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Value Chain Analysis of Red Pepper: The Case of Abeshge District, Guragie Zone, South Ethiopia

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Abstract

The study was conducted at Abshige Woreda to analyze the value chain of red pepper and the factors that determine the supply of red pepper to the market. The study has duly focused on the market channel, market participants and performance of red pepper markets. The main determinants of volume of red pepper supply were also analyzed. The data were generated by structured questionnaire, focus group discussions, key informant interviews and field observation focus. This was augmented by secondary data collected from the Bureau of Agriculture and Rural Development, Woreda marketing agency reports and websites. Traders took a total of 61.3% out of the total profit margin. Red pepper producers added 38.7% of the total value of red pepper in the woreda.

The Total Gross Marketing Margins is highest in Farmers-Processors-Consumers channel (62.1%) followed by Farmers-Retailer-Processors-Consumers channel (55.4%). Results of econometric model showed the relative influence of determinants of different variables on marketable supply of red pepper in the study area. Of the total nine variables, seven variables of the red pepper had shown significant relationship with marketable supply of red pepper. Accordingly, age of the household head, education level of the household head, average output price were found to have positive and significant influence on marketable supply of red pepper. Likewise, distance from market, average input price, diseases and drought were found to influence marketable supply negatively and significantly with volume of red pepper marketed. Therefore the development of red pepper producers' bargaining power through cooperatives is the best measure that should target at increasing the share of producers and increases red pepper production in the woreda red pepper markets.

Keywords: Actors; Marketing cost; Marketing margin; Red pepper; Supply determinants

Introduction

Pepper is the world's second important vegetable ranking after tomatoes and it is the most produced type of spice flavoring and color to food while providing essential vitamins and minerals. The nutritional value of hot pepper merits special attention. It is a rich source of vitamin A and E. Both hot and sweet peppers contain more vitamin C to prevent flu colds than any other vegetable crop Bosland & Votava [1]. The color and flavor extracts from pepper are used in both the food and feed industries, e.g., ginger beer, hot sauces and poultry feed. In some countries, the shoot tips are cooked as herb or as vegetable Rubatzky & Yomaguchi [2]. They also pointed out in addition to their uses as food, uses for cosmetic production, condiment and medicine, and ornamentals in the garden. Pepper has its origin in Mexico and Central America regions, introduced to Europe and it was subsequently spread into Africa and Asia Bosland & Votava [1]. There are many names for pepper in different countries of Asia. Chilli peppers are called "ema" in Bhutan, "la-jiao" in China "cabe" in Indonesia, "prik" in Thailand, and "chilli" in India Berke [3]. According to American Spice Trade Association, 'red pepper' is preferred name for all hot red pepper EEPA [4].

Tropical Asia (India, Malaysia, Thailand, Indonesia and Philippines), tropical Africa (North Africa, Senegal, Nigeria, Ghana, and Kenya) and South America (Mexico) and the Caribbean are the main producers. Over 48% of the world pepper is produced in Asia, China being the leading country. The production in China alone exceeds the entire production of European countries Rubatzky & Yamguchi [2]. India is the major exporter of dry chilli peppers, followed by China, and the major importing countries are the U.S.A. and Germany Berke [3].

The history of pepper in Ethiopia is perhaps the most ancient than the history of any other vegetable product EEPA [4]. Ethiopians have strong attachment to dark red pepper, which has high value principally for its high pungency. The fine powdered pungent product is an indispensable flavoring and coloring ingredient in the common traditional sauce "Wot" whereas; the green pod is consumed as a vegetable with other

food items. There is a general belief among Ethiopians that a person who frequently consumes hot pepper has resistance to various diseases. It is in the daily diet of most Ethiopians. The average daily consumption of hot pepper by Ethiopian adult is estimated 15 gram, which is higher than tomatoes and most other vegetables MARC [5].

In addition to having major role in Ethiopians daily dish it also plays an important role in the national economy. It is a crop of high value in both domestic and export markets. Since it is a commercial and industrial crop, it generates employment to urban and rural workers. The main processed product, oleoresin, is exported to different countries and the spiced ground is supplied to local market. Oleoresin that is used for food coloring is extracted from red pepper for export purpose. The deep red colored cultivars have a very high processing demand in the country EEPA [4].

Pepper is widely cultivated in different regions of Ethiopia. The Ethiopian Export Promotion Agency EEPA [4] has carried out a Spice Potential Market Study in Amhara, Oromiya and SNNPRS, and it identified that the land coverage for pepper in the three regions. The total production of pepper in the country for the year 2013/2014 Ethiopian main cropping season (Meher) was estimated at 2.8 million quintals. On average 72% of pepper production is for market in SNNPRS CSA [6]. The share of the region in the total production of red pepper in the country constitutes 64%, followed by Amahara region, which produces about 25% of the total production in the country CSA [6]. In 2013/2014 production year the total cultivated land and production in the region was 61,069 hectare and 1, 580,066 quintal respectively CSA [6]. The total amount of crop produced in 2014/2015 production year was 2860 hectare and 51,480 quintals in the study Woreda, Board (2015).

Statement of the Problem

Red Pepper is a major spice and vegetable crop produced by the majority of farmers in SNNPRS, Oromia, and Amhara regions EEPA [4]. Despite the significance of pepper in Ethiopian economy and current income generating capacity of pepper for the smallholder producers as compared to its magnificent potential in the country it has not been given due attention. Red pepper in SNNPRS is produced for both consumption and market. In rural areas red pepper is highly consumed not only in regular dishes but in other ceremonial events.

In SNNPRs, the production of pepper is constrained by variable seasonal conditions. As a result, the variation in its supply on rural and urban market is considerable. Besides, storage facilities, transportation, linkages with traders; quality controlling mechanisms, market information and price settings are weak in the region and need to be further investigated. Hence, to benefit producers and other marketing agents involved in the production and marketing of red pepper there is a need to have a well-developed infrastructure to keep the product until it reaches the final consumer. Producers face so many interlinked problems such as poor market information and infrastructural problems (storage, transport and processing). Furthermore, the demand side is also highly characterized by skyrocketing price of paper for consumers. So far how and why the consumer price has been skyrocketed and whether the producers benefit from the progressively increasing price of pepper were hardly studied. This study, therefore, was initiated with the purpose of investigating the pepper value chains and factors affecting red pepper supply to the market in Abeshge. The findings from this study are believed to be helpful in reducing the information gap on red pepper and contributing to work better understanding on improved strategies for reorienting marketing system for the benefit of smallholder farmers, traders, and other market participants.

Objective of the Study

The major objective of the study was to investigate red pepper value chain and examine the factors that affect the supply of red pepper in Abeshge district. The specific objectives were:

1. To map the marketing channels of red pepper,
2. To investigate market performance of red paper,
3. To examine the factors that affects the supply of red pepper to the market.

Research Methodology

Description of the Study Area

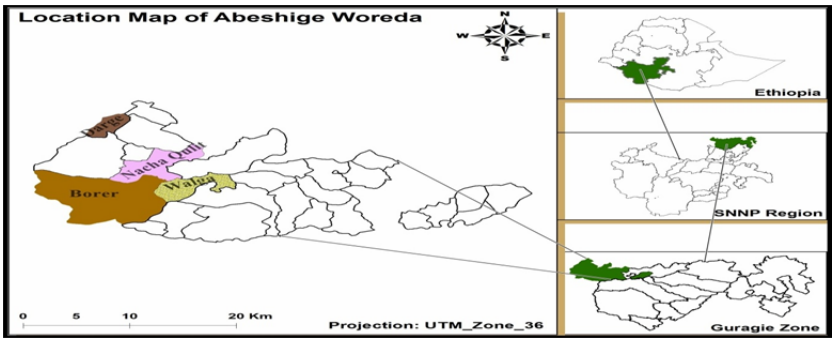

Figure 1: Map of the study area.

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Location

This study was conducted in four rural *kebeles* in Abeshge woreda which is known for its red pepper production. Abeshge is one of the woredas in the Southern Nations, Nationalities, and Peoples' Region of Ethiopia. Part of the Gurage Zone, Abeshge is bordered on the south by the Wabe River which separates it from Cheha district, on the west and north by the Oromia Region, and on the east by Kebena district (Figure 1).

Climate

As it was true to the other parts of Ethiopia, rainfall and temperature conditions depend on elevation. According to the Ministry of Agriculture (MoA) (1998), the agro-ecology of the area is classified into two agro-ecological zones (midland and lowland areas). The area lies at a latitude and longitude of 08°19′N 37°28′ E and 07°56′N 37°37′ E, respectively, at 1500–1800 masl. The district has generally a midland climate with an altitudinal rage of 1100–2300 masl, although there are some lowland areas (1100–1500 masl). It covers an area of 61,016 ha of which the mid- and lowlands constitute roughly 85 and 15 %, respectively EIAR (2011).

Based on information obtained from the Abshege *woreda* Agriculture and Rural Development Office, the area is characterized by a unimodal rainfall pattern with heavy and erratic distribution. '*Kiremt*', the main rainy season, extends from June to September with the peak rainfall occurring during July and August. The short rainy season called '*Belg*' stretches from March to May. The mean annual rainfall is 801–1400 mm. However, the short rains are highly erratic in nature that farmers do not rely on them for grain production. Its mean annual temperature is 23.2°C, with mean annual minimum and maximum temperatures of 18.0 and 28.3°C, respectively.

Population

Based on the 2015 Census conducted by the CSA, the total population of the district, which constitutes two urban and 26 rural *kebeles*, is 72,917 of which 37,187 (51 %) and 35,730 (49 %) were females and males, respectively. Four rural kebeles (Walga, Borer, Dargie, and NachaQulit) with a total population of 13,861 in 1761 HHs were involved in the study. Each village has, on average, 487 HHs and 3465 people.

Land use and Vegetation

The current land utilization in the area is dominated by traditional subsistence mixed livestock-crop rain-fed farming. In mixed farming systems, livestock and crop production are complementary in that livestock, among others are used for nutrient recycling while crop production provides residues for animal feed. Crop production from smallholder farmers is the basic production unit, mainly carried out under rain-fed conditions using traditional farming system. Farmers use oxen to pull the local plough '*Maresha*'. Most of the farmers in the midland areas cultivate their land 3-4 times before planting cereals. On the other hand, farmers living in lower elevation areas practice minimum tillage (1- 2) times.

The major crops and vegetation grown in the area include Red peppers (*Capsicum annuam*), common bean (Phaseolus vulgaris), maize (*Zea mays L.*), wheat (*Triticumaestivum L.*), barley (*Hordemvulgare L.*), teff [*Eragrotistef (Zucc.) Trotter*], sorghum (*Sorghum bicolor*), chickpea (*Cicerarietinum L.*), onion (*Allium cepa*); root and tubers including enset (*Enseteventricosum*), and potato (*Solanumtuberosum*); fruits (*banana, citrus, papaya, mango and avocado*); stimulants, such as coffee (*Coffee arabica*), and khat (*Catha edulis*). A very small fraction of farmers produces vegetables mainly in homestead gardens or where irrigation exists. The dominant trees in the area are *Juniperusprocera, Eucalyptus globules* and Acacia abyssinicaas homestead and farm forest. Besides these, *Oleaafricana, Maytenussenegalensis, Rosa abyssinica, Dodonia viscose, Carissa edulis, Pterolobiumstelatum, Rumeexnervosus,* bushes and shrubs are found on steep slopes and along river valleys as well as edge of eroded areas.

Sampling Strategy and Methods of Data Collection

Study Site and sample households selection

In this study a multi-stage sampling technique was used to select red pepper producers. The district has two urban and 26 rural *Kebles*. In the first stage four major red peppers producing *Kebles* were selected purposively based on its potential for red pepper production and marketing. In the second stage among the households that exist in the four *Kebles* red pepper producers were selected using random sampling technique. Accordingly, the sample size for this study was based on the rule of thumb N≥50+8m; where 'N' is sample size and 'm' is the number of explanatory variables (X_{ij} where i=1, 2...11 *Green* [7]. Hence, 160 respondents from four *Kebles* of Abshige *woreda* were selected and interviewed (Table 1).

Table 1: Sample size distribution of producers with respect to the sample Kebeles comparably.

Sr. No.	Name of Kebele (PAs)	No of HH	Respondent Distrib
1	Borer	393	35
4	Dargie	395	36
3	NechaKulit	744	68
2	Walga	229	21
	Total	1761	160

Table 2: Sample size distribution of traders with respect to the markets identified.

Name of Kebeles/ address	Traders Sample				Sub Total
	Wholesaler	Retailer	Collector	Processor	
AA	3	0	0	0	3
Dargie	1	0	2	4	7
Walga	1	0	2	4	7
Weliso	2	0	0	0	2
Wolkite	0	2	2	4	8
Sub – total	7	2	6	12	

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The trader surveys were conducted on market in urban areas/ towns in which a good sample of pepper traders existed. On the basis of flow of pepper, three markets (Wolkite, Walga, and Dargie) were selected, which are the main pepper marketing sites in the study areas. An additional criterion used to select survey sites was the availability of secondary price data for some of the markets. Due to the absence of reliable information on the population of traders in these areas, cluster sampling technique was conducted in the selected markets (Table 2).

Methods of data collection

In this study, both the primary and secondary data were used. The primary data were collected through a household survey, focus group discussions, key informant interviews and field observations. To generate relevant secondary data on red pepper production and marketing, data was collected from different published and unpublished sources such as government institutions; the Bureau of Agriculture and Rural Development (Board), *Woreda* marketing agency reports and websites were referred.

Method of Data Analysis

Descriptive statistics analysis

Descriptive statistics like mean, standard deviation, ratio, frequency and percentiles were used in order to explain and interpret the data obtained from sampled households and trader's market channel and performance of red pepper markets. The collected raw data were analyzed by applying the Micro-soft Office Excel and the Statistical Package for social Science (SPSS) version 23.

Market performance

A commonly used measure of the performance of a marketing system is the marketing margin. Marketing margin was calculated by taking the difference between producers and retail prices.

Producer's share: The producers' share also known as producer's Gross Margin (GMMp), is the commonly employed ratio calculated mathematically as, the ratio of producers' price to consumers' price. Mathematically, producers' share can be expressed as:

$$\frac{P_s = Px}{Pr} \quad x\ 100 = 1\text{-}TGMM$$

Where; P_s = Producer's Share

P_x = Producer's Price

P_r = Retailor Price, and

TGMM = Total Gross marketing margin

The above equation proves that a higher marketing margin, diminishes producers share and vice versa. It also provides an indication of welfare distribution among production and marketing agents.

Total gross marketing margin: Computing the Total Gross Marketing Margin (TGMM) is always related to the final price paid by the end buyer and expressed as a percentage Mendoza (1995).

The total Gross Marketing Margin (TGMM) is given by the formula:

$$TGMM=\frac{(Consumer\text{^}'s\ Price - Farmer\text{^}'s\ Price)}{(Consumer\text{^}'s\ Price))} *100$$

Net Marketing Margin (NMM): It is the percentage over the final price earned by the intermediary as his net income once his marketing costs are deducted. The equation tells us that a higher marketing margin diminishes the producer's share and vice-versa. It also provides an indication of welfare distribution among production and marketing agents.

$$NMM=\frac{(Gross\ Marketing\ Marrgin\ -Marketing\ Cost)}{(Consumer\text{^}'s Price))} *100$$

From this measure, it is possible to see the allocative efficiency of markets. Higher NMM or profit of the marketing intermediaries reflects reduced downward and unfair income distribution, which depresses market participation of smallholders. An efficient marketing system is where the net margin is near to reasonable profit.

To find the benefit share of each actor the same concept was applied with some adjustments. In analyzing margins, first as shown in the above equation the Total Gross Marketing Margin (TGMM) was calculated; which is the total consumer price that left for different actors who founds between producers and final consumers. Then, marketing margin at a given stage 'i' (GMMi) was computed as:

$$GMM_i=\frac{(Selling\ Price\ (SP_i\ -Purchasing\ Price\ (PP_i))}{(Consumer\text{^}'s\ Price))} *100$$

Where: GMMi is the percentage of the total gross marketing margin at stage "i"

SPi is selling price at ith link and

PPi is purchase price at ith link.

Total gross profit margin

Similarly, according to Dawit [8] and Marshal (2011) for the profit margin that deducts operating expense from marketing margin, total gross profit margin also computed as:

TGPM=TGMM-TOE

Where; TGPM = Total gross profit margin,

TGMM = Total gross marketing margin and

TOE = Total operating expense.

Then, profit margin or net margin at stage "i" (GPMi or NMMi) can be calculated as:

$GPM_i=(GMM_i\text{-}OE_i)/$

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(Consumer^' s Price) X 100

Where; GPMi =Gross profit margin at i^{th} link or NMM_i = Net marketing margin at i^{th} link

GMMi =Gross marketing margin at i^{th} link and OEi =Operating expense at i^{th} link

Econometric Analysis

This method of data analysis refers to the use of different economic and statistical tools or models for testing hypothesis related to the objective of the study. The model is estimated by applying the 2010 Micro-soft Office Excel and the Statistical Package for Social Science (SPSS) version 20.

Model Specification

As the dependent variable, quantity of red pepper supply is a continuous variable the appropriate model is the OLS Gujarat [9].

OLS regression is specified as:

$Y_i=\alpha_i+ \beta_1 x_1+ \beta_2 x_2+ \beta_3 x_3+\cdots\ldots\ldots\ldots\ldots+ \beta_i x_i+u_i$

Where: Y_i = quantity of red pepper supplied to market

αi= Intercept

β_1 = Coefficient of ith explanatory/independent variable

x_1 = Vector of explanatory variables

u_i = Disturbance term

In this study the factors that affect the supply of red pepper to the market is estimated using the Multiple Regression Model (MRM). The main reason multiple linear regression model was used is to identify the most important factors that are associated with the amount of red pepper supplied by producer households in the area, and hence it enables to estimate how the included variables are related. The estimated coefficients indicate the effect of a change in the independent variables on the dependent variable Green [7].

Quantity of red pepper supply = ƒ (age, education, sex, family size, distance from market, average input price of red pepper, average output price of red pepper, disease and drought) (Table 3).

Table3: Description of dependent and independent variables

Variables	Description of Variables	Unit of measurement	Expected sign
Quantity of red pepper supplied to the Market (QSRP)	Dependent variable indicating quantity of red pepper supplied	C=kilogram	+
Average output Price of red pepper (APQ)	Average output Price of red pepper per kilogram	C=ETB	+
Family Size (FAMSZ)	Household family size	C=Number	+/-
Education (EDLHH)	Educational status of the household head	C=Year of schooling	+
Distance from market (DFM)	Far to the market	C=kilometer	-
Age of Household head (AGEHH)	Age of household head	C=Number of years	+/-
Average input price of red pepper(API)	Input price for red pepper	C=ETB	-
Sex of house hold(SEXHH)	Sex of house hold head	D=1 if male; =0 otherwise	+
Disease (DIS):	Occurrence of Diseases	D=1 if disease; =0 otherwise	-
Drought (DR):	Lost quantity of red pepper	C=kilogram	-

2015, ETB= *Ethiopian Birr*; C= *Continuous*; D= *dummy variable*.

Results and Discussion

Marketing Channels of Red Pepper

A marketing channel is businesses structure of interdependent organizations that originates from the point of product origin to the consumer with the purpose of moving products to their final consumption destination Kotler & Armstrong [10]. The analysis of marketing channels is intended to know the alternative routes the product follow from the point of origin to final destination. Eight (8) main alternative channels were identified for red pepper marketing. The main marketing channels identified from the point of production to the final consumer through different intermediaries were as below (Figure 2).

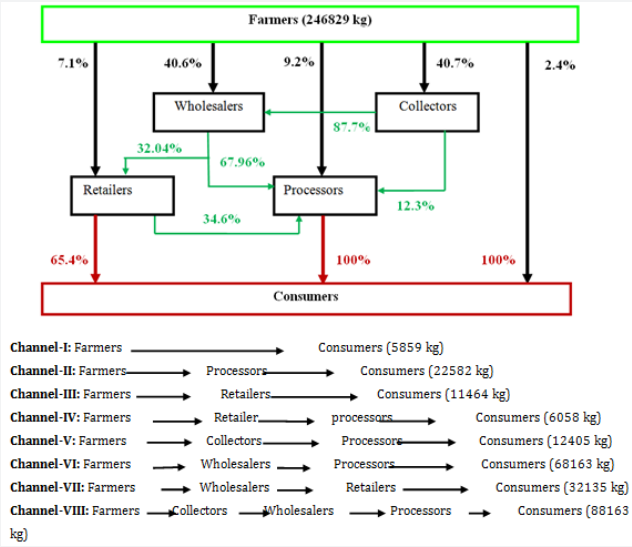

Figure 2: Marketing channels of red pepper originated from Abeshge district, Gurage Zone.

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Market Performance of Red Pepper

Market performance can be evaluated by analyzing costs and margins of marketing agents in different channels. A commonly used measure of system performance is the marketing margin or price spread. Margin or spread can be useful descriptive statistics if it used to show how the consumer's price is divided among participants at different levels of marketing system Mendoza (1995) (Table 4).

Table 4: Red pepper marketing costs and benefit shares of actors (per Kg).

Description	Actors					Horizontal Sum
	Farmers	Collectors	Wholesalers	Retailers	Processors	
Purchase price	0.0	63.7	75.0	50.0	42.5	231.1
Total Mktg Cost	12.02	0.25	1.91	0.72	7.95	22.85
Sale Price	74.55	67.0	96.8	65.0	112.17	415.55
Market Margin	74.55	3.33	21.83	15.00	69.71	184.43
% share of margin	40.4	1.8	11.8	8.1	37.8	100.00
Profit Margin	62.53	3.08	19.92	14.28	61.76	161.57
% share of profit	38.70	1.91	12.33	8.84	38.22	100.00

Marketing margins of red pepper in different channels

Marketing margins of red pepper in the nine channels for each group of market players are given in (Table 5). The GMMf, GMMcl, GMMws, GMMrand GMMpcstands for gross marketing margins of farmers, collectors, wholesalers, retailers and processors respectively. Whereas the NMMf, NMMcl, NMMws, NMMr and NMMpc refer the net marketing margins of farmers, collectors, wholesalers, retailers and processors per each channel respectively [11,12].

Table 5: Actor's marketing margins per each channels of red pepper.

Marketing Margins (%)	Ch-I	Ch-II	Ch-III	Ch-IV	Ch-V	Ch-VI	Ch-VII	Ch-VIII
TGMM	0	62.1	23.1	55.4	43.2	33.1	24.2	43.2
GMMF	100.00	37.85	76.92	44.58	56.76	66.86	75.76	56.76
GMMcl					2.97			2.97
GMMws						19.47	22.05	26.60
GMMr			23.08	13.37			2.2	
GMMpc		62.1		42.05	40.27	13.67		13.67
NMMcl					2.75			2.75
NMMws						17.76	20.12	24.89
NMMrt			21.97	12.73			0.26	
NMMpc		55.06		34.96	33.18	6.58		6.58

The Total Gross Marketing Margins (TGMM), which is the total consumer price left for different actors, is the highest in channel-II (62.1%) followed by channel-IV (55.4%). Farmers, without considering the first channel which farmers directly sold to the consumer, have got the highest gross marketing in channel-III (76.92) and VII (75.76%) followed by processors in channel-II (62.1%). This is because in one way as the number of middle men's between farmers and the ultimate consumers were small the share of farmers increases, in the other way the middle men's between the two ends were not processors the share of farmers also increases. This similar with the general truth that as the number of middlemen between the two ends increases the share of farmers' decrease. However in this study, the numbers of middlemen in channel-IV and VI are equally two; the farmer's share of consumers' price is considerably different having a value of lower (44.58) and higher (66.86), respectively [13,14]. This is because of the activities performed by the last actors in the marketing channels; which means the last actor (processors) in channel-IV adds more form value and hence incurs more cost on the product before it gets on the hands of ultimate consumers. This gives processors to be beneficial in taking more share of consumers' price of red pepper. This proves that red pepper marketing is more advantageous when it sold adding form utility.

Actors' profit margin (NMM), which also shows actors' value addition per channel, was somewhat high in channel-II as processors directly purchase from producer and sell it to the end users, consumers; followed by processers in channel IV which accounts for 34.96% of consumers' price. The combined red pepper market structure and performance analysis result proves that the channel that stands first in terms of marketing much volumes of red pepper was the ones that couldn't secure

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maximum benefit for the farmer's in-terms of marketing margin (profit). Channel-VIII was the first important channel in marketing vast quantities of red pepper, but it doesn't result maximum farmers' margin; rather, without considering channel-I (producers directly sell to consumer), the 6th important channel (channel-III) in marketing much quantities results the highest farmers' benefit.

Determinants of Red Pepper Supply

In this section the factors that influence the supply of red pepper in the study area are presented and discussed. Various variables were expected to influence the quantity of red pepper supplied to the market, and hence multiple linear regression models were employed to analyze the factors.

The goodness of fit of the model

The overall goodness of fit of the regression model is measured by the coefficient of determination (R^2). It tells what proportion of the variation in the dependent variable or regress is explained by the explanatory variable. R^2 lies between 0 and 1, the closer it is to 1, the better is fitted the model. In this study, the coefficient of multiple determinations (R^2) of red pepper model was estimated 0.964. This means that 96.4%, of the variations in the dependent variable have been explained by the included explanatory variables in red pepper model; and rest determined by error terms.

Determinants of Red Pepper Market Supply

Estimates of the parameters of the variables expected to determine the marketable supply of red pepper are presented in (Table 6). The econometric analysis result (Table 6) shows that among the nine (five continuous and two dummy) hypothesized determinants of market supply of red pepper; were found to be significant at 1%, 5% and 10% significant level. The remaining variables were found to be insignificant in determining the marketable supply of red pepper. The relationship and the magnitude of the effect of each the significant explanatory variable on the market supply of red pepper is presented below (Table 6).

Table 6: Estimation of the determinants of red pepper quantity supplied to the market.

Variables	Red pepper		
	Coeff	Std. Err	T-value
(Constant)	329.600	124.830	2.640
AGEHH	4.005**	1.646	2.433
EDUHH	75.347***	10.925	6.897
SEXHH	37.730	52.866	0.714
FAMSZ	4.870	6.441	0.756
DFM	-16.401*	8.811	-1.861
API	-0.006**	0.003	-2.289
APQ	0.011***	0.001	17.460
DIS	-130.853**	57.575	-2.273
DR	-0.429***	0.114	-3.759

a. ***, **, and * are statistically significant at 1%, 5% and 10%, respectively.

b. Dependent Variable = Quantity (in number) of Red Pepper supplied to the market.

c. R-squared= for Red Pepper is 0.964; and

d. Adj. R-squared = for Red Pepper is, 0.962

e. Number of Observation= 160; Std. Err.: is robust

Conclusion and Recommendation

Conclusion

In support of stimulating growth, economic development, food security and alleviating poverty, the analysis of the value chain performance of red peppers plays an important role in an ongoing or future red pepper production and supply development plan. This study was conducted at Abshige district to analyze the value chain of red pepper and the factors that determine the supply of red pepper to the market

The finding shows that red pepper production in Abeshge district is carried out by different actors via different channels. The volume of red pepper transacted in each channels varies. The quantity of pepper passed through different marketing agents from farmers to consumers. However, the Farmers-Collectors-Wholesalers-Processors-Consumers channel stands first in terms of the volume red pepper transacted (35.7%), followed by Farmers-Wholesalers-Processors-Consumers channel (27.6%).

The result with market performance shows that the red pepper market is full of constraints and with low performance. In this regard, the results of the marketing cost, margin analysis indicates trader's profit margin is more than two fold of that of farmers. That means, traders took a total of 61.3% out of the total profit margin. On the other hand, red pepper producers added 38.7% of the total value of red pepper in the woreda. Whereas: collectors, wholesalers, retailers, and processors are responsible for 1.91%, 12.33% and 8.84%, and 38.22% respectively. The Total Gross Marketing Margins is highest in channel-II (62.1%) followed by channel-IV (55.4%). Actors' profit margin which shows actors' value addition per channel is higher in channel-II followed by processers in channel IV which accounts for 34.96% of consumers' price. This shows that the markets are operating quite profitable.

The result from the econometric analysis show that, age of the household head, education level of the household head, average output price of red pepper were found to have positive and significant influence on marketable supply of red pepper. Likewise, distance from market, average input price, diseases and drought were found to influence marketable supply of negatively and significant relationship with volume of red pepper marketed.

Recommendations

Based on the findings of this study, the following points are put forwards that are believed to improve the efficiency of the production to consumption system of red paper originated from Abeshge district:

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1. The development of red pepper producers' bargaining power through cooperatives is the best measure that should target at increasing the share of producers.
2. The result shows that average output price are the positive determinant factors of the quantity of red pepper supplied. Therefore, frequent information provision regarding the market price throughout the production to consumption system is crucial. Notably, mechanisms should be designed so that continuous information on product price can be supplied to the market through extension agents in the area.
3. The findings show that disease and drought are the major bottlenecks for red pepper production in the study area. To minimize the impact due to these natural factors different mechanisms should be defined among them establishing an early warning system is crucial. There should also be mechanisms to minimize the impacts of disease.
4. Due to limited time, budget, and logistics, it was not possible to cover all red pepper producing *Kebles,* all pepper markets found in the study a reas and neighboring *woredas* and also Addis Ababa terminal market (Merkato); so for the future it is better to incorporate those major data.

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