

Full Length Research Paper

Market chain analysis of potato and factors affecting market supply in West Gojam Zone, Ethiopia

Wondim Awoke^{1*} and Desselgn Molla²

¹College of Agriculture and Rural Transformation, University of Gondar, P. O. Box 196 Gondar, Ethiopia.

²College of Agriculture and Environmental Sciences, Bahir Dar University, Ethiopia.

Received 31 August, 2018; Accepted 19 October, 2018

The study was conducted in South Achefer and Jabi Tehinan districts of West Gojam Zone with the objectives of identifying the major potato marketing channels, to analyze potato marketing cost and margins, and to examine determinants of producer's potato supply to market. The study took a sample of 100 producers, 70 traders and 40 end consumers randomly. Both quantitative and qualitative data were collected and analyzed through marginal and econometrics analysis. In South Achefer district, producers, wholesalers, retailers and processors earn 11.44, 7.54, 16.85 and 64.17% share of profit margin, respectively. Whereas in Jabi Tehinan district, the percent shares of profit margin for producer, collector, retailers and processors was 26.35, 25.52, 19.13 and 29.01%, respectively. In Jabi Tehinan, regression analyses revealed that distance to nearest market centre (5%), owned ox number (10%), experience (5%), access to credit (10%), total amount of potato produced (1%) and market information (5%) were significant. In South Achefer district, total amount of potato produced and market information were found to be factors affecting supply of potato to the market at 1% probability level. Therefore, governmental and non-governmental organizations should take part in fulfilling the gap of different market chain actors through their intervention especially in term of market information.

Key words: Determinants, district, market chain, marketing channels, potato.

INTRODUCTION

Wider production of high-value vegetables can provide a viable mechanism to generate additional household income and supplement nutritional intake (USAID, 2000). According to the EIAR and ARARI (2013), potato is the priority world's no-grain food high-value vegetable crop. The global production over the past two decades has expanded from 267 to 375 million tone and market opportunities make it most popular food crop for urban populations. It also generates employment opportunity for

low-income farmers through access to higher value markets along the potato market chain.

Potato also plays a very significant role in the agricultural economy by providing wonderful yields per unit area compared with other food crop (Javeed et al., 2013). Potato and its products could replace cereal or cereal products in either cooked or processed food items (Danielle and Stan, 2011). Potato production seasons in study area were main, residual and irrigation. The most

*Corresponding author. E-mail: wondimawoke@gmail.com.

practiced season was main season through sole cropping production method. Additionally there is a practice of intercropping potato with maize (Yazie et al., 2015). According to Amhara National Regional State (ANRS) (2003), raising consciousness about the economic and nutritional value, marketing, and conduct marketing research to explore expansion potentials into local and export markets are interventions required to raise production and consumption of vegetables like potato. Even if it has immense importance for human being, there were many factors, which affect potato marketing and production. In the study area, disease, lack of improved varieties and lack of marketing information were some of the problems that faced farmers in production and marketing of potato (Yazie et al., 2015).

Agricultural goods, and products and money flow in two opposite directions, that is, agricultural goods and products move up the chain and money flows down the chain. Market chain is the term used to describe the various market channels through which a product or service moves until reaching the end user (Lundy et al., 2007). According to Spilsbury et al. (2004), a market chain has the three main components of a marketing chain with their links and their functions. These are production function, post harvest processing and marketing. Channel is the route through which a product moves between the producer and end consumer (Lee et al., 2008). Marketing channel is the link through which a specified commodity passes among different value chain actors (Artimessia and Germandar, 2012).

To the best of my knowledge, there is little/no-empirical evidence on market chain analysis of potato in Ethiopia particularly South Achefer and Jabi Tehinan districts. Besides, studies conducted on market chain were not commodity and location-specific. Therefore, it was in this background that market chain analysis of potato was conducted to fill the information gap with regard to potato production and marketing in South Achefer and Jabi Tehinan districts. Hence, objectives of the study were: (1) Identifying the major potato marketing channels in the study districts, (2) To analyze potato marketing cost and margins for marketing channels and (3) To examine determinants of producer's potato supply to the market.

METHODOLOGY

Description of the study area

Both South Achefer and Jabi Tehinan districts belong to West Gojam Zone. The topography of the South Achefer district is 72% plain, 10% mountain, 12% undulating and 6% valley. The altitude of the district ranges from 1500 to 2500 m.a.s.l. Agroecologically, the district comprises 13% low land and 87% mid-high land area. The minimum and maximum annual rainfall of the district ranges from 1450 to 2500 mm/year. It has a soil type of mainly 50% red, 40% brown soil and others cover the rest (WOA, 2015a). The topography of the Jabi Tehinan district is 65% plain, 15% mountain, 15% undulating and 10% valley. Altitude of district ranges from 1500 to 2300 m.a.s.l. The district has 12% low land and 88% mid-high land

area. It has a soil type of mainly 60% red, 25% brown and 15% black soil (WOA, 2015b).

Sample producers demographic characteristics

Among the total sample respondents, 96% were male-headed households and only 4% were female-headed in South Achefer district, whereas 82% was male-headed households and 18% was female-headed households in Jabi Tehinan district. With regarding to educational status of the two districts, 70 and 58% were literate in South Achefer and Jabi Tehinan, respectively. Average respondent age was 42.22 and 44.32 years in South Achefer and Jabi Tehinan districts, respectively. In both districts, the average family size of the total sample respondents was six persons.

Sampling techniques and sample size

Two sampling techniques were employed namely, purposive and simple random sampling. Capacity Building for Scaling Up of Evidence Based Best Practices in Agricultural Production in Ethiopia (CASCAPE) perform different research activities related to potato to enhance livelihood of the farmers through providing potato production and marketing information in South Achefer and Jabi Tehinan districts. The main aim of the project is to "improve agricultural productivity in Ethiopia by strengthening the capacity of stakeholders in identifying, validating and disseminating best practices" (Mengistu, 2014). Therefore, CASCAPE intervention districts and kebeles were selected purposive. Sample respondents were selected through simple random sampling technique. Those sample respondents were taken from producers, traders (input supplier, wholesalers, collectors, retailers and processor) and end consumers.

From reading literature review, different scholars determine sample size depending up on their nature of study so that there was no fixed rule that govern sample size determination for different market chain actors. Even applying constant sample size determination would be applicable for some segment of the market chain actor and may not applicable for the other market chain actor to determine sample size. Therefore, sample size for this study was a function of the variability of the population characteristics (either homogenous or heterogeneous), time and resource availability. The researchers used Kothari (2004) formula due to finite nature of population size and easiness of formula to measure the value of information to meet stated objectives. Kothari (2004) formula:

$$n = \frac{z^2 \cdot p \cdot q \cdot N}{e^2 (N-1) + z^2 p \cdot q}$$

was used to determine sample size of the producers, where, n =sample size, Z =value of standard variant at 95% confidence interval, p =sample proportion (0.035), $q=1-p$, e =the estimate which should be within 3.5% of the true value, and N =the total household population.

$$n = \frac{1.96^2 (0.035)(0.965)(1959)}{(0.035)^2(1959 - 1) + (1.96)^2(0.035)(0.965)}$$

$$n = \frac{254.18}{2.52}$$

$$n = 100.87$$

Table 1. Variable definition and hypothesis for market supply of potato.

Dependent variable	Measurement	Hypothesis
Quantity of potato supplied to market	Continuous (quintal)	
Independent variable		
Owned oxen number (OWOXNU)	Continuous (km)	+
Distance to nearest market (DIS MKT)	Continuous (km)	-
Amount/yield of potato produced (YLDOPOT)	Continuous (quintals)	+
Access to credit (ACTC)	Dummy (1=if the HH have access to credit, 0=otherwise)	+
Access to extension service (ACEXT)	Dummy (1=if the HH have access to extension service, 0=otherwise)	+
Access to market information (ACMKT)	Dummy (1=if the HH have access to market information, 0=otherwise)	+
Education of household head (EDHD)	Dummy (1=literate, 0= no formal education)	+
Experience in potato production (EXIPOT)	Continuous (years)	+ or -

Therefore, total sample size of producers was 100. Fifty producers from each district were taken from total population of potato producers. After determination of total number of sample respondents, sample producers were selected based on proportion to sample size from each kebele. However, 70 traders and 40 end consumers were taken based on variability of the population characteristics. Hence, 210 sample respondents were used for the study.

Data collection and data analysis

Important data for study were collected through focus group discussion, key informant interview and sample household interview by structured questionnaire. A focus group discussion and key informant interview were seized with community leader and governmental organizations such as agriculture, cooperative, trade and transport offices. In addition, farmers and traders were incorporated in key informant interview and focus group discussion. A focus group discussion was held to obtain data by prepared questions ranging from 8-12. Data collected through focus group discussion and key informant interview were qualitative in support of data collected by structured questionnaire. Data collected through sample household interview were household general information (sex, marital status, educational level, and family size), farm size, yield, cost, return, source of input, marketing channel, buying and selling price of potato. In addition,

quantity of potato supplied to market, owned oxen number, distance to nearest market, access to credit, access to extension service, access to market information and experience in potato production were collected.

After the collection of appropriate data for the study, both marginal and econometrics analysis were utilized. Marginal analysis was used to analyze potato marketing cost and margin.

The estimation procedure for marketing margin analysis is presented next. Marketing margin at a given stage ‘i’ (MMi) is computed as:

$$MMi = SPi - PPi$$

where SPi is selling price at ith link and PPi is purchase price at ith link.

Then percent share of marketing margin at ith link (%SMMi) is given as:

$$\% SMMi = \frac{MMi}{TPM} \times 100$$

Where, TPM is total marketing margin.

Profit margin at stage i (PMi) is given as:

$$PMi = SPi - TCi$$

Where, SPi is selling price at ith link and TCi is total cost at ith link.

Then percent share of profit margin at ith link (%SPMi) is given as:

$$\%SPMi = \frac{PMi}{TPM} \times 100$$

where TPM is total profit margin.

Under econometric analysis, multiple linear regression analysis was used to analyze the effect of the hypothesized independent variables on supply of potato output to the market as dependent variable. Therefore, the mathematical specification of the model is (Table 1):

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3... + \beta_nX_n$$

where Y= dependent variable, β₀= the slope of the equation, β₁...β₂...β_n= coefficients to estimates, X₁...X₂... X_n= independent variables.

RESULTS AND DISCUSSION

Potato marketing channels

The marketing channel is the means by which

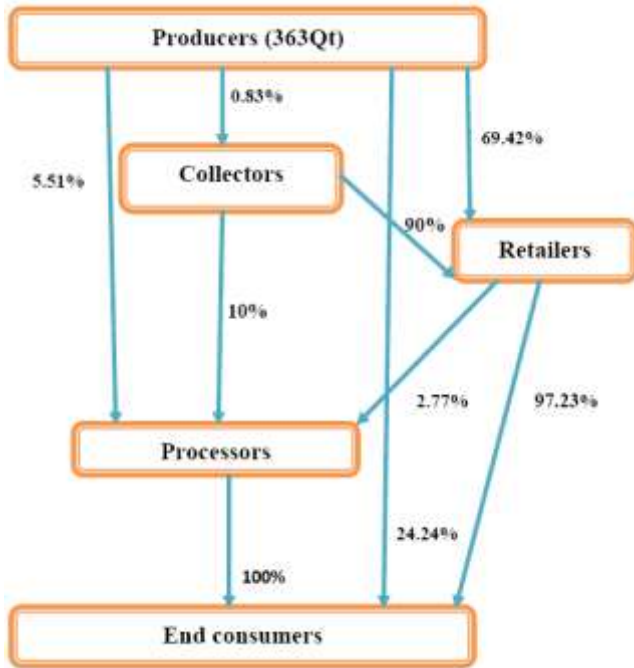


Figure 1. Potato marketing channel of Jabi Tehinan district.

product moves from one value chain actor to the other (Lee et al., 2008). It is used to show how product flows from beginning to end of the chain. In both districts, different number of marketing channels and value chain actors were identified in exchanging potato between producers and end consumer. Therefore, the result of study was revealed separately for each study districts.

According to the study result, seven main marketing channels were identified for potato marketing in Jabi Tehinan district (Figure 1). Retailers received the major quantity of the potato produced in district and they took 69.42% share. Marketing channel comparison was made based on amount of potato passed through each channel. Thus, the channel of Producers - Retailers - end Consumers and Producers - Collector - Retailer - Processors - end Consumers carried out the largest and least channels in the market chain, respectively.

- I. Producers → End consumers (87.99Qts)
- II. Producers → Collectors → Retailers → End consumers (2.64Qts)
- III. Producers → Retailers → End consumers (245.01Qts)
- IV. Producers → Retailers → processors → End consumers (6.98Qts)
- V. Producers → Collectors → Processors → End consumers (0.3Qts)
- VI. Producers → Processors → End consumers (20.00Qts)
- VII. Producers → Collector → Retailer → Processors → End consumers (0.08Qts)

According to the study, there were six main marketing

channels identified for potato marketing in South Achefer district (Figure 2). Wholesalers, retailers, processors and consumers were the main market chain actors that receive potato product from producers with the percent share of 5.13, 52.16, 0.11 and 42.60% in South Achefer district, respectively. The same with Jabi Tehinan district marketing channel comparison was made based on amount of potato passed through each channel. Therefore, the channel of Producers - Retailers - End consumers and Producers - Processors - End consumers took the largest and least amount of product in the channel, respectively.

The market channel of the potato in South Achefer seems as follows:

- I. Producers → End consumers (187.01Qts)
- II. Producers → Retailers → End consumers (227.97Qts)
- III. Producers → Retailers → Processor → End consumers (0.80Qts)
- IV. Producers → Processor → End consumers (0.50Qts)
- V. Producers → Wholesalers → Traders outside Woredas (22.52Qts)
- VI. Producers → Retailers → End consumers outside Woredas (0.87Qts)

Analysis of marketing margins

Estimating the marketing margins was used as tool to analyze performance of market in both districts. According to Smith (1992), a marketing margin is pertinent to provide clues to significant weakness and inefficiencies in the system. Marketing margin is the difference between the value of product at one stage in the marketing process and the value of an equivalent product at another stage or it is simply the difference between the sale price and the purchase price. Therefore, the marketing margin analysis was presented below for both study districts, separately.

South Achefer district

Table 2 shows marketing margin cost and benefit share of different market chain actors who were involved in marketing of potato. The overhead cost was highest next to production cost in producers. Among traders, the processors have incurred the highest cost. This was due to their performing more value-adding activities than the others. Purchaser (wholesaler) who came from other areas covered wholesaler costs related to labor, loading/unloading, transport cost, overhead cost, packaging and storage cost /manufacturing. The lowest marketing cost among actors was the wholesalers because they link farmers with wholesalers outside the district and they did not sell to consumers or retailers who were living around

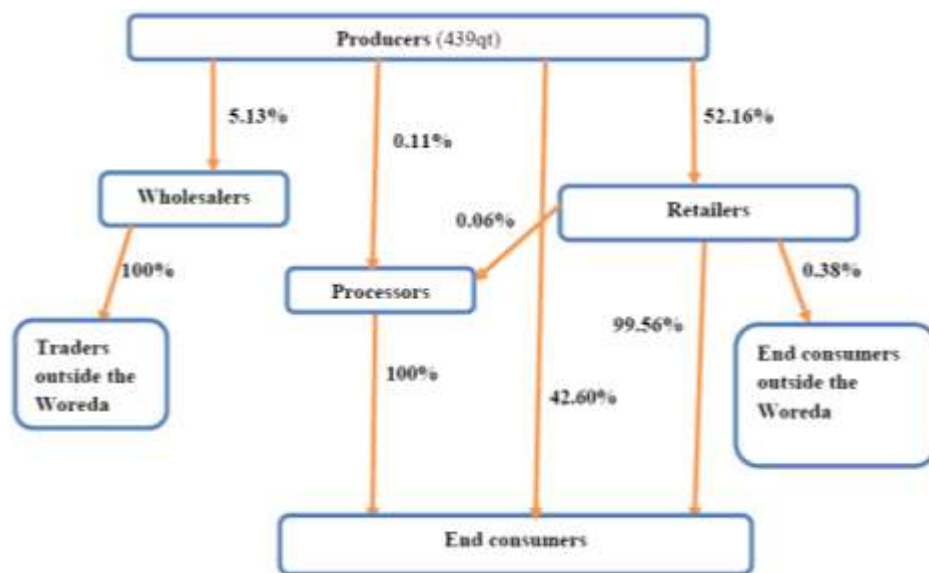


Figure 2. Potato marketing channel of South Achefer district

Table 2. Marketing margin analysis (per quintal) in South Achefer.

Item	Producer	Wholesaler	Retailer	Processor	Sum
Purchase price	-	291.67	316.46	280	
Production cost	135.42	-	-	-	135.42
Marketing cost					
Labor	20.91	-	2	171.43	194.34
Loading/Unloading	-	-	0.9	-	0.9
Personal travel cost	0.4	0.07	0.82	3.43	4.72
Transport cost	11.4	-	22.22	4.29	37.91
Loss	9.97	-	0.9	15.36	26.23
Telephone	-	0.64	0.02	-	0.66
Overhead cost	28.36	-	3	24.29	55.65
Packaging/Container	5.3	-	5.95	5.71	16.96
Processing cost	-	-	-	185.36	185.36
Storage cost/manufacturing	0.27	-	1.53	42.86	44.66
License/Tax	0.41	2.74	0.81	-	3.96
Total marketing cost	77.02	3.45	38.15	452.73	571.35
Total cost	212.44	3.45	38.15	452.73	706.77
Sale price	295.74	350	477.32	1200	2323.06
Marketing margin	160.32	58.33	160.86	920	1299.51
% share of marketing margin	12.34	4.49	12.38	70.80	100
Profit Margin	83.3	54.88	122.71	467.27	728.16
% share of profit margin	11.44	7.54	16.85	64.17	100

the district.

The producer profit share was only 11.44% whereas 88.56% of the profit share was traders. This may make producers not to participate in the market supply of

potato. In the marketing chain of potato in South Achefer district, the wholesalers, retailers and processors earn 7.54, 16.85 and 64.17% share of profit margin. According to the result of study, the processors (64.17%) among

Table 3. Marketing margin analysis (per Qt) in Jabi Tehinan district.

Item	Producer	Collector	Retailer	Processor	Sum
Purchase price	-	272.5	332	349.41	953.91
Production cost	95.15	-	-	-	95.15
Marketing cost					
Labour	17.56	0.25	0.5	5.19	23.5
Loading/Unloading	-	-	-	-	-
Personal cost travel	0.5	1.95	0.31	0.77	3.53
Transport cost	10.5	1	0.29	4.98	16.77
Loss	9.89	1.5	0.28	1.94	13.61
Telephone	-	0.35	0.5	1	1.85
Overhead cost	33.39	-	0.43	7.93	41.75
Packaging	5.57	0.23	3.2	8	17
Processing cost	-	-	-	12.77	12.77
Storage cost	0.34	0.6	1.73	2.02	4.69
License/Tax	0.44	-	0.5	-	0.94
Total marketing cost	78.19	5.88	7.74	44.6	136.41
Total cost	173.34	5.88	7.74	44.6	231.56
Sale price	277.16	378.93	415.12	508.33	1579.54
Marketing margin	182.01	106.43	83.12	158.92	530.48
% share of marketing margin	33.56	19.62	17.53	29.3	100
Profit Margin	103.82	100.55	75.38	114.32	394.07
% share of profit margin	26.35	25.52	19.13	29.01	100

actors with high marketing cost charged more than half of profit margin. Processors did much value-adding activities such as transporting, cleaning, sorting and grading, processing and packing for achieving a better share of profit margin.

Jabi Tehinan district

The percent profit margin for each market chain actors was calculated and shown in the Table 3. Hence, producer, collector, retailers and processors earn 26.35, 25.52, 19.13 and 29.01% share of profit margin, respectively. Among the traders only, the processors receive highest percent share of marketing margin (29.30%) whereas retailers receive the lowest percent share of marketing margin (17.53%). The highest profit margin was processors (29.01%), but producers receive only 26.35% profit margin.

The producer profit share was only 26.35% whereas 73.65% of the profit share was traders. This may make producers not to participate in the market supply of potato. In the marketing chain of potato in Jabi Tehinan district, the wholesalers, retailers and processors earn 25.52, 19.13 and 29.01% share of profit margin. According to this result, the processors (29.01%) among actors with high marketing cost charged more than other

actors in the marketing chain of potato. Processors did much value-adding activities such as transporting, cleaning, sorting and grading, processing and packing for achieving a better share of profit margin.

Econometric model outputs

Determinants of potato market supply

Even if there was variation in amount of potato supply in both study districts, all sample households were good suppliers of potato to the market. Therefore, analysis of factors affecting producer's potato supply to the market by using multiple linear regressions was important. Before running the multiple linear regression model, all the hypothesized explanatory variables were checked for the existence of multi-collinearity through variance inflation factor (VIF). In South Achefer, the result for all VIF values ranges between 1.05 and 1.31. The value of VIF in Jabi Tehinan district lies between 1.15 and 1.26. The result indicates that multi-collinearity was not a serious problem among the variables since VIF results were less than 10. The overall goodness-of-fit of the regression model was measured by the coefficient of determination (R^2). The value of R^2 was 0.84 and 0.95 in South Achefer and Jabi Tehinan districts, respectively.

Table 4. Determinants of potato quantity supplied to the market in South Achefer.

Variable	Coefficients		Sig.
	B	Std. Error	
(Constant)	-16.88	8.341	0.049
Education level of household head	0.876	1.722	0.614
Owned oxen number	-0.639	0.854	0.458
Experience in potato production	-0.040	0.106	0.710
Total amount of potato produced	0.551	0.039	0.000*
Access to extension service	1.714	2.470	0.491
Access to market information	7.316	2.149	0.001*
Access to credit	0.860	3.799	0.822

Dependent variable is total amount of potato supplied to the market in quintal. *Statistically significant at 1%.

Table 5. Determinants of potato quantity supplied to the market in Jabi Tehinan district.

Variable	Coefficients		p-value
	B	Std. Error	
(Constant)	-6.062	6.334	0.344
Education level of household head	-1.488	1.056	0.166
Distance to market in km	-0.819	0.319	0.014**
Owned oxen number	1.092	0.562	0.059***
Total amount of potato produced in qt	0.726	0.030	0.000*
Access to extension service	-0.567	1.204	0.640
Access to market information	5.925	2.724	0.035**
Access to credit	-3.373	1.754	0.061***
Experience in potato production	-0.117	0.048	0.020**

Dependent variable is total amount of potato supplied to the market in quintal. ***, ** and *Statistically significant at 10, 5 and 1%, respectively.

The value lies between zero and one, which is closer to one that shows better fit of the model (Krause et al., 2005).

In both study districts, different explanatory variables were hypothesized to determine the household head. Some variables like price and total land coverage were not included under the analysis due to multi-collinearity problem. In South Achefer district, among the hypothesized seven variables, only total amount of potato produced and market information were found to be significantly affecting the households' potato supply to the market (Table 4).

In Jabi Tehinan district, among the hypothesized eight variables, only owned ox number, experience in potato production, distance to nearest market, access to credit, total amount of potato produced and market information were found to be significantly affecting the household potato supply to the market. The rest of variables (education of household head and access to extension service) have no significant effect on market supply of potato (Table 5).

Econometric result in South Achefer district

Total amount of potato produced: As hypothesized, the result confirms that the total amount of potato produced and market supply has positive effect and statistically significant at 1%. Therefore, farmers who produce more amount of potato per hectare may supply more potato to the market than those who produce low amount of potato. The result of the study also shows that a unit increase in the quantity of potato produced has caused an increase of 0.551 qt of potato supply to the market. This is in line with Abay (2007), Adugna (2009), Assefa (2009), Ayelech (2011) and Abraham (2013).

Access to market information: As hypothesized, the access to market information was positive and significantly at 1% significance level, a positive coefficient implying that an increase in access to market information would increase market supply of potato. This means that the farmer who has a good access to market information (selling price, place where and time when they sell) would

likely produce more quantity of potato and supplied more potato to the market. This result indicates that an increased unit in access to market information leads to increases in the potato supply by 7.316 qt. This is in line with Muhammed (2011) and Abraham (2013).

Econometric result in Jabi Tehinan district

Owned ox number: As expected, the owned oxen number influences market supply of potato positively and statistically significant at 10% level. The most probable reason could be that the farmer who own oxen might not have incurred cost for hiring the ox for plowing and reduce cost. As owning of oxen increase the market supply of potato by 1.092%, the result is in line with that of Abay (2007).

Experience: The result has shown significant negative effect at 5% level for potato market supply of household contrary to hypothesis. This may be because as farmers became experienced, they were also being laggard due to age increase and could not increase productivity of potato and family size will be decreased. As a result, market supply of potato to the market may be decreased. The result implied that as farmer's experience increase by one year, the potato supply fall by 0.117 qt. This is in line with result of Woldemichael (2008) on market participation of farmers on milk.

Access to credit: Contrary to prior prediction, the variable has inverse relation with market supply of potato, which was significant at 10% probability level. The result show that as access to credit increase by one unit the household supply of potato to the market decrease by 3.373 qt. This may be due to the improper or unwise use of credit, lack of advice on how to use credit they took and lack of follow-up for what purpose they use it. Respondents mentioned that they did not get credit at the right time. In addition, producers who took credit may be resource poor and cannot supply potato like resource rich producers so that credit may be negatively correlated with market supply of potato. However, Alemnew (2010) found that access to credit and market supply positively related on pepper. This may not be applicable for potato because experts may not give equal extension service like other crop for the potato.

Distance from the nearest market: As hypothesized, the explanatory variable significantly affected potato supply to the market at 5% significance level. The result shows that as the distance from the nearest market increased by one kilometer the quantity of potato supply decreased by 0.819 qt. This may be due to the reason that as the distance to the nearest market increases, marketing costs (transportation, labor, loading, unloading and personal travel costs) increases. Besides this, the

potato by its nature is highly perishable and a bulky product, thus, taking far distance will lead to loss and marketing costs being increased. The result is in line with Woldemichael (2008), Ayelech (2011) and Abraham (2013).

Total amount of produced potato quantities: As prediction, result shows that total amount of potato produced significantly affect potato market supply of household at 1% probability level. The result of study implies that, a unit increase in the quantity of potato produced has an increase of 0.726 qt. By nature, potato is a perishable crop; and as they produce more they should supply to market to reduce perishability. In study areas, farmers has no more experience to keep potato for long period of time, that is, they did not have diffused light storage except some CASCAPE project technology users. This result is in line with Abay (2007), Adugna (2009), Assefa (2009), Ayelech (2011) and Abraham (2013).

Access to market information: As hypothesized, access to market information was positive and significantly at 5% significant level; a positive coefficient implies that an increase in access to market information would increase market supply of potato. It shows that a farmer who has access to market information would produce more potato and supplied more to the market. An increase of a unit access to market information will increase producer's potato supply to the market by 5.925 qt. This was in line with Mohammed (2011) and Abraham (2013).

CONCLUSION AND RECOMMENDATION

The finding of the study indicated that the result obtained from both districts was different. In both districts, different marketing channels were identified in potato marketing chain. Nevertheless, there was variation on the amount of potato passed through each channel and participation of the market chain actors. Retailers were the most participant in purchasing of a lot of potato product from producers. Each market chain actors had different percentage share of profit margin. Retailers earned the most percentage share of profit margin next to the processors in South Achefer district, whereas producers earned the most percentage share of profit margin next to the processors in Jabi Tehinan district. Processors took the biggest share of the percentage profit margin. The processing industry is still very small-scale and undeveloped. However, it is a good sector for creation of job for youth. Econometric analysis result revealed that distance from nearest market, owned ox number, experience in potato production, access to credit, total amount of potato produced and market information were found to be significantly affecting the market supply of

potato. Market should be competitive to make farmers beneficiaries and marketing linkage should be enhanced through provision of marketing information and training. Generally, governmental and nongovernmental organization should take part in fulfilling the gap of different value chain actors through their intervention.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

ACKNOWLEDGEMENTS

The authors appreciate the CASCAPE project for grant to undertake the research work, and Mr. Molla Tafere for his guidance, and constructive comments provided to conduct research. Authors' sincere thanks go to CASCAPE project coordinator, Yihanew G/Selassie (PhD) for his facilitation during the financial services. In addition, special thanks also go to all Jabi Tehinan and South Achefer district experts, enumerators, farmers, and traders who provide pertinent data and collaborate during office and field data collection.

ABBREVIATIONS

ARARI, Amhara Regional Agricultural Research Institute; **CASCAPE**, Capacity Building for Scaling Up of Evidence Based Best Practices in Agricultural Production in Ethiopia; **EIAR**, Ethiopian Institute of Agricultural Research; **ANRS**, Amhara National Regional State.

REFERENCES

- Abay A (2007). Vegetable Market Chain Analysis. The Case of Fogera District, South Gondar in Amhara National Regional State: MSc Thesis, Haramaya University, Ethiopia.
- Abraham T (2013). Value Chain Analysis of Vegetables: The Case of Habro and Kombolcha Districts in Oromia Region. MSc Thesis, Haramaya University, Ethiopia.
- Aduugna G (2009). Analysis of Fruit and Vegetable Market Chains in Alamata, Southern Zone of Tigray: The Case of onion, Tomato and Papaya. MSc Thesis, Haramaya University, Ethiopia.
- Alemnew A (2010). Market Chain Analysis of Red Pepper: The Case of Bure District, West Gojjam Zone, Amhara National Regional State. MSc Thesis, Haramaya University, Ethiopia.
- ANRS- Bureau of Rural Development (2003). Rural households' socioeconomic baseline survey of 56 Districts in the Amhara region, Bahir Dar, Ethiopia.
- Artimessia, Germandar (2012). Market chain analysis. Securing Rights and Restoring Lands for Improved Livelihoods Project. Available at: https://www.iucn.org/sites/dev/files/import/downloads/marketing_analysis.pdf
- Assefa A (2009). Market Chain Analysis of Honey Production: In Atsbi Wemberta District, Eastern Zone of Tigray National Regional State. MSc Thesis, Haramaya University, Ethiopia.
- Ayelech T (2011). Market chain analysis of fruits for Gomma District, Jimma Zone, Oromia National Regional State. An M.Sc. thesis presented at Haramaya University.
- Danielle D, Stan K (2011). Role of potato in human health. Plant science Department and school of Dietetics and Human Nutrition McGill University, Montreal. Available at: https://www.agrireseau.net/pdt/documents/donnely_kubow.pdf
- EIAR, ARARI (2013). Production and dissemination experiences, challenges and prospects .proceeding of the national workshop on seed potato tuber production and dissemination 12-14 march 2012, Bhair Dar, Ethiopia.
- Javeed Q, Peer A, Ahmad N, Kaur J, Chesti M, Shabir H, Anil H, Bhat B (2013). Study on economics of potato growing towards livelihood security. African Journal of Agricultural Research, Haryana, India. Available at: https://academicjournals.org/article/article1385716405_Peer%2520et%2520al.pdf
- Kothari R (2004). Research methodology methods and techniques. Former principal, college of Commerce University of Rajasthan, Jaipur (India). Available at: <http://www.modares.ac.ir/uploads/Agr.Oth.Lib.17.pdf>
- Krause P, Boyle D, Båse F (2005). Comparison of different efficiency criteria for hydrological model assessment. Advances in Geosciences, European Geosciences Union pp. 89-97.
- Lee S, Ronald J, Biondo, Daniel J, Pentony (2008). Agricultural Marketing. Center for Agricultural and Environmental Research and Training Danville.
- Lundy M, Verónica M, Ostertag C, Best R, Ferris S (2007). Participatory Market Chain Analysis for Smallholder Producers. Centro Internacional de Agricultura Tropical (International Centre for Tropical Agriculture) Cali, Colombia.
- Mengistu K (2014). Unpublished Pamphlet paper About CASCAPE. Accessed on 10/08/2014. Available at <http://www.haramaya.edu.et/wp-content/downloads/announcement/CASCAPE%20Pamphlet%202014.pdf>
- Muhammed U (2011). Market Chain Analysis of Teff and Wheat Production in Halaba Special District, Southern Ethiopia. MSc Thesis, Haramaya University, Ethiopia.
- Smith D (1992). Costs, margins and returns in agricultural marketing. Marketing and Agribusiness Development No. 1. Department of Political Economy University of Glasgow, Rome.
- Spilsbury J, Ferris S, Walker S, Nyapendi R (2004). Evaluating the Marketing Opportunities for Rice and its Products in the Principle Rice Growing Countries of ASARECA.
- USAID (2000). Amhara National Regional State Food Security Research Assessment Report. Bahir dar, Ethiopia. Available at: <https://www.ctahr.hawaii.edu/sm-crsp/phase1/pdf/amhara.pdf>
- Woreda Office of Agriculture (WOA) (2015a). Annual Report, Unpublished document. Jabi Tehnan district, Finotselam, Ethiopia. Hard copy available at Woreda agricultural office.
- Woreda Office of Agriculture (WOA) (2015b). Annual Report, Unpublished document. South Achefer district, Durbetie, Ethiopia. Hard copy available at Woreda agricultural office.
- Woldemichael S (2008). Dairy Marketing Chains Analysis: The Case of Shashemane, Hawassa and Dale District's Milk Shed, Southern Ethiopia. MSc Thesis, Haramaya University, Ethiopia.
- Yazie C, Akalu T, Yalfal T, Baye B (2015). Characterization of potato production, marketing, and utilization in North Western Amhara Region, Ethiopia. Journal of Horticulture and Forestry 9(3):17-25.