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FACTORS INFLUENCING BROILER FARMERS' PARTICIPATION IN CONTRACT FARMING IN LESOTHO

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ABSTRACT

Broiler production is one of the major income generating activities for small-scale broiler farmers in both urban and rural areas, but the sector is currently facing production and marketing challenges in Lesotho. Contract farming as a means for organising the commercial production of both large scale and small scale broiler farmers has been viewed as an effective solution to the sector's challenges in the tiny southern African Mountain Kingdom. Contract farming is practiced in Lesotho but there are very few Basotho farmers practicing broiler production through contract farming and as a result, the study assessed factors influencing their participation in contractual agreements in two large districts of Lesotho which are Leribe and Maseru. One hundred and eighty (180) broiler farmers were selected using multi-stage sampling techniques and data were collected through structured interview schedule. Data were analysed using descriptive statistics and binary regression model to address objectives one and two which are to describe contract farming arrangements that broiler farmers have with agro firms and to identify factors influencing broiler farmers' participation in contract farming in Lesotho respectively in this study. Descriptive results showed that broiler farmers (45%) participated in contract farming, while 55% participated in non-contract farming. Empirical results of the binary regression model revealed that broiler flock size (β=1.720, P<0.05), farming experience (β=0.784, P<0.05), farmer group/association membership (β=1.031, P<0.05), access to marketing infrastructure (β=0.699, P<0.05), access to extension services (β=1.950, P<0.05) and knowledge of grades and standards (β=1.600, P<0.05) influence participation in contract farming in Lesotho. Based on the findings, it is concluded that socio-economic, institutional and technical factors influence participation in contract farming which proves to be an efficient mechanism for production and marketing of agricultural products in the value chain in Lesotho. It is recommended that these factors be taken into consideration by national policy making authorities in the design and development of effective marketing structure for the products of broiler farmers in the country.

Key words: contract farming, participation, broiler farmers, factors, binary regression, influence

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INTRODUCTION

Contract farming is an institutional arrangement that has been expanding in the private sector since the 1960s in response to the demand for high-quality products. It is likely to appear when uncertainty and asset specificity are high, such as in the trade of products that are perishable, difficult to store and transport and probably of heterogeneous quality [1]. This institutional innovation has been increasingly used in Africa where agricultural and input markets often fail [1, 2]. Globally, contract farming is common as agro-industries out-source production of the raw materials needed from smallholder farmers under this institutional innovation [3]. In Africa, contract farming mainly concerns horticultural and animal products produced by small-scale farmers and exported to global markets [1].

There is a growing body of recent empirical literature based on case-studies around the world which document positive welfare effects of contract-farming [1]. According to Ali and Arouna *et al.* [4, 5], purchasers commit themselves to providing production support such as credit, inputs, farm machinery rentals, and technical advice and market services to farmers. Such institutional arrangements lead to increase in productivity, farm household incomes and improved supply of agricultural products [6, 7].

Most of the evidences on contract farming come from high-value supply chains, mostly fruits, vegetables and products from animal origin destined for export markets or supermarket retail in urban high-value market segments [2]. According to Elifneh [3], there is limited documentation on the impacts of contract farming in the domestic markets in the developing world particularly Africa. Nevertheless, Velde and Maertens [2] stated that contract farming is recently emerging in domestic supply chains in different African countries such as Madagascar, Mozambique, Kenya and Benin, among others. The rapid emergence of contract farming are due to high-quality products, state policies implemented after the world food price crisis in order to modernize domestic food chains and support from international organisations [1].

According to Food and Agriculture Organisation [8], there has to be suitable and enabling environment in order to implement contract farming in both developed and developing countries. The successful cases of contract farming are backed by existence of enablers in the form of government support and regulatory environment, social environment, public utilities, financial issues, physical environment, land issues, infrastructure and organisational culture among farmers.

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Contract farming has been expanding across all regions of the world. In Latin America, contract farming has grown rapidly and is predominant in banana and vegetable industries in most countries including Peru, Honduras, and Mexico. In Brazil, around 70% of poultry production and 30% of soya production is now through contract farming [2, 9]. In different parts of Asia, contract farming has grown rapidly in sectors including dairy, poultry, rice and vegetables. More than half of production of most commodities is through contract farming in this part of the world. The out-grower scheme is the most common type of contract farming arrangement in the region [2, 4, 9]. In Africa, contract farming has been on the rise as well and it has been focused on both domestic and export markets. For example, about 15% of farmers in Mozambique are involved in contract farming, while around 30% of Kenyan farmers are involved in contract farming for horticultural exports [9]. Only 80 farmers are involved in contract farming in the Kingdom of Lesotho and these farmers are involved only in the production of broilers. These farmers have market specification contracts with local retailers and government institutions and their broiler production accounts for not more than 4% of the national demand [10].

In Lesotho, there is a high demand for chicken and its products at around 250, 000 tonnes per annum and the demand is from both the formal and informal sectors of the economy. There are broiler farmers found across the country whose primary aim is to serve this high demand for chicken meat and they account for around 20% of chicken meat found in the country [11]. The remaining domestic demand is met by imports from mainly the neighbouring Republic of South Africa [13]. The South African chicken meat and products are supplied through contractual agreements with various Lesotho=based retailers and wholesalers, while the majority of domestic broiler producers are faced with a challenge of lack of readily available markets for their produce [13]. This situation has led to this study seeking to investigate factors that influence broiler farmers' participation in contract farming in Lesotho.

Several international studies have been conducted to assess the importance of smallholder farmers' participation in contract farming, and factors that influenced the decision to participate [1, 3, 7]. The study by Williams [14] focused on the effects of agricultural extension service on the benefits of broiler farmers participating in contract farming, while that of Mohale [15] focused on the impact of contract farming on productivity among Basotho poultry farmers. These two studies [14, 15] did not discuss factors influencing broiler farmers' participation in contract farming in Lesotho.

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The topic is of importance for policy makers in Lesotho where participation in contract farming is low among broiler farmers compared to the developed world [14]. The contribution of this study is two-fold. First, it includes various variables as predictors of farmers' participation in contract farming, which are essential to identify key factors and entities that influence participation in this institutional innovation. Second, this study uses data of the two largest broiler producing cities and the only cities where there are broiler farmers participating in contract farming in Lesotho. Therefore, the findings of this study are appropriate to be used as references in policy-making in Lesotho.

The specific objectives of the research are to:

i. Describe contract farming arrangements that broiler farmers have with agro firms.
ii. Identify factors influencing broiler farmers' participation in contract farming in Lesotho.

MATERIALS AND METHODS

Description of the study area

The study was conducted in the two major cities of Lesotho which are Leribe and Maseru as they are the two largest broiler producing districts in the country. Moreover, these are the only districts where there are broiler farmers engaged in contract farming. The study was carried out in Leribe which is the second biggest producer of broilers in Lesotho. Leribe is located between latitudes 28^{o} E and 31^{o} W and the longitudes 27^{o} N and 30^{o} S. It is situated along the Mohokare river with the total population of 124, 710 [16]. According to Lesotho Agriculture Review, life in Leribe depends on agriculture as most of the villagers are engaged in crop and livestock production [17]. The area produces an average of 200, 000 broilers annually [16]. Maseru is the capital city of Lesotho and has a population of more than 270 000 and it is also the biggest producer of broilers in the country. This area is located between latitudes 28^{o} E and 29^{o} W and the longitudes 27^{o} N and 30^{o} S. According to Bureau of Statistics, life in Maseru depends on agriculture as most of the villagers are engaged in crop and livestock production [16]. The area produces an average of 230, 000 broilers annually [13].

Sampling procedure

The target population for this study was 200 farmers that produced broilers for business purpose in the two districts. Multi-stage sampling procedure was used in the study. In the first stage, purposive sampling was used to select the two districts of Leribe and Maseru. In the second stage, the broiler farmers were divided into

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strata, according to whether they are contract or non-contract farmers in the two districts. In the third stage, simple random sampling was used to select non-contract farmers to come up with 100 farmers for this stratum, while all contract farmers were included to come up with 80 farmers for this stratum and in total, 180 farmers were interviewed in this research. Data were collected from these farmers through a structured interview schedule which was pre-tested before the execution of the main survey to ensure content validity and internal consistency, using Chronbach's Alpha formula with a coefficient of 0.8 generated.

Data analysis

The study used descriptive techniques to describe the types of contract farming arrangements that farmers had with agro firms and the statistical indicators used included percentages, means and frequencies. Binary logistic regression model was used to identify and determine factors that influenced broiler farmers' participation in contract farming arrangements (Table 1). This was because the decision to participate in contract farming arrangement is a dichotomous outcome which can be modelled by a logit or probit model.

The dependent variable is the decision to participate in contract farming and participation in contract farming was coded 1, whilst non-participation was coded 0. In this study, the probability that a broiler farmer produces and markets under contract is Prob (Y=1) and Prob (Y=0) when producing under non-contract. The farmer's decision to produce and market under contract farming institutional arrangement is an indirect utility derived from participating in contract farming. The conceptual model for the linear function of (X) variables is as given below:

$$Z_i = \beta_\circ + \sum \beta_1 \, n \, i{=}1 \, Xk_i \qquad (1)$$

Where:
Z_i = odds ratio
$\beta_\circ$ = intercept
$\beta_1, \beta_2, \beta_3, \ldots . \beta_i$=coefficients of the independent variables.
$X_1, X_2, X_3 \ldots .$ Xk_i = independent variables [socio-economic, institutional factors and other household characteristics] that are likely to influence the broiler individual farmer's decision to participate in contract farming institutional arrangements (Table 1).

Given that $P_i = \frac{e^{zi}}{1+e^{z_i}}$ [18, 19] where e is the base of the natural logarithm and P_i is the probability that the farmer decides to produce and market broilers under contract farming, 1- P_i is the probability that the farmer decides to produce and market

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under non contract/auction. The odds of the farmer's decision to produce under contract (Y=1) and the odds of decision to produce under non-contract (Y=0) is expressed as the ratio of the probability of the decision to produce under contract to the decision to produce under non-contract.

The prediction equation for the individual broiler farmer's production choice is derived from the natural logarithms as given by the equation 2;

$$\mathrm{Ln}\left(\frac{\mathrm{P_i}}{1-\mathrm{P_i}}\right)= \beta_{\circ} + \sum_{i=1}^{n} \beta_1 \mathrm{Xk_i} = Z_i \text{ [19]} \quad (2)$$

Z_i=odds ratio of farmer's decision to produce broilers under contract farming institutional arrangement.

In this study, the binary logistic regression model for the farmer's decision to produce under contract or non-contract institutional arrangement is expressed in equation 3;

$$\text{Logit } (P_i) = \ln (P_i/1\text{-}P_i) = \beta_{\circ} + \beta_1 \text{AGE} + \beta_2 \text{EDU} + \beta_3 \text{HHS} + \beta_4 \text{LANSIZ} + \beta_5 \text{FLOSIZ} + \beta_6 \text{EXP} + \beta_7 \text{MEMBER} + \beta_8 \text{COOPSERV} + \beta_9 \text{EXT} + \beta_{10} \text{MARKINFRST} + \beta_{11} \text{CRED} + \beta_{12} \text{INFOMARK} + \beta_{13} \text{STAGRAD} + \beta_{14} \text{CULT} + \beta_{15} \text{HHI} + \mu \quad (3)$$

RESULTS AND DISCUSSION

Contract farming arrangements farmers have with agro firms

Table 2 shows that 45% of the broiler farmers have contractual agreements with local businesses. Majority (90%) have contracts with some Basotho owned small shops, butcheries and retailers and government institutions such as Police Training College and Lesotho Defence Force. Around 10% of these contracted farmers sell to few Chinese owned retail shops. All the contracted broiler farmers only have short term (1-2years) market specification contracts with their buyers. The majority of contracted broiler farmers were above the age of 55 years and have been in farming for over 15 years. This knowledge and associated skills may put this group of farmers in a better position to choose better rewarding markets and appropriate and effective arrangements through which to access these markets.

In addition, the contract broiler farmers had relatively high monthly incomes from non-farm sources and the regression results revealed a positive relationship between households' monthly non-farm income and participation in contract farming arrangements with a correlation coefficient of 0.710. Based on these results, it is argued that household incomes enabled them to acquire necessary

inputs, equipment and infrastructure that help them to meet the contractual terms and conditions. This finding agrees with Zhu *et al.* [20] that high households' incomes enable farmers to acquire necessary inputs, equipment and infrastructure that help them to engage in contract farming.

Fifty-five percent of the farmers did not have contractual agreements with any buyers and they mainly sold at farm-gate and at public places in their respective areas. The majority of the non-contractual farmers were below the age of 35 years and had been in the industry for less than 4 years. It can be argued that these farmers lack contacts and knowledge of the sector and marketing systems hence participation under non-contractual agreements. In addition, their monthly non-farm income (LSL 4, 500) is relatively low which renders them incapable of acquiring necessary inputs for them amidst poor access to credit to be able to meet strict terms and conditions normally associated with contractual agreements. The findings agree with Muroiwa *et al.* and Zhu *et al.* [19, 20], that farmers with low incomes and poor access to credit fail to meet stringent requirements associated with contract farming. There was no significant difference between the contracted and non-contracted groups of broiler farmers in terms of the level of education, household size and land holding sizes in the entire study area.

Factors influencing participation in contract farming agreements

This section presents the results of the logistic regression model and discusses the results of the significant variables that determine contractual agreements participation choices among broiler farmers in the study area. The variables that were discussed in the previous section were considered for the model and tested for their significance. The logistic regression results are presented in Table 3. The table shows the estimated coefficients (β values), standard error, significance values and odd ratio of independent variables in the model.

Flock size: this variable recorded the correlation coefficient of 1.720 and positively influenced broiler farmer participation in contractual agreements in the country. The finding implies that a unit increase in the broiler flock size results in an increase of 1.72 in the participation in contractual agreements. The results agree with the study's a priori expectation that broiler farmers that keep larger flocks are able to reliably supply their buyers. The results agree with Rondhi *et al.* [21] that farmers who keep large stocks participate more in contractual agreements as they are able to supply products at times and quantities required by buyers hence ability to meet the terms and conditions of the market specification contractual agreements.

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Farming experience: the results revealed that farming experience positively influenced participation in the contractual agreements with a correlation coefficient of 0.784 in the study area. This implies that a unit increase in the experience in farming led to 0.78 increase in the participation of farmers in the contractual agreements. The results agree with the study's a priori expectation that experienced farmers are more likely to participate in the contractual agreements. The experienced farmers have extensive contacts and knowledge of the sector and are more likely to opt for the effective and efficient approaches (production and marketing) that enable them to access lucrative markets and buyers. In addition, they frequently contact their exchange partners to discuss transaction related matters and this reduces the transaction costs associated with information search and negotiations and this also enables them to meet the supply specifications better. This agrees with Sheleme [22], who stated that the experience enables farmers to be informed and understand the workings, demands and expectations of the contractual agreements which enables them to meet these requirements better relative to their inexperienced counterparts.

Farmer group/association membership: there are members of Basotho Poultry Association, a producer association, and this variable was found to positively influence participation in the contractual agreements with a correlation coefficient of 1.031. The results mean that a unit increase in the degree of participation in the farmer groups or associations results in an increase of 1.03 in farmers' participation in the contractual agreements in the study area. The results agree with the study's expectation that a farmer who belongs to a farmer group and/or association is likely to participate in the contractual agreements. This is because group membership facilitates production and market information sharing and also enhances collective action that leads to economies of scale, bargaining power as well as reduced transaction costs and increased productivity. These benefits enable farmers to meet the requirements such as quality, quantity and time of delivery specified in the market specification contractual agreements. The results are consistent with Rantlo [23] that membership in farmer organisations significantly reduces transaction costs and improves productivity and competitiveness among Basotho smallholder farmers and participation in the contractual agreements.

Access to extension services: the results showed that access to extension service was significant with a correlation coefficient of 1.950, thus it does influence participation in the contractual agreements. The result implies that a unit increase in access to extension services led to an increase of 1.95 in the participation in contractual agreements among broiler farmers in the country. The results agree

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with the study's a priori expectation that extension services enhance broiler farmers' skills and knowledge through provision of information on proper management practices and link them with modern technology which will increase their chances to participating in the contractual agreement. The results are also consistent with Muroiwa *et al.* [19] who stated that effective extension services enable farmers to improve their performance and productivity as well as quality and quantity of produce. Hence, competitiveness which enhances their participation and ability to meet the quality, quantity and time of delivery related terms and conditions of the contractual agreements.

Access to marketing infrastructure: the variable recorded a correlation coefficient of 0.699 and significantly influenced participation in the contractual agreements among broiler farmers in Lesotho. This result implies that a unit increase in access to marketing infrastructure results in an increase of 0.6 in contractual agreements participation among broiler farmers in the study area. The results agree with the study's expectation that farmers with access to marketing infrastructure participate more in the contractual agreements. The results are consistent with Barret *et al.* [24] who stated that farmers with access to proper housing, storage, processing and information and communication infrastructure are able to deliver quality and quantities at times required by the buyers hence ability to meet the terms and conditions of the contractual agreements.

Knowledge of grades and standards: knowledge of grades and standards recorded a correlation coefficient of 1.600 and significantly influenced farmers' participation in the contractual agreements. The result implies that a unit increase in knowledge of grades and standards required results in an increase of 1.6 units in the degree of participation in contractual agreements. The more the broiler farmers know about the grades and standards required by buyers the higher the chances of participating in the contractual agreements. The result agrees with Rantlo [23] who stated that farmers with access to information and knowledge on demand and quality grades and standards are better informed and approach their production and marketing activities accordingly. Hence, an increase in chances of meeting the quality, quantity and times of delivery related terms and conditions of market specification contracts.

CONCLUSION

Less (45%) broiler farmers participated in market specification contractual agreements, while most (55%) broiler farmers were involved in non-contract farming in the country. Large flock sizes kept by some broiler farmers render the

environment conducive for broiler farmers' participation in contract farming. In addition, farming experience and household income render the environment conducive for broiler farmers' participation in contract farming in the country.

Participation in farmer groups/associations renders the environment conducive for participation in the lucrative contractual agreements. The participation in contract farming is consolidated by the access to marketing infrastructure that some farmers enjoy in the country. Furthermore, the participation in contract farming is augmented by the technical support provided by the extension services as it enables farmers to have appropriate and adequate technical knowhow in respect of meeting and fulfilling the terms and conditions of market specification contracts. The knowledge of grades and standards expected under contract farming agreements further enhances participation in contract farming among broiler farmers in the country.

Based on the above, it can be concluded that socio-economic, institutional and technical factors influence participation in contract farming which makes it imperative for policy decision makers to be cognisant of in developing and designing an effective marketing structure for the products of broiler farmers in the country.

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Table 1: Description of explanatory variables used in the model

Variable name	Variable label	Coding of variable	Expected relationship
Age	AGE	Number of years	+/-
Education	EDU	Number of schooling years	+
Household size	HHS	Number of members	+/-
Land size	LANSIZ	Hectares owned/farmed	+/-
Flock size	FLOSIZ	Number of birds kept/year	+
Farming experience	EXP	Years of farming	+
Farmer group/association service	MEMBER	1 if member, 0 if otherwise	+
Cooperative service	COOPSERV	1 if yes, 0 if otherwise	+
Access to extension services	EXT	1 if access, 0 if otherwise	+
Access to marketing infrastructure	MARKINFRST	1 if access, 0 if otherwise	+
Access to credit	CRED	1 if yes, 0 if otherwise	+
Access to market Information	INFOMARK	1 if yes, 0 if otherwise	+
Knowledge of grades and standards	STAGRAD	1 if influenced, 0 if otherwise	+
Culture	CULT	Amount per month (LSL)	+/-
Household monthly income	HHI		+/-

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Table 2: Demographics among broiler farmers in Lesotho

Arrangement	Variable	Minimum	Maximum	Mean
Contracted	Age	35	64	56
	Education years	6	18	15
	Farming years	15	20	16
	Non-farm income (LSL)	3,500	15,000	10,000
	Land size (ha)	0.5	4	1
	Household size	3	7	5
Non-contracted	Age	22	35	30
	Education years	5	18	15
	Farming years	1	4	3
	Non-farm income (LSL)	950	6,000	4,500
	Land size (ha)	0.5	3	1
	Household size	4	6	5

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Table 3: The regression model for factors influencing smallholder broiler farmer participation in contract farming institutional arrangements

Variable	β Coefficient	Standard error	p-value	Odds ratio	VIF
Age	1.087	1.092	0.520	1.942	1.342
Education	0.295	0.414	0.672	2.920	1.284
Household size	0.741	0.590	-0.502	1.068	1.010
Land size	0.045	0.604	0.712	2.344	1.325
Flock size	1.720*	0.480	0.003	2.428	1.021
Farming experience	0.784*	0.417	0.000	1.085	1.013
Farmer group/association	1.031*	0.791	0.042	1.034	1.180
Cooperative service	0.020	0.862	0.764	2.934	1.820
Access to extension services	1.950*	0.484	0.038	3.480	1087
Access to marketing infrastructure	0.699*	0.690	0.044	1.088	1.480
Access to credit	0.108	0.496	0.664	3.408	1.036
Access to market Information	0.320	0.842	0.619	2.436	1.430
Knowledge of grades and standards	1.600*	0.999	0.030	4.043	1.860
Culture	0.023	1.059	-0.700	2.901	1.033
Household monthly income	0.710*	0.973	0.046	1.767	1.324

Source: data analysis 2020

* = 95% confidence level

REFERENCES

1. **Soullier G and P Moustier** Impacts of contract farming in domestic grain chains on farmer income and food insecurity. Contrasted evidence from Senegal. Food Policy. 2018.

2. **Velde KV and M Maertens** Contract farming in staple food chains: the case of rice in Benin. ICAE. Milan. Italy. 2015.

3. **Elifneh YW** Exploratory analysis og contract farming: evidence from Ethiopia's barley contract farming. *International Journal of Engineering and Management Research*. 2019; **9(3):** 197 – 210.

4. **Ali AB** Malt barley commercialisation through contract farming scheme: A systematic review of experiences and prospects in Ethiopia. *African Journal of Agricultural Research*. 2018;**13(53):** 2957-2971.

5. **Arouna A, Michler JD and JC Lokossou** Contract farming and rural transformation: Evidence from a field experiment in Benin. Working paper. National Bureau of Economic Research. Massachusetts, USA. 2019.

6. **Ntaganira E, Shukla J, Mbeche R, Mbabzize M and K Taremwa** Determinants of participation in contract farming Among Smallholder Dairy Farmers in Rwanda. *International Journal of Thesis Projects and Dissertations.* 2017; **5(3):** 11-19.

7. **Wu W, Wu G, Yin C and H Chien** Impact of contract farming on farmers' income: a case of Wuchang rice in China. *JARQ*. 2020; **54(2):** 171 -177.

8. **Food and Agriculture Organisation.** Assessing and planning contract farming scheme. Contract farming learning resource. Rome. Italy. 2021.

9. **Prowse M** Contract farming in developing countries – A review. Institute of Development Policy and Management. University of Antwerp, Belgium. 2017.

10. **Ministry of Trade and Industry.** Status of broiler farming trade in the country. Government Printing. Maseru. 2020.

11. **Ministry of Trade and Industry.** Feasibility study for establishment of a broiler slaughterhouse in Lesotho. Government Printing. Maseru. Lesotho. 2021.

12. **Ministry of Trade and Industry.** Trade situation review of 2019/2020. Report 40. Government printing, Maseru. Lesotho. 2020.

13. **Ministry of Agriculture and Food Security.** Challenges facing smallholder farmers in Lesotho. Working report No. 14. Government printing, Maseru. Lesotho. 2019.

14. **Williams J** Effects of agricultural extension service on the profits of broilers farmers participating in contract farming in Lesotho. *Lesotho Journal of Agricultural Sciences.* 2020; **6(2):** 18 – 27.

15. **Mohale TC** Impact of contract farming on the impact of contract farming on productivity among Basotho poultry farmers. *Lesotho Journal of Agricultural Sciences.* 2020; **6(2):** 36 – 48.

16. **Bureau of Statistics**. Lesotho annual development review. Report No. 122. Government Printer, Maseru. Lesotho. 2018.

17. **Lesotho Agriculture Review**. Situation of Agriculture. Working report No. 24. Government of Lesotho. Maseru, Lesotho. 2015.

18. **Fang J** Why Logistical Regression Analyses are more reliable than Multiple Regression Analyses. *Journal of Business and Economics*. 2013; **4(7):** 620-33.

19. **Muroiwa J, Mushunje A and T Musitini** Factors influencing farmer participation in tobacco contract farming arrangements in mount Darwin district of Zimbabwe*. International Journal of Development and Sustainability.* 2018; **7(12):** 2986-3001.

20. **Zhu J, Guo H and RW Jolly** Contract Farming in China. Perspectives of Smallholder Agribusiness Firms. *Comparative Economic Studies*. 2007; **49:** 285-312.

21. **Rondhi M, Aji JMM, Khasan AF and R Yanuarti** Factors affecting farmers' participation in contract farming: The case of broiler sector in Indonesia. *Tropical Animal Science Journal*. 2020; **43(2):** 183-190.

22. **Sheleme JR** Determinants of Smallholder Farmers Market Participation and Outlet Choice Decision of Agricultural Output in Ethiopia: A Review. *American Journal of Agriculture and Forestry.* 2019; **7(4):** 139-145.

23. **Rantlo AM** Integration of Small-Scale Mohair Farmers into the Commercial Agricultural Economy in Lesotho: New Institutional Economics Approach. Unpublished PhD Thesis. Rhodes University. Grahamstown. South Africa. 2018.

24. **Barret BC, Backle EM, Bellmare FM, Michelson HC, Narayanan S and FT Walker** Smallholder participation in contract farming: Comparative evidence from five countries. Cornell University, USA. 2011.