



**CHALLENGES INFLUENCING PARTICIPATION OF SMALLHOLDER FARMERS
IN LEGUME AGRIBUSINESS IN IBENO LOCATION, KISII COUNTY, KENYA**

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Abstract

The study sought to assess the challenges that affect the participation of smallholder farmers in legume agribusiness in Ibeno location, Kisii County in Kenya. The study acknowledges that legume agribusiness plays a significantly important role in employing a majority of the rural population in a predominantly agrarian Kenyan society. A lot of empirical evidence has been drawn on the importance of agribusiness in creating employment, providing incomes and diversifying agricultural products all these aimed at livelihood improvement. Evidence has also been drawn on the various factors and challenges that affect uptake of legume agribusiness from the global to the local arena. This research sought to identify specific challenges in Ibeno location, in Kisii County that affect the participation of smallholder in legume agribusiness. The study aimed to answer the following questions: 1) whether marketing challenges influence participation of smallholder farmers in legume agribusiness and 2) whether institutional challenges influence the participation of smallholder farmers in legume agribusiness in Ibeno location; Kisii County. The target population for this study comprised of 4,468 households in Ibeno location, Nyaribari-Chache sub-county in Kisii County, Kenya. Random sampling was employed to select 424 respondents. Semi-structured questionnaires in ODK software were used to collect data from smallholder farmers through face to face interview. The findings indicated that four challenges influence participation of smallholder farmers in legume agribusiness. These are: access to market information, challenges with legume prices, accessing extension services and accessing credit. The study recommends that for holistic participation of smallholder farmers in legume agribusiness, the farmers need the necessities to enhance their participation. This can be achieved through the efforts of the national and the county government. Therefore market infrastructures should be put in place, extension services and even giving credits to the farmers.

Keywords: agribusiness, participation, smallholders, grain legume

1.0 Background of the study

In Kenya, 80% of the population lives in the rural areas, with half of this proportion being poor people (Ndeng'e & Muli, 2008). Success of agriculture has been pointed as a central pillar towards ameliorating this conditions (Broughton et al., 2003). Thus, smallholder agriculture is the engine of rural growth and livelihood improvement in lifting large number of rural poor out of poverty (Olwande & Mathenge, 2012). A veritable way of increasing rural incomes is by transforming from the current semi-subsistence, low input, low productivity that is characterized in the rural of Kenya (Olwande & Mathenge, 2012) to increased commercialized production where smallholder farmers can produce a surplus for marketing.

Agribusiness refers to the commercialization of agricultural production such that production is not only for subsistence purposes but also for supply to the market (Olwande & Mathenge, 2012; Goletti, 2005). In order to improve living standards and livelihoods of the people, the Agricultural sector should be highly considered. One way of transforming the agricultural sector is through agribusiness which transforms agriculture from a subsistence enterprise to a profitable commercial venture which is the driving force for increased development and sustainable growth in Sub-Saharan Africa. Agribusiness increases agriculture based investments. According to World Bank (2013), agriculture and agribusiness are at the top of agenda for economic transformation and development. Agribusiness offers a great potential for generating income, poverty alleviation, sustainable use of forest and farm products and diversifying the export base (Majuni, Natukunda, & Kugonza, 2012). Commercialization of agriculture benefits the poor by increasing agricultural labor productivity which in turn generates employment in low-capital smallholder agricultural production.

Common beans are a legume that is widely grown as a major staple food in eastern and Southern Africa (Birachi et al., 2011). Common beans have a capability to improve local food and nutrition security, increasing levels of income, a way of resilience to stress and shocks and improving household and community wellbeing and equity (Mazur, 2012). Common bean production and marketing is a potential pathway for improving livelihoods. However, smallholder farmers encounter multiple challenges such as inadequate market information, seasonal price fluctuation, poor access to markets, poor extension services, lack of credit collaterals, pests and diseases, inadequate germplasm and inefficient production technologies (Birachi et al., 2011) which result in to little production and lack of surplus to sell. Commercialization of bean production is very critical in improving rural household incomes. However, the potential for beans to contribute to rural population livelihoods cannot be achieved if these challenges are not addressed early. This study therefore assesses the factors that influence the participation of small holder farmers in legume agribusiness and helps in generating entry points for improved livelihood outcomes.

Participation in agribusiness is increasing the agriculture based investments. Farmers' participation in agribusiness is very vital in sustaining the economic growth, food security and poverty alleviation. Agribusiness has been viewed by World Bank (2013) as one way of

transforming the agricultural sector through transforming agriculture from a subsistence enterprise to a profitable commercial venture which is the driving force for increased development and sustainable growth in Sub-Saharan Africa.

Institutional factors such as group membership, access to credit, extension services and infrastructure have influence on the participation in agribusiness. Membership to group increases household's access to information vital for production, processing and marketing of agricultural products (Olwande & Mathenge, 2012). On the other hand, information flow within a group can be distorted when there is a disagreement within the group therefore impacting negatively. Membership to a group has both positive and negative impacts on participation in agribusiness. Extension service should positively impact on participation in agribusiness since extension services equip farmers with better skill and knowledge on production, processing and marketing (Makhura et al., 2001). Poor road infrastructure has a negative effect on participation in agribusiness because majority of the smallholder farmers in the developing countries are located in the rural areas where roads are poor, and transport is bad. This makes them not to participate in the marketing of the agricultural products (Makhura et al., 2001).

Marketing factors have been found to influence participation in agribusiness both positively and negatively. Sigei et al. (2014) stated that availability of market information boosts confidence of farmers. Poor market information can discourage farmers from participation in agribusiness. A study by Abayneh and Tefera (2013) revealed that access to market information has a positive effect on participation in agribusiness since farmers will get to know which technologies to utilize in production and processing and marketing of their outputs. Chilundika (2011) further noted that price did not have adequate incentive for producers to participate in the market and thus price policies were not an adequate tool for increasing participation. Markelova et al. (2009) further contended that poor access to bean markets was as a result of limited knowledge on market opportunities, poor organization to access markets, infrastructural limitation and poor linkage to transporters, processor and exporters.

1.1 Study Objective

The study sought to assess the challenges influencing participation of smallholder farmers in legume agribusiness in Ibeno location, Kisii County.

2.0 LITERATURE REVIEW

2.1 Empirical Review

2.1.1 Marketing Challenges in Relation to Participation in Legume Agribusiness

Market linkages are very important to successful integration of legumes in small holder farming systems. Studies reveal that different market factors affect farmer's decision to participate in markets and their intensity of participation in those markets (Zamasiya, 2014). Amede and Abayneh, (2013) applied the heckman two stage model in examining market participation of

smallholder haricot bean producers in Meskan district, Ethiopia. Their study revealed that access to market information and distance to the nearest market significantly affected market participation decision of the haricot bean producers. As the market distance between the farmer and the market increases, it becomes costly for smallholder farmers to transport the little produce to the market. The nearer the farmer is to the market, the cheaper the transportation costs. Gebremedhin, Jaleta, and Hoekstra (2009) further noted that the longer the distance to the nearest market, the lower the participation of smallholder farmers in marketing of their produce. Distance from the farm to point of sale is a major constraint intensifying market participation (Omiti, et al., 2009).

2.1.2 Institutional Challenges in Relation to Participation in Legume Agribusiness

According to Mazur (2012), technology and management dissemination are very important in bean production. Legume producers require exposure visits and exchange programs with research institutions and supporters. This therefore increases marketing capabilities as well as even increasing seed production for the crop. Conducting field days at the research and demonstration sites for the farmers helps them to gain more knowledge in crop management.

Extension services are very important in bringing farmers access to vital technologies and services. Lack of government investment in extension has led to a pluralistic model, one in which extension delivery and services are spotty. Extension services needs to change role and focus on the marketing and business needs of smallholder farmers. There should be better means of coordinating and sustaining services, and generating policies that build the capabilities of farmers to raise income by linking them to various markets (Ferris et al., 2014).

Access to credit was found out as a very significant aspect in participating in agribusiness (A.D Alene et al., 2008). Access to credit helps smallholder farmers to buy different inputs for production, to pay for labour, transportation costs and other farm related activities. In Kenya, among other things, lack of credit is one fundamental problem hampering productivity and income of rural farm households (Yehuala, 2008; Salami, Kamara, & Brixiova, 2010). Access to institutional finance is limited and mostly accessed by groups rather than individual farmers.

2.2 Theoretical framework

2.2.1 Structural Change Theory

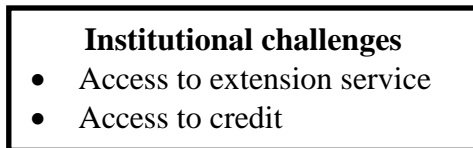
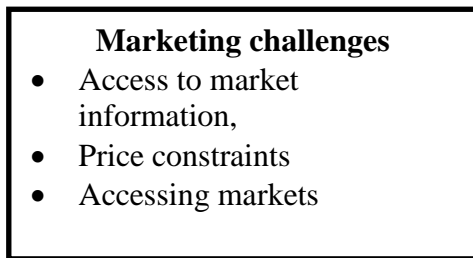
The structural change theory focuses on the mechanism by which underdeveloped economies transform their domestic economic structures from heavy emphasis on traditional subsistence agriculture to a more modern, more urbanized, and more industrially diverse manufacturing and service economy (Todaro & Smith, 2012). Agricultural production is not enough cause of economic development but also linking your production to marketing (Boughton et al., 2007). Markets give households the opportunity to specialize according to comparative advantage therefore enjoying welfare gains of trade. Markets are recognized as engines of economic development (Boughton, et al., 2007). Structural transformation gave rise to market-led paradigm of agricultural development during 1980's (Reardon & Timmer, 2007) that were

accompanied by a widespread promotion of market liberalization policy agendas in Sub-Saharan Africa (SSA) and other low income regions.

This theory explains why farm households participate in agricultural production and marketing. According to this theory, farmers are driven to enter in to markets so that they can enjoy a diverse consumption bundle. By trading, farmers can exploit welfare gains by concentrating in the production of goods that they have comparative advantage of and exchanging for those that they do not have comparative advantage of. This theory also explains the concept of the market led rural development.

2.3 Conceptual framework

Independent variables



Dependent variable

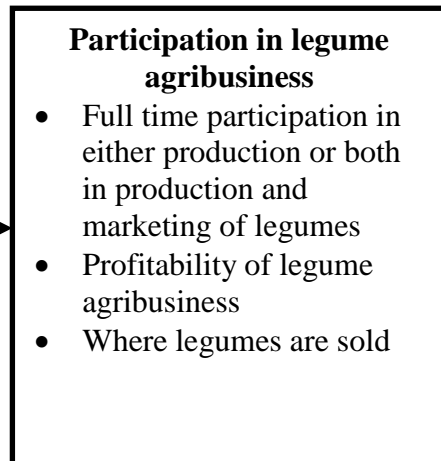


Figure 1: Conceptual Framework

3.0 METHODOLOGY

This study employed a descriptive survey research design, which involved use of administered questionnaires. This design was appropriate for this study since it captured both qualitative and quantitative data from relatively large cases in geographic scope that is logistically easier and simpler to conduct. The population for this study comprised of 4,468 smallholder farmers in Ibeno location, Nyaribari-Chache sub-county in Kisii. Yamane’s simplified formulae proposed by (Bartlett, Joe, & Chadwick, 2001) was used to derive a sample size of 367 households. The response rate was 100% because out of 367 questionnaires required for the study, 424 of them were filled. This is excellent even though the sample size is more than what is required. The more the sample size, the higher the level of accuracy.

4.0 FINDINGS OF THE STUDY

4.1 Marketing Challenges in Relation to Participation in Legume Agribusiness

The study sought to assess the influence of marketing challenges in the participation of smallholder farmers in legume agribusiness. The challenges that were assessed under marketing included, access to market information, legume prices, and accessing markets for legumes.

4.1.1 Challenges with Access to Market Information

Access to market information was hypothesized as a challenge that hindered participation of smallholder farmers in legume agribusiness. A cross tabulation between access to market information and where the legumes were sold was done as shown in the table below:

Table 1: A cross tabulation between where farmers sold their legumes and challenges with access to market information

		Accessing information on quality of beans needed by the market						Freq Total	χ^2 Significance
		Challenge		Minor challenge		Not challenge			
		Freq	%	Freq	%	Freq	%		
Where do you sell your legumes	Neighbors	59	13.9	9	2.1	11	2.6	79	P=0.002
	Nearby markets	96	22.6	30	7.1	44	10.4	170	
	I don't sell	90	21.2	5	1.2	26	6.1	121	
	Others	30	7.1	9	2.1	15	3.5	54	
Total			64.8		12.5		22.6	424	
		Accessing information on Consumer demands						Freq Total	χ^2 Significance
		Challenge		Minor challenge		Not challenge			
		Freq	%	Freq	%	Freq	%		
Where do you sell your legumes	Neighbors	56	13.2	10	2.4	13	3.1	79	P=0.005
	Nearby markets	118	27.8	29	6.8	23	5.4	170	
	I don't sell	104	24.5	10	2.4	7	1.7	121	
	Others	34	8	7	1.7	13	3.1	54	
Total			73.5		13.3		13.3	424	

		Accessing information on Consumer preferences						Freq Total	χ^2 Significance
		Challenge		Minor challenge		Not challenge			
		Freq	%	Freq	%	Freq	%		
Where do you sell your legumes	Neighbors	52	12.3	12	2.8	15	3.5	79	P=0.008
	Nearby markets	97	22.9	34	8.1	39	9.2	170	
	I don't sell	94	22.2	6	1.4	21	5.0	121	
	Others	34	8.1	8	1.9	12	2.8	54	
Total			65.5		14.2		20.5	424	

The results indicated that the smallholder farmers commonly sell their legumes to the nearby markets and to their neighbors while majority of the farmers do not sell their legumes. It can therefore be inferred that poor access to market information can cause farmers not to know the market their legumes. The farmers may have lacked information on quality of the beans needed by the market or they may have produced just enough for family consumption. Farmers can fail to access market information due to poor agricultural coordination within the area. The relationship between where legumes are sold and access to market information was significant at 0.002, 0.005 and 0.008. Similar findings have been recorded by Mazur (2012) who posited that farmers should be provided with information preferably in their local language which increases their marketing capabilities.

4.1.2 Challenges with Legume Prices

Challenge with legume prices was hypothesized as a factor that hindered participation of smallholder farmers in legume agribusiness. A cross tabulation was also done between the challenges with the legumes prices and where the legumes were sold as shown in the tables below.

Table 2: A cross tabulation between where farmers sold their legumes and the challenges with seasonal fluctuation of bean prices

		Seasonal fluctuation of bean prices						Freq Total	χ^2 Significance
		Challenge		Minor challenge		Not challenge			
		Freq	%	Freq	%	Freq	%		
Where do you sell	Neighbors	63	14.9	3	0.7	13	3.1	79	P=0.005
	Nearby markets	153	36.1	3	0.7	14	3.3	170	

your legumes	I don't sell	89	21	4	0.9	28	6.6	121
	Others	45	10.6	4	0.9	5	1.2	54
			82.6		3.2		14.2	424

The chi-square test indicated that price offered by different buyers was not a significant factor influencing participation in legume agribusiness. However, the seasonal fluctuation of bean prices due to seasonality in production was a significant factor at 0.005 indicating where you sell your legumes influences the perspective whether it's a challenge or not with the seasonal fluctuation of legume prices. The chi-square showed that the proportion of the opinions of those that considered seasonal fluctuation of legume prices as a challenge or not irrespective of where they sold the legume was significant.

4.1.3 Challenges with Accessing Markets

Access to markets was hypothesized as a challenge that hindered participation of smallholder farmers in legume agribusiness. A cross tabulation was done to find out the relationship between the challenge with access to markets and where the legumes are sold as shown in the table below.

Table 3: A cross tabulation between where farmers sold their legumes and challenges with finding markets for their beans

		Finding readily available markets for our beans							Freq Total	χ^2 Significance
		Challenge		Minor challenge		Not challenge		a		
		Freq	%	Freq	%	Freq	%			
Where you sell your legumes	Neighbors	20	4.7	6	1.4	53	12.5	79	P=0.016	
	Nearby markets	45	10.6	25	5.9	100	23.6	170		
	I don't sell	41	9.7	3	0.7	77	18.2	121		
	Others	11	2.6	6	1.4	37	8.7	54		
			27.6		9.4		63	424		
		Finding markets for our beans							Freq Total	χ^2 Significance
		Challenge		Minor challenge		Not challenge		a		
		Freq	%	Freq	%	Freq	%			
Where you sell	Neighbors	19	4.5	7	1.7	53	12.5	79	P=0.020	
	Nearby markets	37	8.7	25	5.9	108	25.5	170		

your legumes	I don't sell	37	8.7	7	1.7	77	18.2	121	
	Others	12	2.8	6	1.4	36	8.5	54	
			24.7		10.7		64.7	424	
Accessing markets for our beans									
		Challenge		Minor challenge		Not challenge		a	
		Freq	%	Freq	%	Freq	%	Freq Total	χ^2 Significance
Where do you sell your legumes	Neighbors	19	4.5	8	1.9	52	12.3	79	P= 0.094
	Nearby markets	35	8.3	26	6.1	109	25.7	170	
	I don't sell	37	8.7	6	1.4	78	18.4	121	
	Others	12	2.8	6	1.4	36	8.5	54	
			24.7		10.9		64.9	424	

The results show that the greatest scores were for the access to markets not being a challenge to participation of smallholder farmers in legume agribusiness. In total, over 64% reported it as not a challenge and less than 28% reported it as a challenge. It can therefore be inferred that access to markets of legumes is not a challenge to the smallholder farmers who are willing to participate in selling their legume products in Ibeno, Kisi County.

The chi-square tests indicated that there was a difference of opinions in the proportions of those that considered access to markets as a challenge or not despite of where the legumes are sold.

4.2 Institutional Challenges in Relation to Participation in Legume Agribusiness

The study sought to find out the influence of Institutional challenges on the participation of smallholder farmers in legume agribusiness. The institutional challenges studied were accessing extension services and accessing credit facilities.

4.2.1 Challenges in Accessing Extension Services

Access to extension services was hypothesized as a challenge that could hinder participation of smallholder farmers in legume agribusiness. A cross tabulation between challenges in accessing extension services and participation in legume agribusiness was done to find out the relationship. The results were as shown in the table below:

Table 4: A cross tabulation between accessing extension services and engaging in legume production on full time basis

		Engaging in legume production on full time basis							
		Challenge		Minor challenge		Not a challenge		Freq	
		Freq	%	Freq	%	Freq	%	Total	χ^2 Sig.
Affording services	extension	198	46.7	18	4.2	107	25.2	327	P=0.002
	Challenge								
	Minor challenge	15	3.5	1	0.2	7	1.7	35	
	Not a challenge	31	7.3	12	2.8	35	8.3	62	
Total			57.5		7.2		35.2	424	
		Engaging in legume production on full time basis							
		Challenge		Minor challenge		Not a challenge		Freq	
		Freq	%	Freq	%	Freq	%	Total	χ^2 Sign.
Accessing available services	readily	201	47.4	18	4.2	108	25.5	327	P=0.000
	extension								
	Challenge	23	5.4	6	1.4	6	1.4	35	
	Minor challenge	23	5.4	6	1.4	6	1.4	35	
	Not a challenge	20	4.7	7	1.7	35	8.3	62	
Total			57.5		7.3		35.2	424	
		Engaging in legume production on full time basis							
		Challenge		Minor challenge		Not a challenge		Freq	
		Freq	%	Freq	%	Freq	%	Total	χ^2 Sig.
Extension geared towards our needs	services	186	43.9	36	8.5	88	20.8	310	P=0.000
	Challenge								
	Minor challenge	30	7.1	8	1.9	4	0.9	42	
	Not a challenge	26	6.1	10	2.4	36	8.5	72	
Total			57.1		12.8		30.2	424	

The greatest count indicated that many smallholder farmers participating in legume agribusiness did not access readily available, affordable and extension services that are geared towards their

needs. In accessible extension services meant that farmers were not equipped with better skill and knowledge on production, processing and marketing of their products (Makhura et al., 2001). This findings are in line with those of Mazur (2012) who found out that farmers that did not access extension services had limited access to improved knowledge on crop management and therefore this decreased their marketing capabilities.

4.2.2 Challenges in Accessing Credit

Access to credit was hypothesized as a challenge that influenced the participation of smallholder farmers in legume agribusiness. A cross tabulation was done between the challenges with accessing credit and the participation of smallholder farmers in legume agribusiness as shown in the table below:

Table 5: A cross tabulation between challenges with accessing credit and challenges with engaging in legume production on full time basis

		Engaging in legume production on full time basis							
		Challenge		Minor challenge		Not a challenge		Total	
		Freq	%	Freq	%	Freq	%	Total	χ^2 Sig.
Repaying for loans	Challenge	133	31.4	20	4.7	41	9.7	194	P=0.000
	Minor challenge	8	1.9	5	1.2	5	1.2	18	
	Not a challenge	101	23.8	29	6.8	82	19.3	212	
Total			57.1		12.7		30.2	424	
		Engaging in legume production on full time basis							
		Challenge		Minor challenge		Not a challenge		Total	
		Freq	%	Freq	%	Freq	%	Total	χ^2 Sig.
Collateral for loans	Challenge	140	33	15	3.5	62	14.6	217	P=0.000
	Minor challenge	6	1.4	6	1.4	9	2.1	21	
	Not a challenge	98	23.1	10	2.4	78	18.4	186	
Total			57.5		7.3		35.1	424	
		Engaging in legume production on full time basis						Total	χ^2 Sig.

		Challenge		Minor challenge		Not a challenge		Total	
		Freq	%	Freq	%	Freq	%		
Credit worthiness	Challenge	140	33	12	2.8	61	14.4	213	P=0.001
	Minor challenge	8	1.9	5	1.2	11	2.6	24	
	Not a challenge	96	22.6	14	3.3	77	18.2	187	
Total			57.5		7.3		35.2	424	

The results indicated that farmers had challenges with repaying the loans due to lack of security or due to low repayment period. These findings have been confirmed by Yehuala, 2008; Salami, Kamara, & Brixiova, 2010 who found out that in Kenya, among other things, lack of credit is one fundamental problem hampering productivity and income of rural farm households.

The chi-square results indicated that the proportions of those that considered credit worthiness as a challenge or not and also considered participating in legume agribusiness as a challenge or not was significantly different at 0.000, 0.000 and 0.001. Access to credit was a very significant factor in helping farmers to purchase inputs, pay for labor, transportation costs and other related activities (Alene et al., 2008).

4.3 Probit model

Table 6: Hypothesized relationship of variables

Variable	Description	Hypothesized relationship
Marketing challenges		
Access to market information	1 = Challenge,	+
Variation in legume prices	2 = Minor challenge,	+/-
	3 = Not a challenge	
Access to markets		+
Institutional challenges		
Access to extension services	1 = Challenge,	+
Access to credit	2 = Minor challenge,	+
	3 = Not a challenge	

Table 7: Hypothesized relationship of variables

Variable	Coefficient	Standard error	Wald statistic
Constant	0.6111	0.6693	0.913
Marketing challenges			
Access to market information	0.4579	0.1512	3.028
Variation in legume prices	-0.2569***	0.1127	-2.279
Access to markets	-0.0587	0.1041	0.564
Institutional challenges			
Access to extension services	0.3691**	0.1284	2.875
Access to credit	-0.2330**	0.0881	-2.643
Observations	424		
LR Chi-square	104.27		
Log likelihood	-190.59		

Legend: *** p<0.001 - Significant at 99%; **p<0.05 - significant at 95%; * p<0.1 - Significant at 90%

Under the marketing challenges, seasonal variation in legume prices was found to significantly influence the participation of smallholder farmers in legume agribusiness at 0.001 level. The two institutional challenges considered; access to extension services and access to credit were revealed to significantly influence the participation at 0.05 level.

5.0 SUMMARY OF THE MAJOR FINDINGS

The main objective of this study was to assess the challenges that influence participation of smallholder farmers in legume agribusiness in Ibeno Location; Kisii County. The study looked in to the marketing challenges and institutional challenges. The study found out that two challenges under marketing significantly influenced participation of smallholder farmers in legume agribusiness. These were challenges with access to market information about the quality of beans needed by the market and consumer preferences. The significant challenges with pricing of legumes was the seasonal fluctuation of legume prices. Buyers offering wrong prices was found to be insignificant. Literature reviewed pointed out that market information was a very significant factor that influence participation of smallholder farmers in markets (Amede and Abayneh, 2013).

Two institutional challenges were found to significantly influence the participation of smallholder farmers in legume agribusiness. These were challenges with access to extension services, and access to credit. Extension services had challenges with affordability, accessibility

and gearing them towards the needs of the smallholder farmers. Accessing extension services was highly rated as a challenge than as a minor or not a challenge. Accessing credit had challenges with repaying the loans, collaterals for the loans, and lack of credit worthiness for the smallholder farmers. Accessing credit was rated as a challenge than as a minor or not a challenge. The literature reviewed highlighted extension services as very important since they bring farmers access to vital technologies and services. These services should however be focused on the production, marketing and business needs of smallholder farmers (Ferris et al., 2014).

6.0 RECOMMENDATIONS

The study recommends that more personnel be recruited so as to provide the required extension services so as to improve in agribusiness practices hence increased income and profits for smallholder farmers. The banking and microfinance institutions should find ways of accommodating all classes of smallholder farmers by providing them with credit to enhance their production. Giving the farmers credit could be in different forms e.g. through inputs and not necessarily cash. It is important for farmers to form cooperatives through which they can market their locally harvested agricultural products hence increased profits.

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