

## **Review Article**

# **Review of Market Chain Analysis of Vegetable in Ethiopia**

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**Abstract:** Vegetable are the most important horticultural crops among smallholder farmers because they derive benefits such as income, source of food, health care and rural employment. The market chain of vegetable in Ethiopia was limited due to lack of market information, price volatility related to seasonality of supply, perishability of product and poor performance of the vegetable market. The objective of this review was to review on vegetables market chain analysis, to review determinants of vegetables level of supply in Ethiopia and review vegetable marketing and its constraints in Ethiopia. Main marketing actors of vegetable in Ethiopia was producer, farmer traders, middlemen/ broker, wholesaler, retailers, transporters and consumer. In this review producers sell vegetable especially to wholesalers who resell to retailers and to consumers are major channel in different studies area. In this review was some of the principal production constraints are absence of reliable seed supply and unplanned production of vegetables crop, diseases and insect pests, lack of credit and insufficient product handling are problem on production of vegetables. Vegetable marketing is also constrained by lack of market information systems, poor market opportunities and high perishability. Several factors were identified by different studies on determinants of vegetables market supply in Ethiopia. Access to market information, quantity produce, and extension service was positive effect on market supply. Whereas distance to market was affect negatively in different studies

**Keywords:** Channels, Constraints, Market Chain, Vegetable

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## **1. Introduction**

Horticultural crops are important for health and economy, but the amount and mode of production is still weak in Ethiopia. It can be differentiated as fruit (permanent crops) and vegetables (short season crops). Ethiopia has a variety of vegetable crops grown in different agro ecological zones produced through commercial as well as small farmers both as a source of income as well as food. Various types of vegetable crops are grown in Ethiopia under rain-fed and/or irrigation systems [1].

The area under vegetables increased from 350,600 ha with production of 2.36 million tons in 2010 to 396,510 ha with production of 4.48 million tons in 2013 for smallholder farmers. This implies that the area cultivated to vegetables increased by 13% while the production increased by 103%, between 2010 and 2013. Similarly, export of vegetables increased from 37,210 tons valued at USD163.86 million in 2003 to 220,210 tons valued at USD 437.5 million in 2013 [2].

Vegetable as a group of crops from the horticulture category has a very wide importance both as a source of food and health care. On the contrary, the level of consumption is very low for reasons of unavailability and market imperfection. The production of vegetables varies from cultivating a few plants in the backyards, for home consumption, to large-scale production for the domestic and home markets. The productivity of crops is very low compared to the potential yield obtained in the research centers and on farmers' field technology verification studies. For instance, the productivity of onion and tomatoes was about 90 and 70 quintals per hectare compared to the potential yield of 400 and 350 quintal per hectare respectively in research centers [3].

### **1.1. Objectives**

#### **1.1.1. General Objectives**

To review vegetable market chain in Ethiopia

### 1.1.2. Specific objectives

1. To review on vegetables market chain analysis,
2. To review determinants of vegetables level of supply in Ethiopia,
3. To review vegetable marketing and its production constraints in Ethiopia.

### 1.2. Methodology

This senior seminar is reviewed by referring different studies, published documents, guide books, international journals and proceedings.

## 2. Literature Review

### 2.1. Concepts and Definition of Market Chain

Market: is an arena for organizing and facilitating business activities and for answering the basic economic questions: what to produce, how much to produce, how to produce, and how to distribute production [4].

Marketing: is a social and managerial process by which individuals and groups obtain what they want and need through creating and exchanging products and value with others. It is the performance of all business activities involved in the flow of goods and services from the point of initial production to ultimate consumers [5].

Marketing channel: is a business structure of interdependent organizations that reach from the point of product origin to the consumer with the purpose of moving products to their final consumption destination [5].

### 2.2. Vegetables Production and Marketing in Ethiopia

One of the most important commercial vegetables is Onion (*Allium cepa*). Onion is a cool season crop. However it can be grown under a wide range of climatic conditions. It grows well under mild climatic without extreme heat or cold or excessive rain fall [6]. The principal Alliums ranks second in value after tomatoes on list of cultivated vegetable crops worldwide [7]. These people also reminded that all plant parts of alliums may be consumed by humans (except perhaps the seeds), and many wild species are exploited by local inhabitants. Careful handling and the choice of suitable storage method for the cultivar type in question are vital to ensure that the product retains its quality until it reaches the consumer. Cosmetic quality is of increasing importance in competitive markets. The product is produced for both consumption and market. Out of a yearly production, 48.2 percent was utilized for sale, 39.9 per cent for household consumption in contrast to tomatoes where 66.7 per cent of the total production is send to market.

Tomato is the third largest vegetable crop after potato and sweet potato and as a processing crop it ranks first among all

vegetables. China is the biggest tomato producer in the world with annual production 34.1 million tons. In Ethiopia the area coverage by tomato was 4, 953 ha and production in tons was 40,426 with the productivity of 6.2 ton ha<sup>-1</sup> in 2015. However, production and productivity in Ethiopia is far below than the average of major producers in Africa [8].

Currently tomato is one of the regional export crops of the country. In Ethiopia, the crop is grown between 700 and 2000 m above sea level, with about 700 to over 1400 mm annual rain fall, indifferent areas and seasons, in different soils, under different weather conditions, but also at different levels of technology (e.g. with furrow, drip or spate irrigation) and yields [9].

This review in vegetables marketing based on onion and tomatoes studies paper.

### 2.3. Market Chain Analysis of Vegetable

#### 2.3.1. Main Marketing Actors of Vegetable

Producer: It is the first link in vegetable market chain; the producer harvests products and supplies to the second agent. From the moment he/she decides what to produce, how much to grow and when to grow and sale.

Farmer traders: Sometimes also known as rural assembler, perform both vegetable production and selling by collecting from other farmers.

Middlemen/ broker: A broker is an individual or party that arranges transactions between a buyer and seller for a commission when the deal is executed. A broker also acts as a seller or as a buyer, becomes a principal party to the deal.

Wholesaler: They concentrate on the various intermediate sized loads and put the product into large uniform units. These activities all contribute to price formation.

Retailers: Middlemen that include super market and other large-scale retailer who divides large shipments of produce and sell it to consumers in small units. The basic function they provide is bulk breaking.

Transporters; the main transporters were track and Isuzu car owners in different towns. Their number was unknown but there were adequate transporters. Traders sometimes use their own car to transport to their sale outlet.

Consumer: It is the last link in the vegetable market chain, the participants and their respective functions often overlap. The most widespread combinations are the following: producers to wholesalers that collect commodity and supply it to retailers, wholesalers to retailers (wholesalers that also sell directly to consumers) and wholesalers to exporters.

#### 2.3.2. Marketing Channel of Vegetables (Onion and Tomatoes)

In this paper review different literature in different place of Ethiopia and vegetable have different channel in different place. However, accordingly the review summarized has identified about nine onion and tomatoes marketing channels.

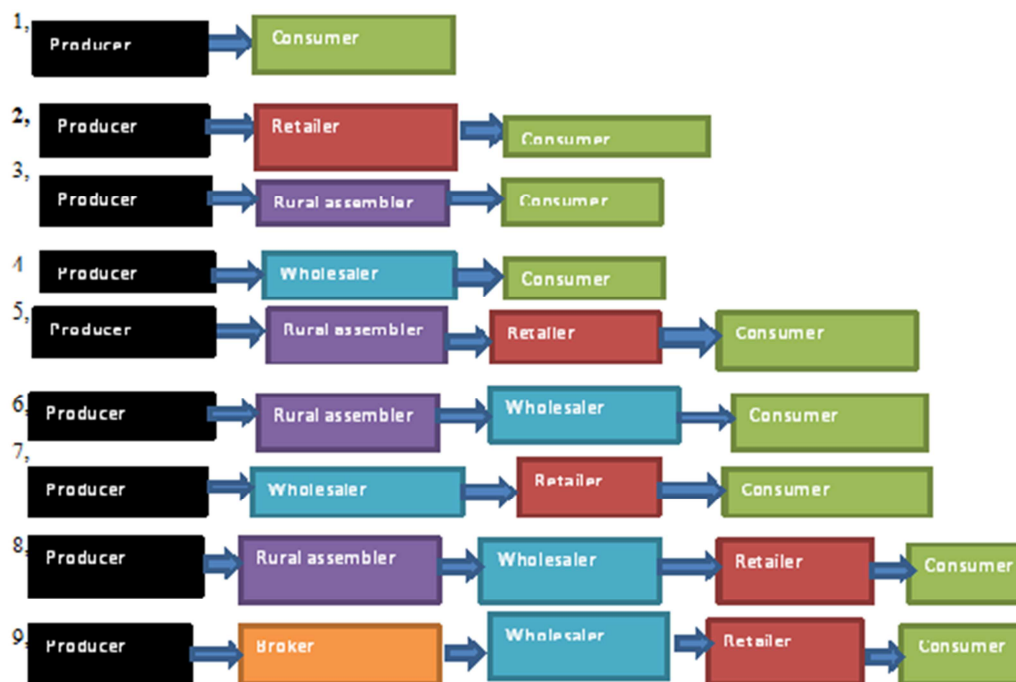


Figure 1. Market channel of vegetable.

In this review producers sell vegetable especially to wholesalers who resell to retailers and to consumers are major channel in different studies area. But producer to broker/wholesaler to retailer and then to consumer is not good for both producer and consumer. In this type of market linkage producer sale his/her product in least price but consumer purchases with highest price and also producer to consumer is excellent path for both producer and consumer.

#### 2.4. Determinant of Vegetable Market Supply

According to review market participation and supply of smallholder farmers is affected by numerous factors, including demographic, socioeconomic factors, institutional factors, market factors and external factors such as political stability of the nation, natural disaster and calamities. These factors could have negative and positive effect.

A study identified that the key factors that affecting marketable supply of red pepper in Alaba and Siltie districts the finding that distance to the market, frequency of contacts with extension agents, quantity of pepper produced and access to market information influenced marketable supply of pepper positively at the district [10].

A study to analyze the determinants of vegetable market supply applied Heckman two-stage model were significantly affected by family size, distance from main road, number of oxen owned, and extension service and lagged price [11]. Similarly in study of pepper marketing chain analysis identified variables that affect marketable supply. According to her, access to market, production level, extension contact, and access to market information were among the variables that influence supply [12].

Another study on value chain analysis of fruit and vegetables showed that among the different variables that

were hypothesized as determining factors for volume of marketable supply the econometric result showed that, number of oxen owned and age of household head for onion while only number of oxen owned for tomato and quantity produced for papaya were significant. All had the expected sign as prior expected [6]. Similarly a study on value chain analysis of vegetable indicated that marketable supply is significantly affected by access to market information and quantity of tomato produced in the case of tomato; access to extension service, access to market information, vegetable farming experience and quantity of potato produced in the case of potato, on/off-farm activities, distance to the nearest market and quantity of cabbage produced in the case of cabbage [13].

A study which was conducted to identified the major factors that influence the volume of marketed supply of pepper in JabiTehinan district finding that amount of pepper produced, productivity of other crops, education level, access to credit and access to extension service were significantly influence the marketed surplus of pepper in the district [14].

Another study on determinants of market participation among small-scale pineapple farmer's results showed that age, gender, education level and pineapple yields significantly influenced the decision to participate in pineapple marketing. Gender, price information, group marketing, marketing experience, vehicle ownership and marketing under contract significantly influenced the extent of market participation. Further, gender, group marketing, pineapple yield, price information, marketing under contract and vehicle ownership significantly influenced the choice of pineapple marketing outlets [15].

A study conducted on factors affecting market outlet choice of potato producers indicated that farming experience,

distance to the nearest market, access to market information, amount of potato sold, postharvest value addition, and bargaining power of farmers affect channel choice decisions in one way or another [16].

The recent study that was conducted by identified the major factors that influence the level of market participation of potato in Hadiya zone of Ethiopia. In this study the finding that sex, education, total annual potato harvest, district, oxen owned by farmers and livestock owned by farmers influenced the level of potato market participation positively but accesses to extension service influence the level of potato market participation negatively [17].

To sum up, in the country most of the past studies literature showed that there are many factors supply of market. It reviewed literature also indicated that a number of factors can affect the market supply extent of farmers such as access to market information, distance to market, quantity produce, extension service, but these factors are not affect equally and similar in all places at all time. Market supply of vegetable is varying from location to location and time to time. An important factor in one place at certain time may not necessarily be a significant factor in other places or even in the same places after some time. Therefore, policy implications drawn from some of the above empirical works may design area specific policies to be suitable with its demographic, socio-economic and institutional condition.

## **2.5. Constraints of Vegetable Production and Marketing**

There are factors that hamper the production and marketing of horticultural crops in the country of Ethiopia. Different production and marketing constraints was stated [6] such as:

1. Weak extension support service,
2. Limited land holding, lack of water,
3. Lack of access to credit,
4. insufficient product handling,
5. Outbreak of disease and pest,
6. Limited supply of improved seed and shortage of human labor from the production side and unfair price quotation,
7. Lack of standards and lack of strong cooperative from the marketing side are some of the most important problems that hinder the production and marketing of vegetable.

Based on review the vegetable production and marketing problems have been discussed below:

### **2.5.1. Production Problems**

**Seasonality:** The effect of seasonality is very significant on market price of vegetable. The price of vegetables drops during the major production season, summer. During this time there is an excess supply on the market and the traders are the major price makers; producers are even forced to sell at a loss.

**Credit:** Lack of credit provider and unavailability of credit results low production and obtain poor quality products.

**Limited input supply:** seed are supplied by public and private dealers that lacks on time delivery, certification and desired Variety.

**Pest and disease-** Prevalence of pest and disease like powdery mildew on papaya, onion tripe, and root rot in the case of onion and problem of African ball worm and cutworm in the case of tomato are the most important pests and diseases reported.

**Insufficient product handling:** Lack of proper pre and post-harvest handling practice. Absence of well-ventilated storage, watering prior uprooting vegetables farm field was constraints that result in poor quality vegetables and ultimately low price.

### **2.5.2. Marketing Problem**

**High perishability:** In Ethiopia considerable quantity of vegetables is wasted before it reaches the target markets due to limited shelf life of the fruit and poor postharvest handling.

**Lack of standards:** Repeated weight cheating and lack of price discrimination were common problem practiced by wholesaler and brokers'. Due to this problem there were no clear and well known quality and grade in the local market

**Unfair price quotation:** Vegetable product had perishability character so that at peak supply periods the price declined and vice versa. The intermediaries used to decide on the price of products. The benefit of Wholesalers overweighs than others and they control the market chain.

**Low quantity and poor quality:** Due to their low endowment in production factors, such as land, water and capital assets, the majority of smallholder farmers produce low quantities of products that are poor quality, which leads to their products being neglected by output markets. Increasing concentration in the food value chain is a global trend, caused by increasingly demanding consumers and concerns about food safety, which tend to make it very difficult for smallholder farmers to enter high- value markets in light of the low quantity and poor quality of their products.

**Transportation problems:** Most small-scale farmers have no means of transport to carry their produce to markets. Transportation problems result in loose of quality and late delivery, which in turn lead to lower prices, and this regarded as the greatest problem faced by emerging farmers.

**Lack of markets in rural areas:** Most smallholder farmers are located in rural areas where there are no formal agricultural markets or agro-processing industries. They are compelled to market their produce to local communities in their areas, sometimes at lower prices, or to transport their products to towns at a higher cost.

## **3. Conclusion and Recommendation**

### **3.1. Conclusion**

Ethiopia has a variety of vegetable crops grown in different agro ecological zones produced through commercial as well as small farmers both as a source of income as well as food. However, the productivity of crops is very low compared to the potential yield obtained in the research centers and on farmers' field technology verification studies. Vegetables producer are facing major

constraints of the vegetables production and marketing. Some of the principal production constraints are absence of reliable seed supply and unplanned production of vegetables crop, diseases and insect pests, lack of credit and insufficient product handling are problem on production of vegetables. Vegetable marketing is also constrained by lack of market information systems, poor market opportunities and high perishability. Several factors were identified by different studies on determinants of vegetables market supply in Ethiopia. Access to market information, quantity produce, and extension service was positive effect on market supply. Whereas distance to market was affect negatively in different studies.

### 3.2. Recommendation

1. Government extension and research system has to give a due attention to local seed growers in providing technical back up and in certifying the seed they produce to keep the quality of seed.
2. Develop improved and affordable postharvest handling and storage structures to prolong shelf life and minimize postharvest losses.
3. To increase the market efficiency of the vegetables, there should be local and national market or price information access to producers through different media like for sesame and other cash crops.

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## Biography



**Yalemwork Amare** received BSc and MSc degree by agricultural economics in 2015 and 2017. She employed at Raya University as Lecturer from July 2017 up to present.