

# Analysis of Pineapple Value Chain and Factors Affecting the Producer's Profitability in Aleta Chuko District, Sidama Zone, Ethiopia

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## Abstract

*The study was undertaken with the main objective of analyzing the pineapple value chain and factors affecting profitability in Alata Chuko Woreda, Sidama Zone. The objectives were to assess cost and profit analysis and market efficiency has been taken into account for analysis. For the purpose of the study both primary and secondary sources of data/information were comprehensively revised and analyzed. Secondary data were collected from Woreda Cooperative and Marketing Promotional Offices, Woreda Rural and Agricultural Development Office, Woreda's annual reports and related literature reviews whereas primary data was collected from 300 sampled pineapple producing farmers' selected on proportionate to size sampling and the other chain actors (brokers, wholesalers, retailers and local collectors) who were selected randomly. The collected data were organized and interpreted by using growth-marketing margin analyzing approach to identify Cost and profitability analysis of pineapple fruits for farmers. The findings of the study show there is no organized pineapple value chain system rather than it seems as if there is chain alignment for the outside observers. The constraining potential factors were critically observed from three areas; pineapple producing sampled farmers, institutional and market related activities that have been severely affecting pineapple market value chain. Regarding farmers related constraints, inadequate farming skills, knowledge of production and products management affect the amount of supply. Farmers' expertise in production storing, grading, packing and transporting is traditional which rigorously affect the qualities and quantities of the pineapple fruit supply to market. Having a less efficient quality of pineapple fruit, farmers were totally out of the value chain activities and they have no power to negotiate and set the market price and rather they found to be the mere price takers. Pertaining to the institutionally related factors, the government officials were often influenced by the wholesalers and brokers and they could not form the regulated pineapple market at local, regional and at the national level. Institutions failed to bring up farmers' capacity to the expected level.. Based on the findings, the Alata Chuko Woreda Cooperative Market Promotional Office should organize strong farmers cooperative organization, Infrastructure facilities should be maintained and Development agents capacities should be built through continuous training recommendations were forwarded to maximize the farmers' participation in pineapple value chain.*

**Keywords:** Assessment, Pineapple value chain, Chain actors, Producer's bargaining power and Cost and profitability

## INTRODUCTION

### 1.1 Background of the study

Beginning from 2007 up to now, for the seven successive years Ethiopia has been achieving the strong economic growth and which makes it one of the fast developing countries in sub-Saharan Africa despite that its economy depends on an agriculture economy sector (Lower, 2014). Ethiopia is well known for producing of livestock, grains, and varieties of vegetables and fruits. Many numbers of the research findings show that more than 47,000 (thousand) hectares of land are under fruit crops. Bananas contributed about 60.56% of the fruit crop area followed by Mangoes that contributed 12.61% of the area. Nearly 3.5 million quintals of fruits was produced in the country. Bananas, papaya, mangoes and orange took up 55.32%, 12.53%, 12.78% and 8.35% of the fruit production, respectively (CSA, 2016). As the same study revealed that, 3.2 million smallholders engaged in growing of fruit varieties in the country. Out of the total smallholders, 64.7% of them engaged the banana production and followed by 32.4% in Avocado, 26.3% in Mango and 16.8% in Papaya. Guava, Lemon, and Pineapple took the least shares of 7.5%, 6% and 1% respectively. As the finding results show that, the pineapple fruit accounts insignificant amount of the production when it compared with the other fruits.

The agricultural products in general and fruit products in particular are bulky and perishable in nature and need series integrations of the chain actors actively participating all chain functioning groups in the system. An effective communication and commitments in processing and functioning of the value addition of the product at each margin is an imperative. Value chain guarantees and increases qualities and the standards of the products and create competitive advantages and sustaining superior performance that can benefit all value chain actors and final consumers. the farmers are stopping to produce the pineapple fruits anymore and shifting their farming land to the other cash crop growing activities.

Majorly Pineapple is produced in Alata Chuko Woreda, Sidama Zone Southern part of the Ethiopia has been facing incomparable challenges with regards to both in product and market sides. Pineapple producing farmers lack to have improved seed, new technology access and initial capital on the production side and limited access to have nearby market access are unsolved challenges. In addition, pineapple-producing farmers are hardly integrated with each other and live far remote areas from the town and main roads having a little or no information about market price. On the current position, local farmers are not well organized and are not on the right position to govern the value chain. Considering these and using as a good fate the brokers are informally cooperated with wholesale traders, traders in pineapple markets. Hence, there are no interrelation networking systems among each actor such as producers, brokers, whole sellers, retailers and consumers to link one-actor activities to another for further mutual benefits.

## 1.2 Statement of the Problem

Globalization has changed trade by opening market opportunity and increasing competitive pressure for producers in many countries. Market demands for quality agriculture produce have been increasing for further value added products (Minten et. al., 2013) . The agricultural market environment in general and the

fruit market, in particular are changing with unprecedented speed and in very diverse ways in globally, nationally and at the local level. Consequently, this has positive impacts on the fruit producers in many countries. However, in Ethiopia, fresh fruits are characterized by various bottlenecks that seek in-depth and organized attention and effort that enable the producers to have direct market linkage with final consumers. In the current situation, this sector is highly dominated by smallholder producers and constrained by planting materials, lack of know how to use new technology, post-harvest loss and other related factors combining together contributed low productivity, less quality with high costs and less competitiveness in the market. In addition to this, fruit producers, collectors, and traders have been loosely connected in the value chain networks and brokers are more powerful to govern value chain than producers (Humble and Reneby, 2014)

On the other hand, lack of the producing farmer technical skills of pre-cooling, storing, sorting, grading, packing and transporting are severely affecting the quality and quantity of the marketable fruits. Therefore, these cause high production costs, decrease the quality and quantity of the marketable surpluses due to high volume of wastage. On the other hand, the local farmers are not adapt know how to use a new technology practices to maintain their products qualities that can create safety and more satisfaction for the final customer (Humble and Reneby, 2014). So far, even though the Woreda has a potential to produce pineapple fruit, however, lack of farmer awareness, limited access to have input supplies such as land, labor, capital, etc. are the containing factors thereof. The limited access of nearby marketing, poor infrastructure facilities, pricing strategy and lack of suitable the container access for the primary products for which is highly exposed to perishable product spoilages would have been contributing high costs and inefficient marketing system. Hence, the pineapples producers are unable to have an equal access to participate in the value chain and dominated by chain actors such as (brokers, whole sellers, and retailers) albeit producers should have chain govern power than the other actors. Due to weak cooperative organization and poor institutional supports, farmers are being denied and marginalized by chain actors such as brokers, wholesale traders and retailers and became passive as to be a price taker than price maker. Thus, the research has attempted to address the following questions

### **1.3 The Research Questions**

1. How does the cost and profitability of pineapple among value chain actors look like?
2. What are the major factors that affect market efficiency in pineapple value?

### **1.4 The objective of the study**

1. To examine the cost and profitability of pineapple among value chain actors in Aleta Chuko district
2. To examine the market efficiency in pineapple value chain in Aleta Chuko district

## 1.5 Significance of the study

The present study focuses on scrutinizing of the cost and profitability of pineapple among value chain actors and market efficiency in Aleta Chuko district and it was not conducted studied at the zonal level other than some specific survey studies were made by the zone's cooperative and marketing department and some NGOs. Therefore, the finding of this study is expected that would bring the recommended changes in the sector and which may benefit pineapple growers, traders, and policymakers, governmental and non-governmental organizations as a guiding manual. Finally, the researchers use for academic references.

## 2. REVIEW OF LITERATURE

The agricultural commodity marketing is complex in nature. It depends on the economy development of the one's country and precisely it relays on the infrastructure facilities, such as access to regulated marketing centers, market information facilities, and cooperation of the co-actors are the important one among others. If theses and the other related infrastructures facilities are not well established, it is difficult to far remote areas' living producers to sell their produces traveling long march to come the local marketing center. Some scholar suggested that well-organized agricultural market is an important element for the agricultural development. According to Hernandez, M. A., Lemma, S., & Rashid, S. (2015) revealed in his studies that organized and regulated agricultural market center has a significant effect, empower the farmer enhancing income, and consequently, allow the process of the equal participation of the chain actors and intensification to deepen further with a positive impact on poverty reduction.

According to the Minten et. al., (2013) indicated that, limited access to capital markets, high consumer spending, and large family size attributable to lower economic efficiency for the marketed driven production like vegetables. Zone et al., (2017) made survey study on the fruits value chain at Sidama Zone in the six producing districts and the assessment that was made indicate that there is a lack of vertical linkages between actors at all levels in fruit value chain in general and in Alata Chuko District pineapple producers in particular. The other factor which influences the agricultural marketing in the value chain is high fluctuations of the production market prices. Most of the time, primary agricultural product price is made by buyers rather than it has been set after a negotiation made between buyers and sellers. Thus, producing farmers are a price taker than have the power to set a market price for their product (S.Rolle, 20012). Wolf et al., (2007) assessed on the bean producer choice of the market channel in Zambia and his finding shows the preferred market channel to sell beans product can be influenced amount of the selling prices of the products. That means, the higher price farmers likely switch to sell their beans to the other market channel to get a better income.

Most of the scholars use value chain actor's costs and selling prices to calculate the marketing margin between chain participants and the distribution of cost and benefits among them. The F. Report (2015)

survey was made on entitled pulses value chain potential in Ethiopia and the findings result indicate the relatively, large number of actors working highly fragmented manner coupled infrastructure and the inability for large-scale international traders to track products, implies high transaction costs for aggregate and traders. The study conducted by Brihanu Kuma (2011), reveals that to test how much of the portion of the profit gained by chain actors at each margin and also Scott (1995, as cited by Kuma, 2012), scrutinized marketing margin analysis on potato marketing in Bangladesh and found that producer's price and margin were 1.27% and 67% respectively. As different scholars suggested primary commodity producing farmers are not much more benefited from the sale of their products. According to Atingi (2015), selling Cassava Chip and Cassava Flour selling prices are still not profitable, which probably, explains why most farmers do not participate in chip production ventures to any great extent in Republic Congo. In generally developing countries like Ethiopia, the major factors that agricultural output marketing, low commodity prices, operational difficulties, the agricultural economy, and competition. Labor, low margins, weather, and increasing costs are the other influencing factors. These same problems were identified for the near future except the agricultural economy and increasing costs were considered to be of greater concern according to (Guo, 2014).

### 3. Methods and Methodologies of the Study

#### 3.1 Study Population

The population for the study includes 300 pineapple producers, 10 wholesalers, 16 retailers, 11 intermediaries, 5 local collectors and 1 the Aleta Chuko Woreda Agriculture and Rural Development Office and 1 Cooperative and Marketing Promotion Officers.

#### 3.2 Sampling Procedures

The pineapple fruits are being produced in the three rural prominent areas in the Aleta Chuko districts such as Dibbicha, Tesso and Gambela. To conduct this research random sampling method was adopted to select three kebeles (the smaller parts the distinct) from the district. Value chain actors were stratified and randomly selected and participated as respondents. To describe the sample pineapple producers, simplified formula which provided by Yamane (1967) was used.

$$n = \frac{N}{1 + N(e)^2}$$

$$\text{Apply the formula} = \frac{1200}{1+1200 (0.05)^2} = 300$$

Thus, the total sample producers were 300. Finally, the sample producers' were identified from three kebeles using proportionate random sampling technique.

**Table 1**  
**Sample frame and size**

S. No	Names of the kebeles	Total pineapple producers in each kebeles	Proportion of each streams	Sampled households
1	Dibbicha	510	0.43	129
2	Gambela	412	0.34	102
3	Teesso	278	0.23	69
<b>Total</b>		<b>1200</b>		<b>300</b>

Source: Woreda Agriculture and Rural Development Office, 2017

Further, to obtain more information, the Aleta Chuko district (Woreda) ten (10) wholesalers, sixteen retailers (16) retailers, eleven (11) middlemen, five (5) local collectors and one (1) Agriculture and Rural Development Office and one (1) Cooperative and Marketing Promotion Officers were randomly selected.,

### 3.3 Tools and Methods of Data Collection

Semi-structured questionnaires and interview guidelines were considered as the tools for data collection. Besides, focus group discussion was conducted among producers, brokers, and governmental officials. Semi-structured interview and questionnaires comprise both open and close-ended questionnaires were prepared and administered among the sample procedures. From different interview, guidelines were prepared and administered among brokers, wholesalers, retailers and governmental officials respectively. All data collection tools were first prepared in English and then after translated into Amharic to ease the data collection.

### 3.4 Data Analysis

Regarding to data analysis, growth marketing margin method was used to analyze **Cost and profitability analysis of pineapple fruits for farmers**. As being it is difficult to determine costs in many of the agricultural marketing chain that costs are always cash and imputed, the Total Gross Marketing Margin (TGMM) was calculated (Scott, 1995).

$$\text{TGMM} = \frac{\text{End buyers price} - \text{first seller price}}{\text{end buyer price}} \times 100 \dots\dots\dots (1).$$

This implies that in what extent farmers are being participated and the farmer's Gross Marketing Margin (GMMP) which is the portion of the price paid by the consumer that goes to the farmer. Hence, the farmer's margin is calculated as,

$$\text{GMMP} = \frac{\text{End buyers price} - \text{gross margin market margin}}{\text{end buyer price}} \times 100 \dots\dots\dots (2).$$

### Result Discussion

### Cost and profitability analysis of pineapple fruits for farmers

To analyze cost and profitability of the pineapple value chain partner's two major actors were selected viz. producing farmers and sellers. An average cost and a selling price are used to measure cost and profitability of an each chain player and traced as in the following (table 2) below.

**Table 2**  
**Cost and Profitability Analysis of producers**

No	Revenue	Fruit/ETB	%
1	Average yield rate of pineapple in quintals	8 quintals	
2	Average Market Price at farm gate	6	
3	Growth Sale /Birr per pineapple fruit (A)	1920	
4	<b>Costs</b>	<b>Fruit/ETB</b>	
5	Labor Cost including harvesting costs	0.7	20.0
6	Sack (Container)	0.45	13.0
7	Storage Loss	0.9	25.0
8	Tax Paid	0.675	19.0
9	Transport Cost	0.85	23.0
	Subtotal Cost (B)	3.575	
	<b>Total Cost (3.575*40*8)</b>	<b>1144</b>	
10	A-B	1920- 1144	
11	<b>Profit/Loss per quintal</b>	<b>776</b>	

Source: Primary data (Feb 2017)

\*N.B One Quintal Contains on an average of 40 pieces of pineapple fruits

Table 2 shows that majority of the pineapple producers sell their products to the local collectors or brokers at farm gate at a minimal price, which was already decided, by brokers or traders. Due to the absence of cold storage facilities local farmers' incur 25% of spoilage loss as per of harvesting period. In addition, as it was observed during the survey time that pineapple-producing farmer incurs 23% of the transportation cost. Though the profit figure shows the positive sign, it is as much as lesser the portion from the retailers.

**Table 3**  
**Cost and profitability analysis of pineapple for retailers**

No	Cost	Fruit/ETB	%
1	<b>Pineapple Retailers purchase price = (A)</b>	<b>14</b>	
2	Transport Cost	0.1625	11.0
3	Storage cost	0.125	8.0
4	Storage Loss	0.1	6.0
5	Labor Cost	0.375	23.0
6	Tax Paid	0.25	15.0
7	Other costs	0.35	21.0
	<b>Total operation cost = (B)</b>	<b>1.6125</b>	
8	<b>Total Cost = C</b>	<b>15.6125</b>	
9	Growth Sale /Birr per pineapple fruit (D)	20	
10	D - C	20 - 16	
11	<b>Profit/Loss Birr per pineapple fruit</b>	<b>4</b>	

Source: Primary data (Feb 2017)

A cursory look at Table 3 shows that the average purchasing cost was 14 ETB per fruit and other variable costs incurred by the retailers were found to be minimal as compared to farmers and collectors market because, there were better product handling and storing performance.

The store cost and related other costs such as mobile expenses and the other personal expenses were higher and their averages were 23% and 21% respectively. As survey data shows in the above table that the growth sale of pineapple was found to be 18 ETB per fruit which is a positive profit sign. At the retail market final consumers purchase a single pineapple fruit by 18 ETB average prices and the much more profit go to the middlemen actors rather than equalizing producers.

### Market margin

Marketing margin refers to the difference between producer and consumers price of an equivalent quantity of a commodity. Hence, it is useful to introduce the idea of farmers' participation, farmers' portion, or farmer's Gross Marketing Margin price (GMMP) which is the portion of the price paid by the consumer that goes to the farmers (Berhanu Kuma, 2012). Producing farmers are the baseline to identify at what price they sell their wares during peak harvest time. It helps to easily understand the portions of the total revenues of the producers calculating from input supplying up to vend. Understanding opportunities of the production and markets of the pineapple entirely to analysis and describe the constraints and farmer's participation in pineapple value chain, Gross Marketing Margin is important to calculate as follows:-

Thus, to calculate based on the above-defined formula,

**Table 4**  
**Average Price of Pineapple at Different Market Levels**

Market Channel Participants	Price Birr/fruit	Market Cost	Growth Profit	Growth Market Margin
Farmers	6	0.76	5.24	33.33%
Local Pineapple Collectors	14	1.14	12.86	44.44%
Retailers	18	1.6125	16.39	22.22%

Source: Primary data (Feb, 2017)

TGMM (Complete distribution channel) 67%

GMM (Pineapple Collectors) = 44.44%

GMM (retailers) = 22.22%

GMMP (producers participation) 100% -67% = 33.33%



### **1. Organizing Regulated Market system**

The result of the market margin show that Alata Chuko Pineapple value chain system is fully dominated by brokers and wholesaler chain actors and due to this reason, it fails to make equal opportunities for participation for producing farmers. Thus, the Alata Chuko Woreda Cooperative and Marketing Promotion Office need to be involved in the market regulating system to form regulated market that is paramount importance for producers, wholesalers, and final consumers.

### **2. Strengthening horizontal and vertical integration among chain actors**

The finding depicts that the volume of the pineapple products getting deteriorated year after year yield due to inefficient marketing system although there were plentiful producing capacities of pineapple fruits. Having complex and blurred marketing channels and informal networking systems between wholesalers and brokers, local pineapple growing farmers were ignored from sharing the opportunities of existing market share. Because, they were bounded by several constraining factors such as; lack of technical skills, technological expertise, credit facility, alliterative, market price fluctuation and market information asymmetry among the others. Thus it is high time to strengthen the value chain alignment among actors by the officials of the agriculture and rural development office.

### **3. Improvement of infrastructure facilities**

Lack of infrastructure facility has a significant effect on the status of pineapple producing farmer's participation in the value chain. Due to a limited access of the infrastructure facilities, farmers unable to participate in the pineapple market to maximize their profitability in value chain activities. Therefore, the Woreda and Zonal level should improve rural networked dry road connection, from market price information access to remote area living communities and build suitable storeroom for easily perishable products like pineapple fruits.

### **4. Establishment of strong farmer cooperative organization**

It was observed from the findings of the survey, there is no cooperative society exclusively meant for pineapple growers in the study area. Keeping this in mind, the Alata Chuko Woreda Cooperative and Marketing Promotion Office may organize and strengthen functional pineapple cooperative societies like as coffee union. Without forming effective cooperative organization, it is difficult to realize community-based participation for sustainable development.

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