

# Review of Manufacture Prospective and Restraints of Banana Value Chain in Ethiopia

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**Abstract:** Banana is the supreme imperative essential food and extensively developed and expended fruit in Ethiopia. It has a countless socioeconomic position causative much to the complete well-being of the country counting food sanctuary and revenue generation. Even though, the country has a great probable for transfer this product, its manufacture is mainly propose for the local marketplace and for home feasting. Banana value restraint was not established yet and a quantity of difficulties tend to face in contradiction of the construction and promotion of this fruit in the nation. Additionally, the procedures taken to solve these difficulties were incomplete due to laughable investigates. Therefore, the aim of the evaluation was to show construction probable and efficiency of banana and its tendencies and the encounter and restriction that banana value chain look in Ethiopia. To judgment the message diverse; author's assumptions and gossips were used. Most of the writers used a tool like value chain map; SCP to consider market and stream chain difficulties and PESTEC tools to find agronomic difficulties that disturb banana value chain.

**Keywords:** Banana, SCP, Value chain, PESTEC tool

## 1. INTRODUCTION

Banana (*Musa spp.*) is world's most popular fruit which has major economic importance in the world. The annual production of banana fruit is 106,714,204 metric tons which cover the world largest fruit portion (FAOSTAT, 2016). In relation to gross value of production, bananas ranks as the fourth most imperative global food product subsequent rice, wheat and maize (INIBAP, 1992). About 70 million individuals are largely estimated to depend on banana fruit for daily carbohydrate consumptions (Swennen R, Wilson GF, 1983).

Banana is also significant sources of revenue for many smallholder Sub-Saharan Africa farmers (FAOSTAT, 2012). In East Africa, banana source chains to urban marketplaces are considered by many links that add little price and outcome in only an unimportant quantity of the retail price accomplishment farmers, providing little enticement for speculation to improve production (Beed et al., 2012).

Ethiopia lies entirely in the tropics have great potential for banana production. Cavendish banana is the major fruit crop that was most widely grown and consumed in the country. Especially in the south and southwestern parts of the country, it is of great socioeconomic importance contributing much to the overall well-being of the rural communities including food security, income generation and job creation (Zenebe et al., 2015a). Banana contributes around 47.83% for producers' own consumption, 49.19% for income generation, 0.47 for animal feed and 2.52% for other purposes in Ethiopia (CSA, 2015). It covers about 59.64% (53,956.16 hectares) of the total fruit area, about 68.00% (478,251.04 tones) of the total fruits produced, and about 38.30% (2,574,035) of the total fruit producing farmers in Ethiopia (CSA, 2015).

Banana is the most imperative capsule in Ethiopia, but over the years a quantity of difficulties tend to face in contradiction of the manufacture of this fruit in the country. The poor efficiency of banana has been accredited to a number of biophysical influences such as lack of better changes, pest, disease and poor postponement (Gold, C.S., et al., 1999).

### 1.2. Objectives

- 1.2.1. To review production potential of banana in Ethiopia
- 1.2.2. To review the challenge and constraint of banana value chain
- 1.2.3. To review trends of banana production and productivity in Ethiopia

## 2. LITERATURE REVIEW

### 2.1. Basic Concepts and Definition of Value Chain

**Value chain:** is a collection of activities used to bring the product starting from designing, delivering and supporting up to consumption (Porter, 1985). Kaplinsky (2000) defines Value Chain as "full range of actions which are compulsory to bring an invention or service transient through the midway phases of construction to delivery to consumers and final discarding after use".

(Gibbon and Ponte, 2005) describes “value chain” as the full range of value adding activities required to bring a product or service to final consumers through different process including preparing raw materials or inputs, make physical transformation (like changing the place of the product using transport or make some change in form of the product) and deliver the product so as to response the consumers demand.

### Market and Marketing Concepts

Marketing is a process or all business activities, involved in the flow of goods and services from the point of initial agricultural production until ultimate consumers. Generally marketing is all activities associated with satisfying human needs by bringing products to people. Agricultural marketing starts from farmers plan at the farm up to meeting of marketing demand and market prospects (Abbot and Makeham, 1981).

**Value chain actors:** These are those who perform different activities starting from production up to consumptions of agricultural products. Actors could be direct chain actors including producers, traders, retailers and consumers and indirect chain actors which provide financial or non-financial support service, such as bank and credit agencies, government, researchers and extensions (Kit et al., 2006).

**Supply chain:** It is a chain that shows physical flow of finished product that is transformed from raw materials. Supply chain management is about making the chain efficient in terms of product flow, resource usage, quality control throughout the chain, reducing the risk and decreasing the agricultural industry’s response to changes in consumer demand for food attributes (Dunne, 2001).

**Banana:** The banana plant is a large perennial herb with leaf sheaths that form trunk-like pseudo stems (Haifa, undated).It is one of the oldest fruits probably originated in the warm moist tropical Asia. The commercial bananas are classified into species of dwarf sp, tall ones (whose fruits are edible raw) and *musa prasiadica* whose fruits are cooked (banana farms report, 2007).

## 2.2. History of banana in Ethiopia

Profitable fruits like banana, mango, avocado, orange, papaya and apple are supposed to have been presented into Ethiopia by buyers, sacred groups and external powers. Most native fruits are wild. Intelligences indicate that banana was educated later mid-18 century, about Ankober (McCann, 1995). An itinerant to Eritrea also described the presence of several Italian owned fruit farmsteads, including banana, as primary as the 1920s (Maydon, 1924) which could perchance be from Gros Michel changes. Dwarf Cavendish (*Musa acuminata*) was though familiarized from Somalia to Eritrea in 1939 (Taye, 1975). In Ethiopia, it is supposed to have been familiarized from farms in Eritrea throughout the late 1950s or early 1960s (Taye, 1975) by Italians who had happening banana agricultural in Ethiopia.

Almost all big banana farmsteads were possessed by Europeans and were mostly focused in the Upper and Middle Overflowing basin. There was also a banana homestead of about 62 ha in Arba Minch state farm in 1984 in the southern Rift Gorge. In the mid-1970s, however, all the farms (including those in Eritrea) were national by military government. After this period, efficiency of many of the farms failed (Seifu, 2003) and some were also transformed to other land uses. Though, some farms such as the state owned farm, Melka Sedi, in Middle Awash have freshly stationary manufacturing banana due to cumulative salinity (Michael and Sileshi, 2007). However, the present management has put transformed importance on cultivation expansion. As a result, some large scale marketable propagation joint ventures with foreign corporations have been reputable frequently to address the transfer market. The management heartens smallholder fruit manufacturers, mostly for the internal market.

## 2.3. Production potential of banana in Ethiopia

According (CSA, 2015), for the last ten consecutive years the cultivated area of land under banana crop showed a gradual positive change in a sense that area coverage increased from 29,083 hectares in 2003/04 to 53, 956.16 hectares in 2014/15 production year. However, these changes are very few in ten years period with compared to the country's cultivable land potential area. The survey results also show that about 90,070.83 hectares of land is under fruit crops in Ethiopia and from these bananas contributed about 59.64% of the fruit crop area followed by avocados that contributed 15.19% of the area. More than 7,066,485.72 quintals of fruits was produced in the country. Bananas took up 68% of fruit production followed by mangoes avocados, papayas, and oranges which were accounts 13%, 8%, 6% and 4%, respectively.

According to (CFC 2004 , Belachew et al., 2015, CSA 2014), report on area and production of major crops and fruit in case of Ethiopia, reported that in terms of production, and consumption dessert banana is the leading fruit crop among other horticultural crops of the country. At present it is believed to cover about 86% (478,251.04 tones) of the total fruit production. In various parts of the country this fruit grows in the form of home garden crop at a household level to large scale plantations. From various regions of the country the Southern Nations and Nationalities Peoples’ (SNNP) regional state is the leading banana producer which accounts for 68.72% (37,076.85 hectares) area of land coverage by banana production, 77.53% (370,784.17 tones) of the fresh banana produce and 22.38% (1,504,207) of the banana producers. This creates a great opportunities for the region to benefit from increased

food security, income generation, employment opportunities and from the enhancement of local and regional economic developments.

**2.4. Banana Production and Marketing in Ethiopia**

Ethiopia has a variety of fruit crops grown in different agro ecological Zones by small farmers, mainly as a source of income as well as food. The production of fruit varies from cultivating a few plants, for home consumption, to large-scale production for the domestic and home markets. According to CSA (2013) 61,972.60 areas under these crops (avocado, bananas, guava, lemons, mangoes, oranges, papayas and pineapples) and more than 4,793,360.64 quintals of fruits were produced in the country. The area covered by fruits production is only a small token area and production in the country.

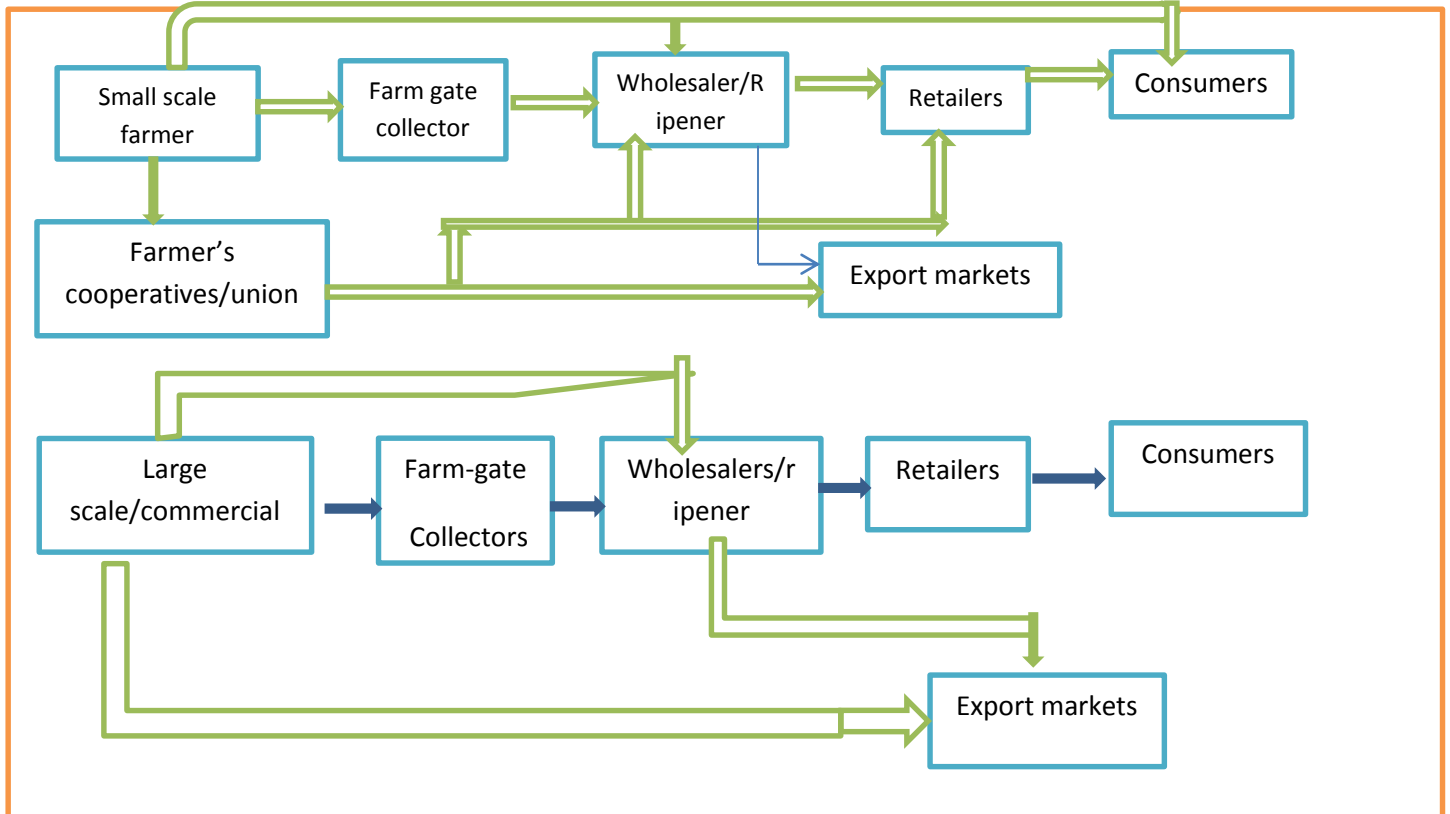
According to banana farms report, (2013) among the fruit the demand for banana is expected to increase with population growth, increased income, increased attitude of households in consuming fruits and vegetables as well as the wide opportunity for export in neighboring countries like Europe and the Middle East. Demand for banana in the domestic and export market is conservatively assumed to grow by about 4%, annually. The present demand for this product is estimated at 19,830 tons per annum. The demand is expected to reach at 28,815 tones by the year 2015.

Banana is produced throughout the country mainly at low to mid altitudes where there is adequate rainfall and/or irrigation facilities are available. It is the staple food for millions people of Ethiopia and income security crop for the millions of farmers of the country. Although it has a great potential as an export commodity, its production is tend to left at local market and for home consumption. Farmers eat what they produce and sell most of it (80-90%) at roadsides and local markets all year-round. The dessert type is a popular fruit crop among producers and consumers (Seifu 1996),

“In Ethiopia, banana is widely produced in traditional agricultural system by small-scale farmers but at the commercial level, the production is limited to state and farmers’ union farms. In smallholder fields, it is planted either as a monoculture (in lowlands) and/or in multiple cropping system together with enset, coffee, sugarcane, and taro. Smallholder farmers usually grow both banana and enset in the same field at mid-altitudes. However, commercial banana growing areas are geographically separated from the enset growing areas, mainly located at lower altitudes” (Ibid).

Both small-scale and large-scale banana producers in Ethiopia follow similar marketing channels as shown in the banana supply chain chart below (Adam, 2016).

Figure 1 supply chain of banana in Ethiopia



Supply chain of banana in Ethiopia adapted from (4)

**Producers:** - Are those small-scale and large-scale commercial farmers who involved in banana production. The roles of small-scale farmers are limited to production and they have no much power control over the price that they receive from their produce (Adam, 2016).

**Farmer cooperatives/unions:**-These are a group of village level farmers formally organized into farmer cooperatives or unions in order to market their banana and access or purchase inputs (Ibid).

**Farm-gate collectors:** - These are sometimes called “assemblers” or “forwarders”. They are often village based licensed middlemen or intermediaries who purchase the newly harvested banana at farm gate from the direct producers and forward it to wholesalers that are found in the major regional and central markets (Adam, 2016).

**Wholesalers:** - These are banana traders that operate mostly at major regional and central market outlets. They buy the bananas in bulk either directly from producers or through the licensed farm gate collectors and ripen and sell them to individual and institutional retailing business operators (green grocers, supermarkets, street and open market vendor, etc.).

**Retailers:** - These are traders that purchase either green-ripe or yellow-ripe bananas after de handing from wholesalers/reopeners and sell them to consumers.

**Consumers:** - Consumers are categorized into individuals, households, and public and private institutional types (Adam, 2016).

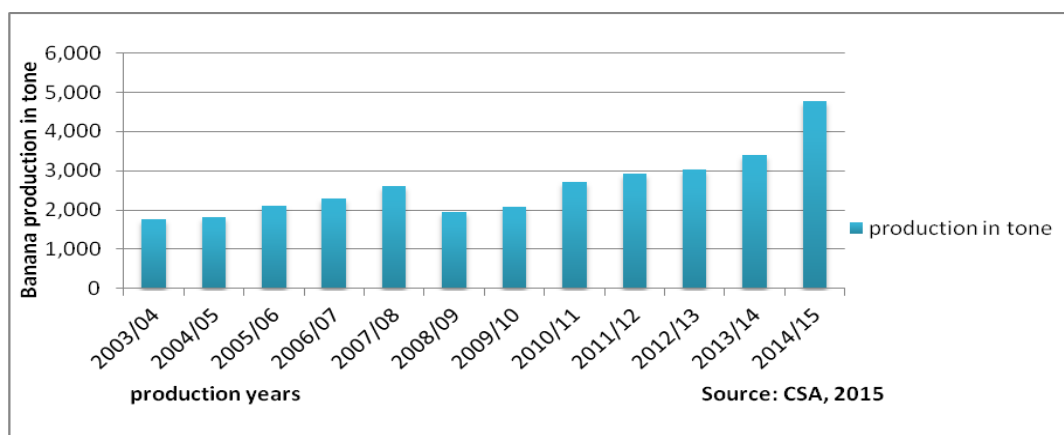
**Export buyers:** - These are foreign traders often in the neighboring countries of Djibouti and Somaliland, and at times Saudi Arabia, which purchase fresh bananas from Ethiopia and do the subsequent business within the market channels in their respective countries.

## 2.5. Trends of Smallholding Banana Production and Productivity in Ethiopia

The banana production at smallholder level shows the appositive change in the amount of production during each production period. It increased from 1,751 tons in 2003/04 to 4,783 tons (CSA, 2015a).

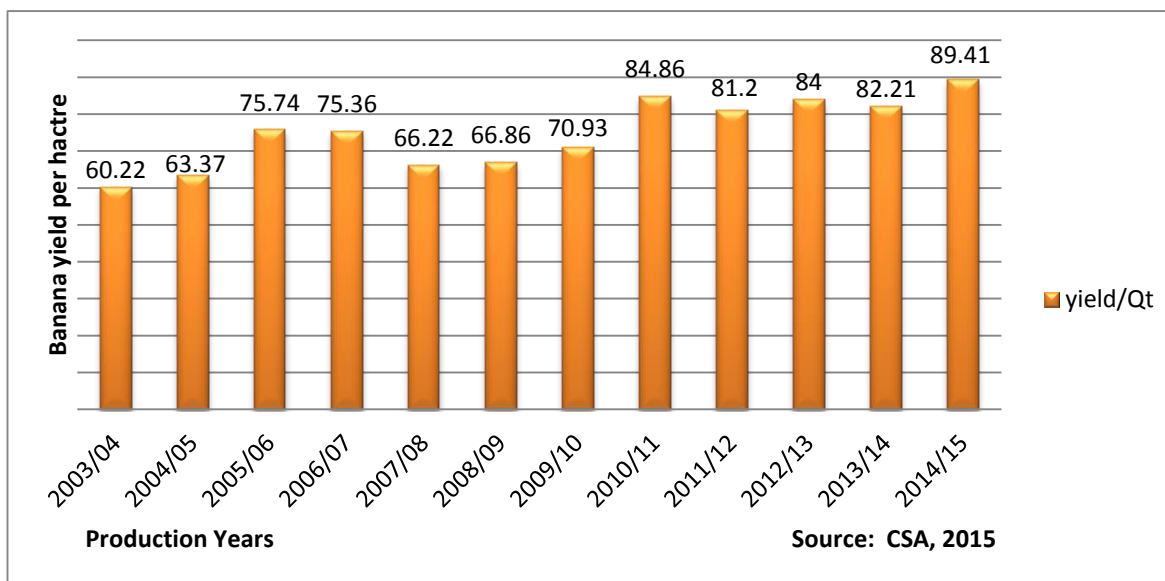
Smallholder bananas contributed about 68% of the fruit crop production in tone followed by mangoes (12.5%) in 2014/15. This implies banana shares a vast amount of fruit production in the country CSA (2015b).

**Figure 2** trends of small holding banana from 2003/04 to 2014/15



Despite the production Smallholder banana productivity trend varied from year to year during the last ten years. It had increased at initial period then kept constant for three years and started to increase in 2010/11 then again fluctuating until the current production period. This fluctuation in productivity of banana crop came from the improper agricultural practices (CSA, 2015a).

Figure 3 trend of smallholding banana productivity from year 2004/05 to 2014/15



## 2.6. Factor affecting banana supply and value chain

This seminar review post-harvest loss, disease and insect pests, bad agronomic practices, financial limitations, lack of appropriate storage facilities and marketing infrastructure as the major factors that affect banana value chain in Ethiopia and reviewed as follows:

**Post-harvest loss:** - The actors involved in the supply chain invariably face some kind of marketing charges and post-harvest loss challenges. The first factors that contribute to postharvest loss in fruits can be categorized in to mechanical, physiological, pathological or environmental factors (Kader and Rolle, 2004). The losses are favored by secondary factors resulting mainly from inadequate technology applications and quality control. A high postharvest loss caused by inadequate and inefficient postharvest handling practices, is reported to be one of the major problems limiting the expansion of banana production in Africa (Olorunda, 2000). Similarly, lack of postharvest and marketing infrastructures such as packaging, cold storage, pre-package and distribution, postharvest treatment and washing facilities together with production constraints are problems leading to low productivity and considerable postharvest loss of banana in Ethiopia (Gabre-Mariam, 1999).

Ethiopia has great potential to produce and export high quality bananas; however, due to postharvest loss which results from mis-handling practice and limited shelf-life the actual yield and quality of the fruit is poor in addition most of the fruit is wasted before it reaches the target market or consumers (Gabre-Mariam, 1999).

Farmers in different parts of Ethiopia mentioned different types of causes for banana loss at farm level. By most of the farmers mechanical damage (58%) was considered as the main cause for banana loss while improper maturity at harvest (27%) and sun browning (15%) were also the other main causes for banana loss (Mulualem 2015).

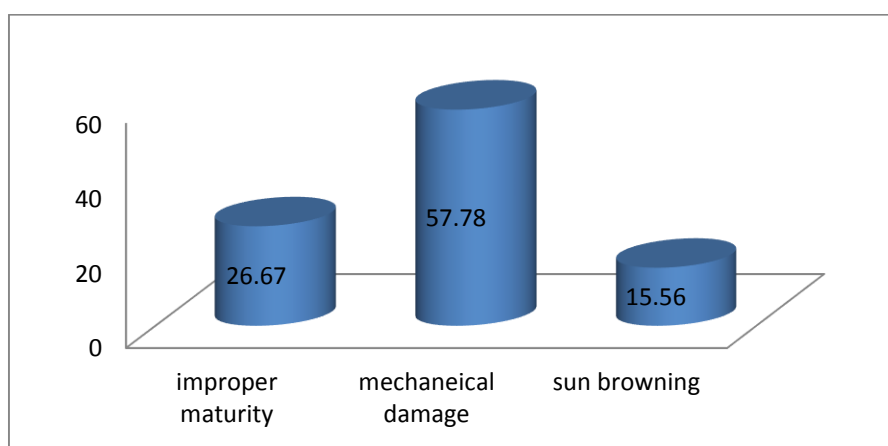


Figure 1 cause of post-harvest loss

**Disease and insect pests, and agronomic practices:** - low productivity and income resulted from inappropriate use of inputs (improved varieties, fertilizers, and pesticides), lack agronomic optimum practices, disease and insect pests, harvesting and post-harvest handling techniques, and marketing plan. On the other hand, **financial limitations, lack of appropriate storage facilities,**

**and marketing knowhow**, over ripening and deterioration of banana fruit before selling were the major constraint of banana value chain. This may lead to unplanned and unscheduled delivery of banana fruit to the market which may lead to high losses due to over ripening (Gebremedhin, 2016)

According to (Girma 2016), his study on assessment of banana value chain: the case of Arba Minch, Ethiopia, found that Poor agronomic practice, disease, and pests and climate change were the major constraints for affecting banana yield while limited market information, lack of cooling store, truck, poor post-harvest handling, lack of alternative market and weak capacity of cooperatives were the main constraint for banana marketing in Arba Minch.

Study conducted by (Adam et al, 2016), found that different household and farm characteristics such as age, household size and experience in banana production, area of land allocated and method of banana production (irrigated or rainfed), spacing and type of planting material used, household head (male or female-headed), extension service, membership of farmer cooperatives/unions, etc. affect the yield of banana in the country. Results also indicate that even though the country has a great potential for banana production, the supply and value chain is facing several limitations and constraints including high **variability in crop management practices and yield**, and highly deregulated marketing practices that result in **excessively high price and marketing margin disparities** across the numerous channels. These factors indicate that there is a need for further research works on this area so as to improve marketing logistics and channel management.

Studies by (Zenebe et al., 2015a; 2015b; LIVES, 2014; Beed et al., 2012, Getachew and Nuppenau, 2009, 2010a, 2010b, 2010c, 2011a and 2011b, and Getachew, 2010) have been conducted on smallholder banana value chain in Ethiopia found that weak institutions, restricted access to markets and credit, inadequate infrastructure, farmer age, household size and experience in banana production and method of banana production, extension services, membership of farmer cooperatives, lack of value addition practices like processing and packaging, high transaction cost, information asymmetry, low farm gate prices and lack of integration of smallholder banana producer to market were constrained sustainable banana productivity and marketing of smallholder farmers. They conclude that there is vast potential for banana production in Ethiopia but the value chain is facing several constraints result in excessively high price and marketing margin disparities across the numerous channels.

Several studies (Ferris et al., 2014; Arias et al, 2013; IFC, 2013; Mather, 2008; Zossa and Pletziger, 2007 and Dixie, 2005) have been conducted on linking of smallholder farmers to market in Ethiopian case and they found out that production and marketing of smallholder farmers are constrained by farm size, location, limited access to agricultural inputs, quality inputs, finance, infrastructure, extension services, market information, water and production technologies; skill and lack of knowledge, poor farm management, level of farm household dependence structure, product quality, seasonality of production, weather, culture and tradition, institutional arrangement, price volatility, pests and diseases, inconsistent policies, gender, high cost of storage and transportation and also not all farmers can take advantage of market developments. Their access to evolving agricultural markets especially to value chains is commonly constrained.

A survey conducted by Amare, (2015) found that the total postharvest loss of banana was estimated to be 26.5%; where 56% of the loss occurred at the retail level, while 27% and 17% of the losses occurred at wholesale and farm levels, respectively and this in turn affect marketing of the fruit in Ethiopia

**Market-knowledge:-** Gebre-Mariam and Seifu (2015) reported that although banana has great potential as export commodity besides, its use as a cheap source of carbohydrates, minerals and vitamins and as well as a shade tree for coffee plants in coffee producing regions, production is mainly meant for home consumption. According to Yohannes Agonafer (1994), out of the total exports of fresh fruits and vegetables in 1974, banana alone had a share of nearly 50% in quantity and 43% in value. This figure dropped drastically in 1987. After land nationalization due to mismanagement, build-up of salinity and nematode incidence yield and quality of fruits declined substantially. As a result of this the export dwindled and the produce is now marketed locally.

**Technology** play a crucial role in banana value chain however there was a negative relationship between age and the adoption of some agricultural technologies in Ethiopia, (Husen et al., 2017). In addition sex of the household also affects banana value chain and this could be explained by the reason that females are better at handling activities in the value chain than males. Well managing of fruits at the market enables to maintain fruit properly and hence reduce the loss (Kader, 2005). Generally, if proper attention is given to banana research and development, it will play an important role in the food-self-sufficiency program of the country.

### 3. CONCLUSION

Ethiopia has a great potential of fruit in general banana in particular. Despite the fact that this great potential, the production and value chain of the sector encountered difficulties. The constraints intern affects different value chain actors in the process of value addition and product flow.

Age, household size and experience in banana production, area of land allocated and method of banana production (irrigated or rain fed), spacing and type of planting material used, household head (male or female-headed), extension service, membership of farmer

cooperatives/unions, poor agronomic practice, disease, and pests and climate change were the major constraints affecting banana production while limited market information, lack of cooling store, truck, poor post-harvest handling, lack of alternative market and weak capacity of cooperatives, highly deregulated marketing practices that result in excessively high price and marketing margin disparities across the numerous channels, financial limitations and marketing knowhow, over ripening and deterioration of banana fruit before selling were the major constraint affect banana value and supply chain. Hence creating awareness about post-harvest handling practices of banana is a basic and major thing for loss reduction effort in the value chain and also farmers need to be organized in cooperative so as to have better bargaining power in banana market.

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