Harla Journals

Harla Journal of Sustainable Development in Business and Economics

Journal home page: https://journals.ddu.edu.et/index.php/HJSDBE

Harla journal of Sustainable Development in Business and Economics

Market Chain Analysis of Sesame in Bench Sheko and West Omo Zones, Southwest Ethiopia

Agegnehu Workye[1*], Engida Gebere[1] and Kusse Haile[1]

*Corresponding author: Agegnehu Workye, Department of Agricultural Economics, Mizan – Tepi University, Mizan – Aman, Ethiopia. E-mail: agegnehuworkye@gmail.com

Abstract

This study attempted to analyze the market chain analysis of sesame in Bench Sheko and West Omo Zones of the southwest, Ethiopia. The study used both primary and secondary data obtained from survey and desk reviews. A multistage random sampling technique was used to draw 270 sesame producers. Besides, 17 traders were interviewed. Descriptive statistics and econometric models were used to analyze the data. The result from the analysis of the degree of market concentration indicated, that both Biftu and Bachuma markets are tight oligopolistic sesame market types. The highest producers share in sesame market channels was 60.31% in the channel I. The result of econometric regression analysis shows that eight variables namely total livestock unit, sesame farming experience, cooperative membership, family size, land under sesame, annual off-farm income, participation in training, and distance to nearest market significantly affected the market supply of sesame. Based on the study results, the quantity supply of sesame could be enhanced by ought strengthening farmers' sesame cooperatives, improving farmers' knowledge through adult education as well as their experience sharing with these same-producing farmers, improving accessibility of transport services and developing infrastructure, improving productivity through strengthening extension service provider and motivating sesame producing farm household to participate different training.

Keywords: *Sesame, Market Chain; Multiple Linear Regression; Bench Sheko; West Omo*

**Corresponding author: Agegnehu Workye; agegnehuworkye@gmail.com*

DOI:

Received month year; Received 14.09.2022; Accepted in revised form 9.11.2022; accepted, 8.12.2023

1. Introduction

The oilseed sector in Ethiopia significantly contributes to the country's foreign exchange earnings. Sesame, soybean, and niger seed, Ethiopia's three main oilseed crops, account for nearly 20% of total agricultural export earnings, second only to coffee (USDA, 2020). Sesame is among the earliest oilseeds known to humans, with a wide range of distribution from the tropics to temperate regions. Sesame cultivation has a long tradition in Ethiopia. Some literatures indicated sesame's introduction to Ethiopia from the west around 300 BC. Since then, Ethiopian farmers have been growing the crop as a cash crop. The crop has been expanding in its area coverage due to the presence of suitable agro-ecologies for the crop and the rise of profitability of the crop (MoA, 2015).

The Humera area in Tigray, the Metema and Wollo areas of the Amhara region, the Chanka area in Wellega of the Oromia region, and the Pawi area in the Benshangul Gumuz region are all major sesame producing areas in Ethiopia (CSA, 2020). Sesame production is growing in Ethiopia, especially in the southwest and northwest regions, due to high market demand and favorable environmental conditions. (Wijnands et al., 2007). In 2019/20, 543,236 smallholder farmers actively participated in producing 262,654 MT of sesame from 375,120 hectares of land (CSA, 2020).

The increasing demand for sesame on the global market and the available capacity to enhance sesame production, could promote Ethiopia's economic growth. However, sesame production and marketing in Ethiopia is confronted a number of obstacle that must be overcome. In the major producing areas, these include low productivity and efficiency, inadequate market infrastructure, and long and conventional marketing channels. Sesame seed quality and export competitiveness have suffered due to a lack of sufficient road infrastructure, market knowledge, and warehouse facilities (Terefe, 2016).

A study conducted by Kindie (2007) and Mengstu et. al (2019) analyze sesame market chain in Metema Woreda of Amhara region and Humera District of Tigray region of Ethiopia respectively. However, no extensive previous studies investigating the performance and determinants of volume of sesame supplied in the Bench Sheko and West Omo Zones of southwest Ethiopia existed. Even though the study area has remarkable potential for sesame production, productivity and the benefits obtained from the crop, its production and

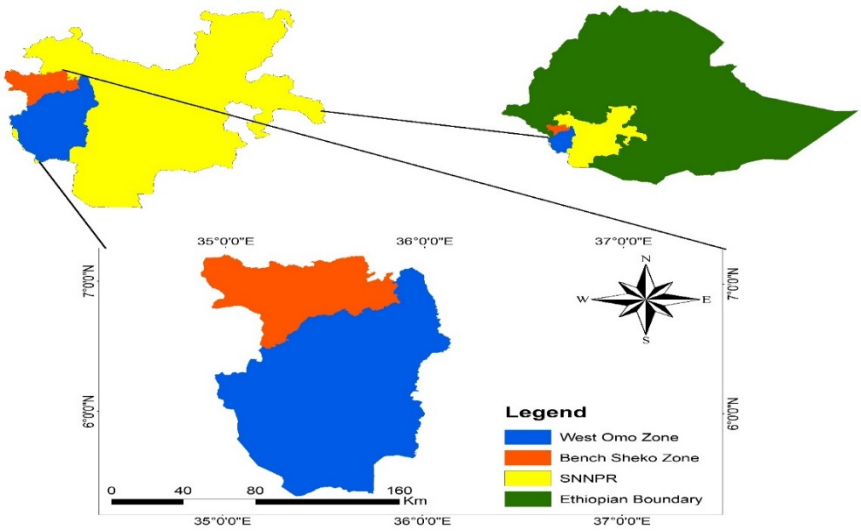
productivity are not comparable to those in other parts of the country. Therefore, this study tried to fill the existing research and information gaps by analyzing sesame market performance and identifying the determinants of volume of sesame supplied to the market by farm households in Bench Sheko and West Omo Zones of southwest Ethiopia.

2. Materials and methods

2.1. Description of the study area

This study was conducted in Bench Sheko and West Omo Zones. Bench Sheko and West Omo Zones are amongst of the twelve Zones in SNNPRs of Ethiopia (Figure 1).

Figure 1. Geographical location of the study area



2.2. Sources and Methods of Data Collection

Both primary and secondary data sources were used. Primary data was collected from sample farm households from seven rural *Kebele's* and traders using a pretested semi-structured questionnaire. Secondary data for the study was collected from the agriculture offices of each zone and district as well as published and unpublished reports.

2.3. Sample size determination and sampling technique

The technique of multistage random sampling was employed for this study. In the first stage, two Districts, namely Guraferda and Meinit Goldiya were selected purposively based on the potentiality of sesame production from Bench Sheko and West Omo zones respectively; this information is obtained from the respective zone Agricultural and Rural Development office. In the second stage, *Kebeles in* each District was grouped in to sesame growers and non-growers. In the third stage, among the sesame growing *kebeles*, *seven kebeles* from each district was selected randomly. In the last stage, from 9210 sesame producers in Bench Sheko and

West Omo Zones, 270 sample household heads were selected randomly, using probability proportionate to size and the formula developed by Yamane (1967) at 95% confidence level with degree of variability of 5% and level of precision equal to 6% (Table 1).

$$n = \frac{N}{1+N(e)^2} = \frac{9210}{1+9210(0.06)^2} = 270 \text{ Households} \quad (1)$$

Where, n = sample size, N = population size (sampling frame) and e = level of precision considered 6%.

Table 1. The summary of sample frame and sample size

Zone	District	Kebeles	Sesame producing HHs	Sample size	Percent
Bench Shako	Gurafarda	Kuja	428	31	11.48
		Gabika	470	34	12.59
		Semerta	456	33	12.22
		Sega	401	29	10.74
West Omo	Manit Goldeya	Kushanta	622	45	16.67
		Dega	670	47	17.41
		Genbab	705	51	18.89
	Total		3752	270	100

Source: Own sampling design, 2018

In addition, the largest traders from Biftu and Bachuma markets were identified based on the data obtained from the trade and industry office of the respective Zone. The first 7 and 10 traders were considered in Biftu and Bachuma markets respectively. The total sample size of traders was 17.

2.4. Method of data analysis

Descriptive statistics consisting of frequency, mean, standard deviation, percentage, minimum and maximum were used to describe the characteristics of sampled sesame producer households and structure conduct and performance. When all households participate in the market, the OLS model is used to determine factors affecting the degree of participation. Not all households may be able to participate, and some may choose to participate in one market over another, while others may be excluded by the market. If the OLS regression is estimated without including non-participants, the model will suffer from sample selectivity bias (Gujarati, 2003). Unfortunately, during the data collection time, all households become the supplier of sesame products to the market. Therefore, the multiple linear regression model come appropriate to analyze the market supply the model equation was specified as:

$$Y_i = \beta_o + \beta_i X_i + \varepsilon_i \quad (2)$$

Where, Y_i -Quantity of sesame supplied to the market (log-normalized)

X_i - Explanatory variable that affects the dependent variable

β_i- Estimation parameter

2.5. Definition of variables and working hypotheses

Volume of sesame supplied: It is a continuous dependent variable, measured in quintal (100kg). It is amount of sesame product supplied to the market by the farm household during the production period. To eliminate the effect of outliers, it was converted to natural logarithm during analysis. Prior to identifying the determinants of the volume of sesame supplied to the market, possible independent variable that could affect the dependent variable (sesame market supply) were carefully selected and hypothesized as depicted in Table 2.

Table 2. Summary of variables definition, measurement and working hypotheses

Variables	Category	Measurement	Expected effect on supply
Dependent variable			
Volume of Sesame supply	Continuous	Natural log of volume of supply	
Independent Variable			
Education level of the HH head	Continuous	Years of schooling	+
Sesame farming experience	Continuous	Years	+
Family size	Continuous	Number	+/-
Distance to nearest market	Continuous	Kilometer	-
Frequency of extension contact	Continuous	Number of days	+
Land under sesame	Continuous	Hectare	+
Amount of Credit received (log)	Continuous	Natural log of credit amount	+
Cooperative membership	Dummy	1if yes and 0 otherwise	+
Annual non-farm income (log)	Continuous	Natural log of non-farm income	+
Participation in training	Dummy	1if yes and 0 otherwise	+
Sex of the household head	Dummy	1 if male and 0 otherwise	+
Total livestock unit	Continuous	Total livestock unit (TLU)	+

3. Result and discussion

3.1. Characteristics of sample households

According to the study, the sample household heads' average family size was 5.48. In the study area, farmers stayed in sesame farming for an average of 7.07 years. During the cropping season, the average frequency of extension contact was found to be 2.78. In terms of credit access, about 184 (68.15%) of sesame-producing sample farmers reported being able to obtain credit, while the remaining 86 (31.85%) of sample households do not have access to credit. In case of credit service, farmers borrowed up to 2930.22 ETB on average from formal institutions (local cooperative unions and Micro-finance Institutions) and informal sources (friends, relatives and traders).

In the study area, farmers get training from FTC (farmers training center) and non-governmental Organizations. The training includes land preparation, fertilizers and seed application, sowing, weed management and other management practices. Out of the overall sample households interviewed for this study, about 115 (42.59%) reported receiving training

during the survey period, while the remaining 155 (57.41%) did not receive any training. As per the survey's results, the average distance between a market and a household's residence is 5.89 kilometers, ranging from 2 to 22 kilometers. Out of the total number of household heads interviewed, 247 (91.48 percent) were male-headed households and 23 (8.52%) were female-headed households. According to the findings of the survey, 44.07 percent of the respondents were members of cooperatives, while the rest (55.93 percent) were not (Table 3).

Table 3. Characteristics of sampled sesame producers

Variable description	Mean	Std.	Minimum	Maximum
Family size	5.48	2.49	2	12
Sesame farming experience	7.07	3.76	3	22
Education Level	2.48	2.10	0	9
Land under sesame	0.48	0.51	0.12	3
Extension contact (Number)	2.78	2.57	14	1
Amount of credit (Ethiopian Birr)	2930.219	3341.735	12000	0
Distance to market (Kms)	5.89	4.16	2	22
Total livestock unit	5.72	4.19		
	Frequency		Percentage	
Access to training (Trained HHs)	115		42.59	
Sex of Household Head				
Male	247		91.48	
Female	23		8.52	
Cooperative membership				
Yes	119		44.07	
No	151		55.93	

Source: Own computation result, 2018

3.2. Sesame Marketing Channels

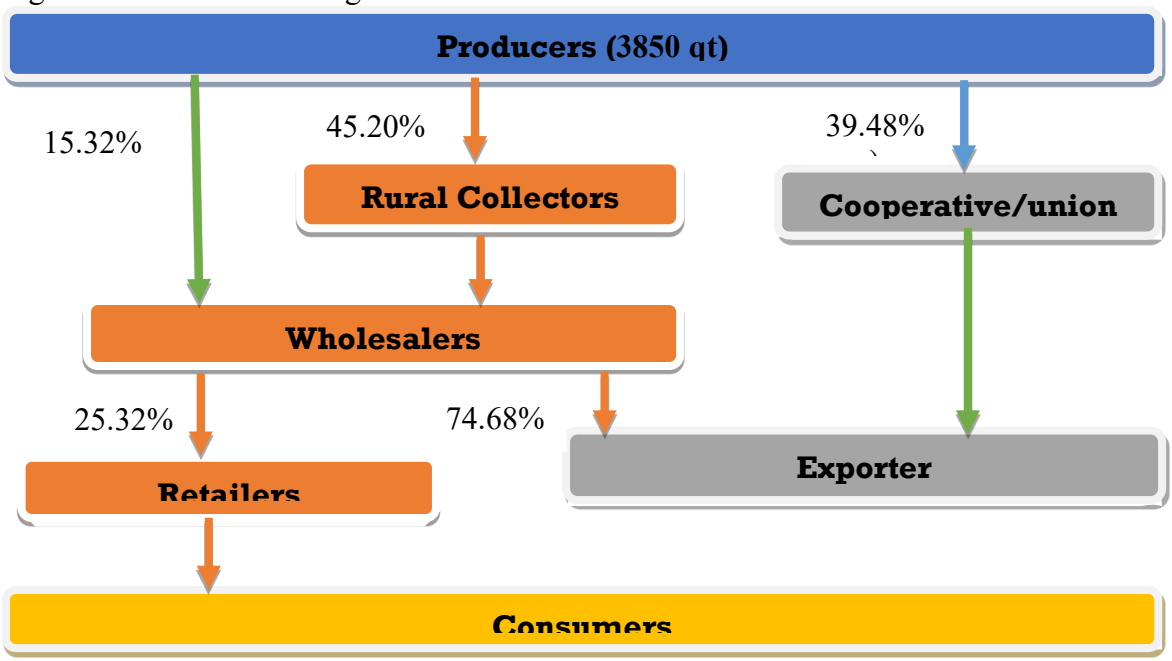
In this study three alternative marketing channels were identified for sesame as depicted in Figure 2. From 4500 qt estimated volume of sesame produced by sampled households in 2017/18, about 3850 qt of sesame was supplied to market. The comparison was made among channel based on the volume of the sesame that passed through each channel. Accordingly, the largest volume of sesame passed through channel II which is 45.20% of the total volume. In channel I 39.48% of the total sesame marketed which is the second largest channel. The main receivers of sesame from the producers were rural collectors and cooperatives/union who possess estimated percentage of 45.20 and 39.48 respectively.

Channel I: Producers → Cooperatives/Union →Exporters 1520 qt (39.48%)

Channel II: Producers → Rural collectors →Wholesalers → Exporters 1740qt (45.20%)

Channel III: Producers → Wholesalers →Retailers → Local consumers 590 qt (15.32%)

Figure 2. Sesame marketing channel



Source: Own sketch from survey result (2017/18)

3.3. Structure-Conduct-Performance Analysis of Sesame

Market structure: The structure of sesame market in the study area was analyzed by market concentration ratio and degree of transparency.

The degree of market concentration: Degree of market concentration was analyzed by taking all sesame traders from Biftu and Bachuma market which are the capital town of Gurafereda and Menit Goldya district respectively. The concentration ratio was calculated by taking annual volume of purchased sesame in 2017/18. As indicated in Table 4, result of CR4 shows that the top four sesame traders in Biftu and Bachuma market handled 78.36% and 50.21% of the sesame purchased, respectively. Based on Khols and Uhl (1985) market concentration measures, this result indicated sesame markets in Gurafereda and Menit Goldya is strongly oligopolistic market type.

Table 4. Sesame traders' Concentration ratio in Biftu and Bachuma market

Biftu market				Bachuma market			
Traders (Code)	Quantity purchased in Qt	% share of purchase	% cumulative purchase	Traders (Code)	Quantity purchased in Qt	% share of purchase	% cumulative purchase
TT001	520	24.65	24.65	TB001	600	14.93	14.93
TT002	423	20.05	44.7	TB002	559.8	13.92	28.85
TT003	365	17.3	62	TB003	450	11.2	40.05
TT004	345	16.36	**78.36**	TB004	408.45	10.16	**50.21**
All others traders	456.6	21.64	100	All others traders	2001.39	49.79	100
Total	2109.6	100		Total	4019.64	100	

Source: Computed from survey data, 2017/18

Degree of market transparency: The survey result indicated that about 88.24% of the total sesame traders had access or awareness to current sesame market price information in the study area. About 80% and 20% of the sesame traders obtained market information from other traders and their personal observation (Table 5).

Table 5. Market information access and its source for sampled household

Variables	Category	Number of traders (N = 17)	Percent
Access to market information	Yes	15	88.24
	No	2	11.76
Source of market information	Other traders	12	80
	Personal observation	3	20

Source: Computed from survey data, 2017/18

Sesame market conduct: The conduct of sesame market is analyzed in terms of price setting, purchasing and selling strategies of producers and traders.

Conduct of the producers: The method of price setting is important in sesame trading activity. Hence, the survey result in Table 6 indicates that about 55.56% of the respondents reported price of sesame was set by buyer only, 24.07% of them reported that their selling price set by market, about 5.56% of the sample producers set their selling price by themselves and the remaining 14.81% of them reported that their selling price was set by negotiation.

Table 6. Place and selling strategies of producers

Activities	Strategies	Number of sampled households (N =270)	Percent
Price setter	Producers	15	5.56
	Buyers	150	55.56
	Negotiations	40	14.81
	Market	65	24.07
Place of sesame sold	Farm gate	150	55.56
	Village market	75	27.78
	Urban market	45	16.66

Source: Computed from survey data, 2017/18

Conduct of traders: According to the survey result presented in Table 7, About 58.82% and 17.65% of traders purchasing price was set by traders themselves and buyers respectively. The remaining 23.53% of traders reported that purchasing price was set by negotiation with suppliers. With regarding using method of attracting suppliers, 52.94% and 29.41% of traders attracted their suppliers by paying better price and by visiting them, respectively. The rest 17.65% of traders used offering credit service to attract their suppliers.

Table 7. Traders buying and selling strategy

Activities	Strategies	Number of traders (N = 17)	Percent
Price setter	Traders themselves	10	58.82
	Buyers	3	17.65

	Negotiations	4	23.53
	Giving better price	9	52.94
Attracting	By visiting them	5	29.41
suppliers	Offering credit service	3	17.65
Terms of payment	Cash	14	82.35
	Credit	3	17.65

Source: Computed from survey data, 2017/18

Market Performance Analysis: Market performance of sesame market was analyzed by estimating marketing margin, by taking into consideration associated marketing costs for key marketing channels at that production and marketing year.

Marketing cost: The profitability of sesame producers was calculated by taking average total income and expenses of all sample producers' operation in 2018. As showed in the table below Producers earned a net profit of Birr 1957/quintal. The result in Table 8 showed that sesame wholesalers earn a profit 391.6 Birr/quintal by involving in sesame trade which is higher than exporter's profit (145.19 Birr/quintal).

Table 8. Cost structure and profitability for sesame producers, wholesalers and exporters

Cost items (Birr/qt)	Producer	Wholesalers	Exporters
Production cost	322.95	0	0
Packaging material / Packing fee	9.96	6	6
Loading and unloading	4.09	17	16
Transport expense	10.37	240	140
Storage cost / Storage for one month for exporter	4.75	27	5
Storage, transport and other losses		42.95	
Brokerage fee		32	
Tax	5.06	4.4	
Salaries of employee/production year	40.08		
Interest cost	12.21	36	43
Market search cost	3.78	6	
Selling and distribution			180
Impurity loss (2-4%)			92
Forwarding			30
Other cost	29.9	47.05	58.81
Purchase price		2400	3,250
Total cost	443.15	2858.4	3,820.81
Average selling price / FOB Price in birr /quintal	2400	3250	3966
Gross Profit/quintal	1957	391.6	145.19

Source: Computed from survey data, 2017/18

Marketing margin:

The survey result in Table 9 shows the differences between the total sesame income and the costs incurred in the process of sesame trading which results the gross profit of each actor in different channels. Sesame producers' gross profit is highest in channel I which accounts 1948.57 birr/qt and lowest in channel III which accounts 1556.85birr/qt. From traders' exporters obtained the highest profit which is 641.85 birr/qt in channel I and the lowest profit

shared by rural collectors which is 20.64 birr/qt in channel II. Total gross marketing margin (TGMM) was highest in channel IV which was 40.49% and lowest in channel III which was 30.41%. Without considering channel I, the producer's share (GMMp) is highest in channel III which was 69.59% of the consumers' price and lowest in channel IV which was 59.51%. From traders the highest gross marketing margin was taken by exporters which accounts 30.58%. of the consumers' price in channel I.

Table 9. Gross marketing margins, marketing costs and gross profits of actors

Actors		I	II	III
Producers	Production and marketing cost	443.15	443.15	443.15
	Selling price	2391.72	2360	2000
	Gross profit	1948.57	1916.85	1556.85
	GMMP (%)	60.31	59.51	55.25
Rural collectors	Purchase price		2360	
	Marketing cost		28.52	
	Selling price		2409.16	
	Gross profit		20.64	
	GMMRc (%)		1.24	
Cooperatives	Purchase price	2391.72		
	Marketing cost	213.67		
	Selling price	2753.24		
	Gross profit	147.85		
	GMM Coop (%)	9.11		
Wholesalers	Purchase price		2409.16	2000
	Marketing cost		454.5	458.4
	Selling price		3250	2900
	Gross profit		386.34	441.6
	GMMWho (%)		21.20	24.86
Retailers	Purchase price			2900
	Marketing cost			215.54
	Selling price			3620
	Gross profit			504.46
	GMMRet (%)			19.89
Exporters	Purchase price	2753.24	3250	
	Marketing cost	570.91	570.91	
	Selling price	3966	3966	
	Gross profit	641.85	145.09	
	GMMExp (%)	30.58	18.50	
	TGMM (%)	39.69	40.49	44.75

Source: Computed from survey data, 2017/18

3.4. Determinants of volume supplied to the market

Multiple linear regression models were employed to identify the factors. For the parameter estimates to be efficient, assumptions of CLR model should hold true. As a result, the hypothesized explanatory variables were tested for the presence of multicollinearity, heteroscedasticity, and endogeneity using appropriate test statistics. The result revealed that

there is no problem with the model estimation (Appendix Table 1). To determine the volume of marketable supply of sesame, twelve explanatory variables were hypothesized. Among these variables, only eight variables were found significant. The summarized results of the model are given below (Table 10).

Total livestock unit: This variable influenced the quantity of sesame supply positively and significantly at 1% significance level. Hence, owning of more of livestock helps to increase to purchase agricultural inputs for production and this indirectly increase the production and market supply of sesame. The result shows that a unit increase in the livestock causes 22.1% increase in the amount of marketed, holding all other variables constant. This is consistent with the finding of Sosina (2016) and Azeb (2020) who found that tropical livestock unit positively and significantly influenced quantity supplied to the market.

Sesame Farming Experience: As hypothesized, sesame farming experience positively contributed in sesame quantity supplied to the market and it was significant at 1% significant level. Thus, the result implied that, as farmer's experience increase by one year, the sesame supplied to market increased by 1.6%, keeping others factors constant. This means that the farmers with more experience in sesame production and marketing have higher ability to sell more sesame produces in the market than less experience because they have more marketing network and information. This is in line with the findings by Adepoju et al. (2015) Bizualem *et al*. (2015) and Gizachew *et al* (2018) who revealed that as farmer experience increased the market supply of pineapple, coffee and pepper, to the market increased, respectively.

Cooperative Membership: The result has showed significant effect at 1% significant level with expected positive sign. The positive coefficient implies that the volume of sesame marketed for those households who are the member of cooperative increases by 21.2% as compared to those household who are not the member of cooperative, keeping other factors constant. This may imply that, households who are the member of the cooperatives obtain inputs like seeds, fertilizers, pesticides, insecticides, credits and others which foster the famers production and influences the sesame households to supply more in the market. Moreover, working in a group creates synergy among the farmers and enables them to access market information as well as sharing experiences. This finding is in agreement with Adenegan *et al*. (2012) & Kyaw et al (2018) who found that being a member of farmers' association influenced volume of supplied to market positively and significantly.

Family Size: Previously it was hypothesized that family size affect volume of sesame marketed either positively or negatively. However, the model result confirmed that family size of the households negatively influenced the market supply at 5% significance level. The negative

effects of family size on market supply may imply that, households who have large family size allocated more quintals of products for consumption purpose and supply less to the market. The coefficient confirms that as the family size of the households increase by one, the market supply was decrease by 2.6% This is in line with Agegnehu et al. (2019) and Sharma (2016) who found that there is negative relationship between family size and market supply.

Table 10. OLS estimation of determinants of quantity supply of sesame (log)

Variables	Coefficients	Std. Err.
(Constant)	-0.287	0.197
Sex	-0.101	0.067
Total livestock unit	0.221***	0.057
Sesame farming experience (yrs)	0.016***	0.006
Cooperative member	0.212***	0.050
Family size	-0.026**	0.013
Education	-0.013	0.010
Land under sesame (ha)	0.424***	0.053
Annual off-farm income (log)	0.023***	0.006
Amount of credit received (log)	0.004	0.005
Training participation	0.519***	0.058
Distance to nearest market (kms)	-0.006**	0.002
Frequency of extension contact	0.014	0.015
Number of observation	270	
F (12, 257)	41.20	
Prob > F	0.0000***	
R-squared	0.6580	
Adj R-squared	0.6420	

Own computation result, 2018

Note: Dependent variable- is log of quantity of sesame supplied to the market

*** Significant at 1% level of significance and ** Significant at 5% level of significance

Land under Sesame: The result shows that land allocated for sesame has significant effect on volume of sales of sesame at 1% significant level with expected positive sign. The positive coefficient of land under sesame implies that a one hectare increases in land allocated for sesame leads to the sesame quantity supplied increased by 42.4%, holding all other variables constant. This is support the fact that the larger farmers with respect to area under cultivation are likely to be more interested in cash by selling their produce in the market and less interested in keeping the produce at homes for consumption. These results confirm the findings of Aslam (2013) and Adugnaw (2017) indicated that the area of land allocated for seed cotton and *teff* production affected farm level marketed supply of each commodity significantly and positively.

Annual off-farm income (log): As hypothesized, off-farm income of the household heads had positively affected sesame market supply at 1% significance level. On average, if a sesame producer gets non farming income increment by one percent causes 2.3% more sesame than

those who did not have access, by holding other factors constant. This may be explained by the fact that farmers who had cash from these sources used as supplementary income to purchase inputs like improved seed, fertilizers, chemicals and farm implements for sesame production and thus supplied more sesame to market than those who had not. This finding is in agreement with Adenegan *et al*. (2012) and Abajobir (2019) who found that access to non-farm income influenced volume of maize supplied to market positively and significantly.

Training participation: As expected, the provision of training service affected sesame market supply positively and significant at 1% significant level. The model result indicated that, ceteris paribus, the amount of sesame supply for those households who have participated in sesame production training increased by 51.9% as compared to those households who have not participated. This is in line with finding of Tizazu et al (2017) who confirmed that access to training service was significantly affect the volume of honey supply.

Distance from the nearest Market: The coefficient of distance to market was negatively related with sesame quantity supplied and significant at 1% significance level. For a one-kilometer increase in distance from residence to the nearest market indicated on decrease in the sesame quantity supplied by 0.6%, keeping other factors constant. The implication is farmers who located at far kebeles have less access to other relevant factors like price information and transportation which affects the quantity supplied to market negatively. This result of the study compromise with Falmata (2018) and Adepoju et al.(2015) who reported that distance to market affects quantity supply to the market negatively and significantly.

4. Conclusion and recommendations

Result from analysis of degree of market concentration indicated, that both Biftu and Bachuma markets are tight oligopolistic sesame market type. The result of multiple linear regression analysis shows that eight variables namely total livestock unit, sesame farming experience, cooperative membership, family size, land under sesame, annual off/non-farm income, participation in training and distance to nearest market affected market supply of sesame. Those variables which are total livestock unit, sesame farming experience, cooperative membership, land under sesame, annual off-farm income and participation in training affected positively and significantly market supply of sesame. However, distance to the nearest market and family size affected it market supply of sesame negatively and significantly. Based on findings, policymakers should focus on strengthening sesame producer cooperative, promoting experience sharing among experienced farmers, improving transportation accessibility and infrastructure development, improving productivity through strengthening extension service provider and encouraging sesame producers to participate actively in various training. As a

result, the above-mentioned important socioeconomic and institutional factors must be considered in order to improve the performance and market supply of sesame in the study area.

References

Abajobir N. 2019. Analysis of Maize Value Chain: The Case of Guduru Woreda, Horro Guduru Wollega Zone of Oromia Regional State, Ethiopia. *Inter. J. of Agri & Agribus*, 3(2): 257 – 291.

Adenegan, K.O., Adepoju, A. and Nwauwa, O.E. 2012. Determinants of Market Participation of Maize Farmers in Rural Osun State of Nigeria. Ibadan University, Ibadan, Nigeria. *Inter. J. of Agric Econ & Rural Dev't*, 5 (1): 28-38.

Adepoju A.O., Owoeye I. T. & Adeoye I.B. 2015. Determinants of Market Participation among Pineapple Farmers in Aiyedaade Local Government Area, Osun State, Nigeria, *Inter. J. of Fruit Science*, 15(4): 392-404.

Adugnaw A. 2017. Analysis of teff (Eragrostistef) market chain: The case of HuletEjEnese District, East Gojam Zone, Ethiopia. MSc Thesis, Haramaya University, Haramaya, Ethiopia.

Agegnehu W., Degye G. & Bosena T. 2019. Analysis of factors influencing market supply of rice by smallholder farmers in Guraferda District, Southwest Ethiopia. *Agri, Fore & Fish,*8(5):95-99.

Aslam M., Ghafoor A., Abbas M.and Rasool S. 2013. Determinants of marketed surplus -a case of seed cotton growers in District Khanewal. Journal of Agricultural Research, 51(1): 71-79.

Azeb L., Adune D. & Mohammed S. 2020. Value chain analysis of smallholder milk producer in West Hararghe Zone, Ethiopia. *Inter. J. of Agri Science & Food Technology*, 6(2): 93-100.

Bizualem A, Degye G. & Zekarias S. 2015. Analysis of marketed surplus of coffee by smallholder farmers in Jimma zone, Ethiopia. *J. of Biol, Agri & Healthcare*, 5(5): 2224-3208.

CSA (Central Statistical Agency). 2020. Statistical Report on Area and Production of Major Crops (Private Peasant Holdings, Meher Season). CSA, Addis Ababa, Ethiopia.

Falmata G. 2018. Factors affecting marketing intensity of wheat growers in Southeastern Ethiopia. *J. of Agri Sci & Food Research*, 9(1): 1-6.

Gizachew W., Mengistu K. & Alelign A. 2018. Determinants of pepper market supply among smallholder farmer in Wenberma District, Ethiopia. *Agri, Fore & Fish*, 7(6); 133-142.

Gujarati, D.N. 2003. *Basic Econometrics, 4th Edition*. McGraw-Hill, New York, USA.

Kindie A. 2007. Sesame market chain analysis: The case of Metema Woreda, North Gondar Zone, Amhara Region. MSc Thesis Haramaya University, Haramaya, Ethiopia.

Kyaw N. N., Ahn S. & Hyeon L. S._Analysis of the factors influencing market participation among smallholder rice farmers in Magway region, Central Dry Zone of Myanmar. *Susta't*, 10; 1-15.

Mengstu B, Worku T., Girma G., Kahsay T. & Mewael K. 2019. Value chain analysis of sesame in Humera district, Tigray, Ethiopia, *Cogent Food & Agri*, 5: 1-11.

MoA. 2015. Sesame Value Chain Development Strategy (Working Document 2015-2019).

Sharma, V.P., 2016. Marketable and marketed surplus of rice and wheat in India: distribution and determinants. *Indi J. of Agri Econ*, 71(2):138-159.

Sosina B. 2016. Dairy value chain analysis in Meta District, Eastern Ethiopia. MSc Thesis Haramaya University, Haramaya, Ethiopia.

Terefe N. 2016. Review of sesame value chain in Ethiopia. *Inter J. of Afri and Asia Stu.,* 19: 36-47.

Tizazu T., Bosena T. & Lemma Z. 2017. Determinants of honey market supply: The case of Shebedino District, Sidama Zone, Ethiopia. *J. of Eco & Sust Dev't*, .8(19): 7-10.

USDA. 2020. Ethiopia oilseeds report annual, assessments of commodity and trade issues, 2019/20.

Wijnands, J., Biersteker, J., and Hiel, R., 2007. Oilseeds business opportunities in Ethiopia. Survey report. MOA, Nature and Food Quality, the Netherlands, The Hague, pp. 8-20

Appendix

Appendix Table 1. Test results for multicollinearity, heteroscedasticity & specification (Stata output)

Variables	VIF	1/VIF	Breusch-Pagan / Cook-Weisberg test for heteroscedasticity
Sex	1.08	0.921922	
Total livestock unit	1.16	0.858754	Variables: fitted values of logsesamesold
Sesame farming experience (yrs)	1.17	0.855252	Ho: Constant variance
Cooperative member	1.22	0.817639	chi2(1) = 0.19
Family size	1.23	0.815861	Prob > chi2 =0.6588
Education	1.12	0.894768	
Land under sesame (ha)	1.42	0.706534	
Annual off-farm income (log)	1.15	0.869147	
Amount of credit received (log)	1.13	0.884593	Ramsey RESET test using powers of the fitted values of logsesamesold
Training participation	1.48	0.675855	
Distance to nearest market (kms)	1.12	0.891114	Ho: model has no omitted variables
Frequency of extension contact	1.08	0.923970	F (3, 254) = 2.00
Mean VIF	1.20		Prob > F = 0.1146