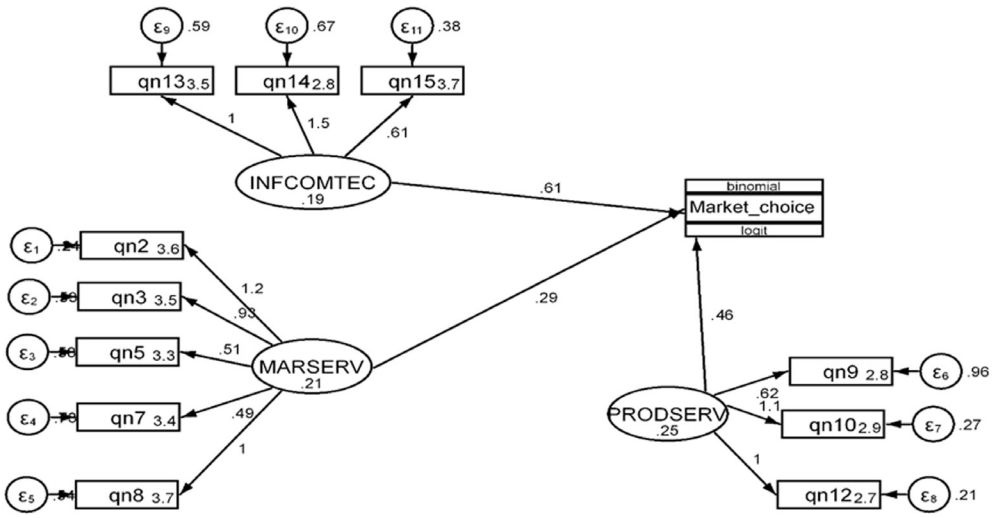

Figure 5: GSEM for determinants of choice of marketing channel among Smallholder sesame farmers

agriculture production services.

Fischer and Qaim (2012) undertook similar study of agriculture production services but from the perspective of agricultural inputs, in particular about relationship between a farmer ownership of farm machine and choice of market channel. In this respect, this study confirmed the findings of which concluded that farm machine ownership variables had positive effect on the probability of using cooperatives as a marketing channel. Farm machine is among agriculture inputs, or, as used in this study, one of agriculture production services.

Conclusion and Recommendation

Agricultural production services namely, education and training, agricultural inputs, and agriculture support services (technical assistance, quality and standards, transportation services and access to credit) influence the choice of marketing channel among Smallholder sesame farmers in Lindi and Mtwara. The increase in production services increases the chance of Smallholder sesame farmers to use WHRS channel instead of the other market channels by the odds ratio of 1.59. However, there is generally low provision of production services to Smallholder sesame farmers in the study area. The Smallholder sesame farmers in the study area have low access to education and training, agricultural inputs and agriculture support services. Low provision of production services implies low productivity in agriculture. In view of the conclusions drawn, the study recommends the Government, UNIONS and AMCOS to ensure provision of technical and cooperative education and training to members, leaders and management in order to enhance value chain development.

Acknowledgements

I wish to express my sincere gratitude to academicians, administrative staff and my fellow PhD students at the College of Business and Economics (CoBE), The University of Dodoma (UDOM) for their unconditional cooperation. This paper is a product of discussions and consultations between the author, supervisor and many experts in the field of economics, business management, agriculture and cooperatives especially those at Lindi and Mtwara regional secretariat as well as Liwale, Kilwa, Masasi and Nanyumbu District Councils. I am very grateful to these experts and institutions. I also wish to express my sincere gratitude to all respondents who provided invaluable experiences for this study.

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