

***ENSET VALUE CHAIN ANALYSIS: THE CASE OF ANGECHA
WOREDA IN KEMBATA TEMBARO ZONE, SOUTH ETHIOPIA***

*A thesis Submitted to the School Graduate Studies of Jimma University in Partial
Fulfillment of the Award of the Degree of Masters of Science in Economics
(Economic Policy Analysis)*

By:

EDOM ALEMU HIRIGO



**JIMMA UNIVERSITY
COLLEGE OF BUSINESS & ECONOMICS
ECONOMICS PROGRAM**

MAY, 2016

JIMMA, ETHIOPIA

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Under the Guidance of

Leta sera (PHD scholar)

And

Esubalew Ayalew (MSc.)



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CERTIFICATE

This is to certify that the thesis entities “Enset value chain analysis the Case of Angecha Woreda in Kembata Tembaro Zone, Southern Ethiopia”, Submitted to Jimma University for the award of the Degree of Master of economic policy analysis and is a record of bonafide research work carried out by Mr. Edom Alemu, under our guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree of diploma.

Main Adviser’s Name

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Leta sera (PHD scholar)

Co-Advisor’s Name

Date

Signature

Esubalew Ayalew (MSc.)

DECLARATION

I hereby declare that this thesis entitled “Enset value chain analysis the Case of Angecha Woreda in Kembata Tembaro Zone, Southern Ethiopia”, has been Carried out by me under the guidance and supervision of Leta Sera (PHD scholar) and Esubalew Ayalew (MSc.).

The thesis is original and has not been submitted for the award of degree of diploma any university or instructions.

Researcher’s Name

Date

Signature

Edom Alemu

ABSTRACT

Enset is one of the major food crops supporting many people in Southern Nations, Nationalities and People's Regional State. The crop requires intensive management and high amount of nutrients; however, only limited work has been done to upgrade the crop even the demand increases from time to time. Absences of many institutional, organizational and technological improvements were attributed to existing inefficiencies in enset production and utilization.

This study was undertaken in Angecha Woreda in Kembata Tembaro Zone, south Ethiopia has been designed to throw light on the analyze existing value chain, develop chain map and identify the actors, identify challenge and opportunity of enset product and identify factors affect farmer participation on value addition focused on this study. SPSS-16 was used for descriptive statistics, inferential statistics and STATA 12.1 was used to analyze multiple out come and marginal effect model. The result from descriptive study shows that long market chain and diseases bacteria wilt highly affect enset crop. The result from multinomial logit model, number of years' experience, education level, land size coverage by enset crop, distance to main market, number of cattle and extension service are significantly influencing farmers' on bulla product value addition positively. Land size of enset, crop variety, distance to village market and number of cattle significantly influence farmers on fiber value addition negatively.

The study therefore recommends policy interventions whereby to solve the problem of bacteria wilt disease; policy makers, research and extension groups, NGOs and other actors must find solutions and give continuous training should be arranged and delivered on enset production, management, pre and post- harvest handling techniques to farmers and service providers to create sustainability of crop. This important to develop agricultural product general. Farmers are small-scale and unorganized in the study area; this state of affairs clearly needs strong government intervention. Effort should also be made to strengthen farmers' cooperative and encourage collective action of farmers to improve variety and share information about market.

Key words: Enset value chain Analysis Upgrading Map

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ACRONYMS AND ABBREVIATIONS

CSA	Central statistical Agency
ECA	Economic commission of Africa
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
IFPRI	International Food Policy Research Institute
ILRI	International livestock Research Center
Km	Kilo Meter
KTZ	Kembata Tembaro Zone
MEDAC	Ministry of Economic development and cooperation
MNL	Multi nominal Logit
NGO	Non-governmental organization
n.d	No date
SD	Standard deviation
SNNPR	South Nation Nationalities and Peoples Region
SPSS	Statistical package for social science
UN	United Nation
VC	Value Chain
VCA	Value Chain Analysis
VIF	Variance Inflation Factors

I: INTRODUCTION

1.1 BACKGROUND

A large number of African countries are highly dependent on agriculture for their livelihood. While on average the agricultural sector accounts for one-fourth of GDP and in some countries this share reaches or exceeds 50 per cent (UN, 2007). Agriculture, the mainstay of Ethiopian economy, directly supports about 85% of the population in terms of employment and livelihood, contributes over 41% of the country's gross domestic product; generate about 90% of export earnings. And furthermore, the sector in supplying food for the population and raw material for agro-based domestic industries and in generating surplus capital to speed up the country's overall socio-economic development (CSA, 2014).

However, this immense potential could not be put into use because number of constraint, including low investment and productivity, poor infrastructure, lack of funding for agricultural research, inadequate use of yield enhancing technologies, weak linkages between agriculture and other sectors, unfavorable policy and regulatory environments, and climate change (ECA, 2009).

Food insecurity is the single greatest barrier to sustainable development in Ethiopia, which affects up to 5 million people annually and many Ethiopians depend on food aid from abroad (Kumar, 2013). Furthermore, 52% of the rural population and 36% of the urban population of Ethiopia consume under the minimum recommended daily intake of 2100 calorie per person per day (FAO, 2002; MEDaC, 1999). The world development report indicators for the year 2000/01 reveal the prevalence of child malnutrition (children under age 5) is 48% during the period 1992-1998 (Berhanu, 2004).

Researchers and policy makers have been particularly concerned with finding long-term and sustainable solutions to Ethiopia's food security needs. But country still face with complex poverty and insecure rate increase from year to year which has to been aggravated by erratic weather, catastrophic droughts, land degradation and civil war which has triggered famines for centuries. Even, 10% decline in rainfall below its long-term average reduces national food production by 4.4% (Braun, 1991) and agricultural activity mainly dominated by small farmers,

account for over 90% of total crop area and agricultural output (Bollinger et al. 1999:3), this and other factor aggravate the problem.

Therefore, a country must adopt drought tolerance crop like *enset* and agricultural technologies should be given emphasis to achieve long term and sustainable food security. *Enset* is a plant which closely resembles the banana plant, forming a single corn underground and a pseudo stem above the ground (Yemane, 2006).

Ethiopia policy has placed an emphasis on increasing agricultural production to serve as a base for rural development. But low unit value for production and absence of household's market participation result of low-productivity value chains, low-skill, traditional/not modernize, low-value products and services contribute low value addition on *enset* and *enset* product. Moreover, an increase in agricultural production, weak relationships between value chain actors, weak supporting service, different socio-economic factors, lack of market information, such as end market quality and quantity requirements and delivery timing needs and poor development of production of the sector becoming smallholder farmer poor and poor.

Similarly, Angecha woreda where considerable proportion of *enset* crop and ample variety of resources exist and contribute thousand small farmers for consumption purpose have not been utilized significantly. The above problem are highly hindering *enset* crop development with associated social and economic factor that farmers participation of value addition, feeding behavior and absence of attention to the crop for further use as modern and marketable product.

1.2 PROBLEM STATEMENT

In Ethiopia more than 20 percent of population are consume *enset* as staple & co-staple food crop providing year-round food, fiber consumption, animal feed and medicine and gives higher product per unit area (25 t ha⁻¹ yr⁻¹),- also a source of domestic and industrial uses (Zerihun et. al., 2012). The plant has been cultivated as a food and fiber crop in Ethiopia for several years and over 80% of the production is concentrated in the south and south-western part of the country (Taye et al., 1967). Moreover, Populations dependent upon *enset* have never suffered from famine, during Ethiopia's tragic drought and famine prone decades of the 1970s and 1980s (Brandt et.al, 1997).

Despite the huge potential, the crop has not been fully exploited and promoted in the country due to inefficient utilization of resource in area, farmers' decisions on choice of enterprises, lack of technologies, absence of stable markets and weak institutional capacity to respond to environmental and market (Tilahun, 2006). Moreover, bacterial wilt, small farmer dominance, lack of market access and poor collaboration among value chain actors contribute to un-exploitation of *enset* potential. Furthermore, less opportunity in market, absence of proper linkage of rural enterprises into the market and absence of improvement on value chains of agricultural commodities, household takes low price and demand obtain in availability of low quality products (USAID, 2010). These and other factors aggravate the challenging situation of *enset* producer to supply their products to the market and improve their families' livelihoods and makes *enset* producer's bottom of the value chain.

Value chain analysis is important to know about constraint and opportunity of value chain, improve inefficiency of producers to produce market-oriented and increases competition, gain greater access to markets, enhance their value chain position and increase their value-added so as to boost income and reduce poverty and point out area of intervention to capture market opportunities, obtain fair deals, and produce higher-quality products improves, increasing rural incomes, employment and harnessing economic growth for rural areas

Prior studies concerning about *enset* crop emphasized on issues of food contribution, gender analysis, bio-diversity and livelihood activity. Therefore, it is paramount important to analyze value chain and identify constraint those determinants farmers' participation on *enset* value addition in the effort of maximizing production for smallholder *enset* producer so as to improve their livelihood. Hence, this study is intended to investigate constraints and opportunity of *enset* product value addition, point out area of intervention and emphasizing of factor that affect *enset* product value addition and with particular attention to Kembata Tembaro Zone, Angecha Woreda.

1.3 OBJECTIVES OF THE STUDY

1.3.1 General Objective

The overall objective of this study is to analyze the value chain of *enset* in Angecha Woreda, Kembata Tembaro Zone, South Ethiopia.

1.3.2 Specific Objectives

The specific objectives of the study are:

- ❖ To understand the existing *enset* value chain in the Angecha Woreda
- ❖ Develop value chain maps and identify the main *enset* value chain actors
- ❖ To assess the challenges and opportunity of *enset* value chain
- ❖ To identify socio-economic factors that determines farmers' participation in value addition

1.4 SIGNIFICANCE OF THE STUDY

My study area is one of ample *enset* variety and potential area in Ethiopia. it is common that *enset* product are inefficient in market activity because of not prove good insight on enable farmers to create and capture more value in the *enset* product and not given attention to enhancing linkages between producer groups and actors in markets study area.

Furthermore, research related to *enset* value chain is scanty. Even organizations those working on *enset* development mainly focus on agronomic and biodiversity part. No one write issue like chain analyzing provides in depth understanding production, consumption and marketing trends and to identify bottlenecks in production, processing at each point in the chain that enables to identify key intervention points for government and other development institutions to address food security to study area.

Therefore, the study provides an empirical basis for identifying options to increase *enset* product value addition of households, analyzing of the factors that determinant of value addition contributes to the success of value chain. In doing so, the study attempts to contribute to filling the knowledge gap by assessing factors that affecting farmer's *enset* value addition in *Angecha woreda*, Ethiopia.

1.5 SCOPE OF THE STUDY

The study was intended to investigate ways for upgrading efficiency of *enset* value by emphasizing on examining factors that affecting *enset* value addition development for smallholder householder in study area. Due to financial and time constraints, it was limited its investigation to one districts of Angecha Woreda of the SNNPR regional state and followed that along value chain actors Addis Ababa routes. Hence, the study focused on the representative sites woreda in three rural Kebele and two urban district (Angecha and Halaba).

1.6 LIMITATION OF THE STUDY

Different condition that limit quality of the thesis, short time frame allowed to conduct the field data collection work, lack of cooperation by some of the key informants, frequent interruption of power and internet connection, cost of producer and challenge of actors' timely data in value chain. Study was also limited only one district (this was due to budget constrain and scattered chain actors). And also country has wide range of diverse agro-ecologies, institutional capacities, organizations and environmental conditions, the result of the study may have limitations to make generalizations and make them applicable to overall country. However, it may be useful for areas with similar context with the study area.

1.7 ORGANIZATION OF THE THESIS

With the above brief introduction, the remaining part of the thesis is organized as follows. The second chapter deals with literature review, empirical study and the conceptual framework of the study. The third chapter discusses the study areas and the research methodology employed. The fourth chapter elaborates research findings and discusses the results. Finally, the fifth chapter gives a summary, conclusions and presents recommendations.

II. REVIEW OF RELATED LITERATURE

2.1 THEORETICAL LITERATURE

2.1.1 Concepts and Definition

Small farmer- A farmer that produce partly for sales and partly for own consumption, purchase some of their input and provide some of their own resources and there can be apparently “perverse” response, i.e. Food price \uparrow → food supply \downarrow (micro-economic policy,2015).

Value added created in different stages by different actors throughout the value chain. It related to quality, costs, delivery times, delivery flexibility, innovativeness, etc. The size of value added is decided by the final-customer’s willingness to pay (Jacques H.2011). In agricultural product value added form contain converting row material in to finished or semi-finished products, maintaining quality, variety of crop, location or means of transportation, time, ownership or possession and information. It is customer orientated and decided by willingness to pay the product.

Value addition act of adding value to a product, whether you have developed the initial product or not. It contains taking a product from one level to the next (Fleming, 2005). Means, focus on safety and quality of product and intrinsic characteristics of the product itself (e.g. color, taste, tenderness) and extrinsic characteristics of the process which cannot be measured on the product (e.g. organic or fair trade production). Adding value does not necessarily involve altering a product; it can be the adoption of new production or handling methods that increase a farmer’s capacity and reliability in meeting market demand. For farmers, value addition has a particular importance in that it offers a strategy for transforming an unprofitable enterprise into a profitable one. The farmer is not only involved in production of a raw commodity but also takes part in value addition and distribution. This allows the farmer to create new markets or differentiate a product from others and thus gain advantage over competitors. Value addition activities are essentially meant to add such utilities as form utility, time utility, place utility, information utility, among others.

Value chain order of activities required to make a product or deliver a service (Vermeulen *et al.*, 2008). Means that, a sequence of related business activity started from specific input for particular suppliers, primary production, transformation, marketing up to final sell particular product to user. On the other way, a group of company working together to satisfy demand of people. In this study also include, input suppliers, producers, traders (wholesaler and retailers), processors and consumers.

Value chain analysis full range of activities required to bring a product or service from its conception to its end use, actors that perform those activities in a vertical chain and final consumers for the product or service. It is used to identify how poor people, small enterprises or other target groups can take a role to play a larger and more active position in particular value chain and how a value chain's structure or characteristics can be changed to enable it to grow in pro poor ways (Berhanu K., 2012). In this, chain map also developed that graphically presents the relevant market actors and their relationships with one another. It is increasingly used to help develop a competitive strategy for agricultural production and enables the poor to engage more productively in markets, the thinking goes and poverty be reduced through market engagement. Making markets work for the poor emphasizes the need to unblock access to profitable market opportunities.

Value chain actors are those involved in supplying inputs, producing, processing, marketing, and consuming agricultural products (Kuma, 2012). They can be those that directly involved in the value chain (rural and urban farmers, cooperatives, processors, traders, retailers, cafes and consumers). According to Bammann, (2007) who directly deal with the products, i.e. produce, process, trade and own them. Indirect actors who provide financial or non-financial support services, such as credit agencies, business service and government, researchers and extension agents.

Value chain upgrading the acquisition of technological capabilities and market linkages that enable firms to improve their competitiveness and move into higher-value activities (Kaplinsky and Morris, 2000). On the same way, increasing economic activity of Enterprises occupying new positioning in the market or delivering to new markets and buyers. Firms can take place in the form of process upgrading, product upgrading, functional upgrading and chain upgrading. Upgrading entails not only improvements in products, but also investments in people, know-how, processes, equipment and favorable work conditions. Empirical research like (*e.g.*

Humphrey and Schmitz, 2000; Humphrey, 2003; Humphrey and Memedovic, 2006) provide evidence of the importance of upgrading in the agricultural sector.

Value chain development is all about making the consumer/customer at the end of the chain happy. If enterprises cannot satisfy the needs (or requirements, preferences, desires) of their buyers, the buyers will sooner or later turn to another supplier. Value chain development is therefore a market-oriented approach whereby all activities of a particular chain are directed towards the market, all stakeholders along a particular value chain need to cooperate and coordinate their activities and appropriate business environment in place to satisfy the needs of the end consumer. It has five triggers such as product quality and speciation, system efficient, product differentiation, social and environmental standards, and enabling business environment (Lesego, 2007).

2.1.2 Agricultural value chain analysis.

Agricultural value chain can be enable Biruhalem (2010), termed as “better targeting of interventions aimed at poverty reduction.” Sustain rural economic growth and poverty decreasing demands proper linkage of rural enterprises into market through accurate analysis and development of value chain (VC) of agricultural commodities to enable rural producer get better price for their produce (USAID, 2010). This shows that increasing inter-linkage in the market, small holder rural farmers get better advantage from their product. It allows, farmer to create new markets, or differentiate a product from others and thus gain an advantage over competitors (Abrham, 2013). Means that, increasing integration like *enset* product value chain bring batter benefit and share that is not just as a means of survival but as smaller or larger commercial businesses linked to domestic and global industrial markets and need to identify and tap into new sources of potential growth and value addition in the sector, this increase value of smallholder producer of crop.

Agricultural value chain analysis can be viewed as a heuristic device or analytic-ale tool (Kaplinisky and Morris, 2001). It means, systematically maps chain actors and their function production, processing, transporting and distribution to final consumer. In similar manner, identify primary actors in the value chain, their role and interrelationship, identify sales markets, unmet demand, and international competitors, identify supply channels and trends within the

value chain, identify constraints and opportunities that inhibit value chain growth and competitiveness.

The overall above description shows that, agricultural sector is determined by the performance at each stage along the agricultural value chain. By analyzing the full range of agricultural activity from simplest input up to final consumers and give the role of participating to small holders in reducing poverty. It contain upgrading the product, facilitate and enable farmers to create and capture more value in the agricultural value chain, by enhancing linkages between producer groups and markets.

2.1.3 Importance of Value Chain Analysis

The concept of value chain is important to understand the reasons for inefficiencies in the chain, and identify potential leverage points for upgrading the performance of the chain, using both qualitative and quantitative data and also useful framework to understand the production, processing and distribution/marketing of a commodity or group of commodities (Biruhalem k., 2010). It means that to now about constraint and opportunity in value chain, to increases higher level of efficiency and improves quality and product differentiations, and where improvement must be important in order to increase higher level of efficiency and improve quality of product differentiation in and to achieve economic growth with poverty reduction.

Value chain is important to poverty-reduction tool if it leads to increase on and off farm rural employment and income. Upgrading agricultural productivity alone is not a sufficient route out of poverty within a context of globalization and increasing natural resource degradation. But according to Lundy *et al.*, (2002) after harvest activities, differentiated value added products and increasing connectivity with access to markets for product produced by low-income producers would appear to be the strategy open to smallholders.

It also important to analyze the pro-poor growth approach by focusing approach like promotes economic potentials of the poor and disadvantaged groups of people (OECD, 2006). The main aim is to enable them to react and take advantage of new opportunities arising as a result of economic development, and thereby overcome poverty (Berg *et al.*, 2006). On other way, promote greater employment and income for all value chain enterprise and poverty alleviation by poor benefit at least equal or above average from the income generated. This show that Pro-poor growth is one of the most commonly quoted objectives of value chain promotion analysis. The

key criterion in this context is growth that benefits the rural poor to the greatest possible extent or, at least, does not worsen their position relative to other demographic groups.

It also seeks to identify long-term solutions to reduce the vulnerability of developing countries to fluctuating world market prices or inflation. It does not just focus on adding value to existing traditional commodity exports but also on promoting alternative products more over by combining, authority and power relationships that determine how financial, material and human resources are allocated and flow within the chain (Gereffi *et al.*, 1994). Means that, market shift by developing and transferring knowledge, resource to intermediaries and producers, so that they can adapt and maintain a competitive market position over time.

2.1.4 Overview of *Enset* Production in Ethiopia Economy

Enset (*Ensete ventricosum*) is a huge perennial herbaceous plant that grows 4-11 m in height. It is commonly known as “false banana” for its close resemblance to the endemic banana plant. It is Ethiopia’s most important root crop, a traditional staple crop in the densely populated area of south Ethiopia (George, 2004). According to Mous and Azeb, (2003) *enset* is confined to a relatively small region of the southwest, in areas dominated by speakers of Semitic, Cushitic and Omotic languages and contributes more than 10 million people in the South and South-western parts of Ethiopia (George, 2004). This shows that, the crop support high densely populated area by combating hunger to human, livestock and also important that rapidly increasing percentage of population portion below poverty line. Major use farmers as: food consumption, cloths, beds, houses construction and material, animal feed and plates (Brandt et al., 1997). This indicates that, the crop plays important role in economic activity especially in southern Ethiopian.

Sometimes, the cultivation of crop is mandatory when populations are dens and landholding size is small. According to Demekech (2008), about 400 *enset* crop grown in one hectare of land. Therefore, the cultivation of *ensets* increasing because the number of people per unit of land area that can be adequately fed by food than that of other crop and cropping system for the same agro-ecology and input.

Behind food consumption, it contributes to the on-farm conservation of agricultural diversity that provides a concrete evidence for positive environmental externality and societal services that benefit the welfare of society (Eyasu E., 2013).

And also for source of fiber, starch, local medication. This all show that, the crop play high role in country economic activity by improving food security of dense populated area and environment conservation.

2.1.5 Application of Value Chain Analysis on *Enset* Product

The value chain concept has been applied in both the crop and livestock sectors as an approach for assessing potential interventions from a development perspective (Rich et al., 2010). It also driving force for pro-poor initiatives and for connecting small businesses with the market (World Bank, 2006). Means that, the main source of employment, agricultural GDP, export earnings, and food and raw materials supplies to urban areas and food industries and produced by large numbers of farmers and consumed by large numbers of households.

Poverty rate in the rural and urban areas is significantly high 45.8% and 37%, respectively and more than 50% of the rural poor are found in the food deficit zones, where the staple food availability per household is half the national average level 530 kilograms per household, even in good years (IFPRI, 2005). And it also points out that, food availability per household in the food surplus areas averages 1,800 kilograms, which is 70 percent above the national average.

To come up poverty, *enset* crop must give emphasis because more than 20% Ethiopian rural population use the crop for food, animal feed and conservation of natural resources in life of this people. But absence of market opportunities, fair market deals, and produce low-quality products become *enset* producer farmer get less incomes from the sector. Increasing the integration of farmers into VCs to bring better benefits and fair share to enable rural farmers get better price for their produce. During value chain analysis on *enset*, chain map is developed that graphically presents the relevant market actors and their relationships with one another. Identified primary actors and their role in value chain participants and identify socio-economic factors affect the market access, input supply, technology/product development, management and organization, policy, finance, and infrastructure. It also assesses current existing value chain in study area.

2.2 EMPIRICAL LITERATURE ON VALUE CHAIN APPROACH

The empirical studies were reviewed concerning the different agricultural value chain by mainly focused on those studies that are directly or indirectly related to the variables or objectives of this study.

Dereje (2007), used value chain approach to study the competitiveness of Ethiopian coffee in the international market. The study indicates that Ethiopian farmers have low level of education, large family size with small farmland and get only 3% of the retail price in the German market. Thus, policy intervention was suggested to improve farmers' performance.

Jarso (2013), conducts the study of determinant of livestock value chain development for smallholder pastoralist Borena Zone. He stated that, factors that determine small micro pastoral in livestock value chain development are use of traditional livestock production system with less quality focused, product differentiation & demand driven, limited supply of production inputs (feed, breeding stock, and water), inadequate extension service, poor marketing infrastructure, lack of marketing support services and market information, limited credit services, absence of value chain actors integration, seasonality of demand and supply, poor enabling environment and natural resources degradation. He also adopts the probit model to estimate factors determining the decision to participant in value addition. Thus, policy intervention was suggested to improving access of production and input.

Akenbor (2011) _, conducted the study of an Empirical Investigation of Value-Chain Analysis and Competitive Advantage in the Nigerian Manufacturing Industry. He stated Lack of a significant relationship between Value-Chain Analysis and Competitive Advantage of manufacturing firms could be attributable to the inability of firms to identify activity drivers. Used Multiple Regression Analysis to estimate the impact of Competitive Advantage of a manufacturing firm in Nigeria.

Kindie et.al (2010) _, stated the Constraints and opportunities for enhancing the system Maize Value Chain Potential in Ethiopia. Maize is grown by more small-scale farmers than any other single crop in Ethiopia, and remains a central building block for the country's long term food

security. Government of Ethiopia along with its development partners have made great strides toward enhancing the productivity of maize with expanded access to hybrid varieties and improved extension.

Sandra (n.d) stated Maize and Soya Bean Value Chain Analysis; the processing soya bean into oils, cake flour and other products is a way of adding value. To develop sustainable strategies that involve the government, banks, NGOs in order to increase the production base of the maize sub-sector and have responsibility business mindset, access to finance, infrastructural support and access to transport and market. The farmer needs adequate financing on the farm and processing operations.

Jacques (2011), Agricultural Value Chains in Developing Countries a Framework for Analysis: he's theoretical study on value chains have provided valuable insights into their operations, our understanding of how value chains develop toward improved performance, termed 'upgrading', is limited. Give attention to the business environment in which chain actors operate. Value chain actors may be motivated to improve their position in the chain by changing their production of value added, their relationships (governance) with other actors in the value chain and by choosing different market channels for their products.

Biruhalem (2010), rice value chain in metema district, in his finding, there are multiple public and non-public actors involved along the rice value chain, upstream from input supply to downstream consumers, playing different role. However, there is no mechanism to coordinate multiple actors together for effective and efficient functioning of the value chain. There is public sector actors' domination with limited private sector involvement in the value chain. As to the linkage, weak and informal linkage between chain actors characterizes the rice value chain. Policy intervention created between value chain actors to create an enabling environment for sharing of information, knowledge and solves existing problems of shortage of rice polisher machine and input supply services.

2.3 CONCEPTUAL FRAMEWORK

The concepts of agricultural value chain have attracted many researchers in the advancing environment mainly for smallholders to be connect in the chain where producers and marketers need to be integrated and work together to discuss challenges and information (Joshua, 2010). Thus, value chain encompasses the full range of activity and service required to gives product or service from its production to its customer (Kaplinsky, - 2000). The value chain approach is particularly helpful in analyzing sectors where the buyers play the leading role in establishing the parameters of the chain, defining what, how, and under what conditions a product is produced, as well as who gets included and excluded from the chain (Gereffi and Kaplinsky, 2001). Value chain analysis is also useful as a fanatical tool in understanding the policy environment, which provides for the efficient allocation of resources within the domestic economy, notwithstanding its primary use thus far as an analytic tool for understanding the way in which firms and countries participate in the global economy (Morris, 2001).

In the context of food production, value chain activities include farm production, trade and support to get food commodities to the end consumer (e.g. transport, processing). Food value chain is the network of stakeholders involved in growing, processing, and selling the food that consumers eat or use finally. Collaboration among various stakeholders along food value chain is more important than other because the functions most closely linked along the chain and Knowledge and data sharing is also important area to collaboration among stakeholders to improve efficiency along the value chain. In addition, greater vertical integration within the value chain (e.g., retailer private label programs) means that individual stakeholders are taking on additional roles and responsibilities.

Figure 1 Food value chain sequence and function



Sources: Modified by Research from Deloitte, 2013

The value chain concept entails the addition of value as the product progresses from input suppliers to producers and consumers and it also available the concept of market chain. At concept of value addition in each stage in the value chain, the product changes hands through chain actors, transaction costs are incurred, and generally, some form of value is added and in market chain concept cash and value flow that transfer of goods or service from producer to consumer. A value addition result from diverse activities contains paking, cleaning, grading, and, transporting, storing and processing (Anandajayasekeram and Berhanu, 2009).

Figure 2 Agricultural value chain and related activity

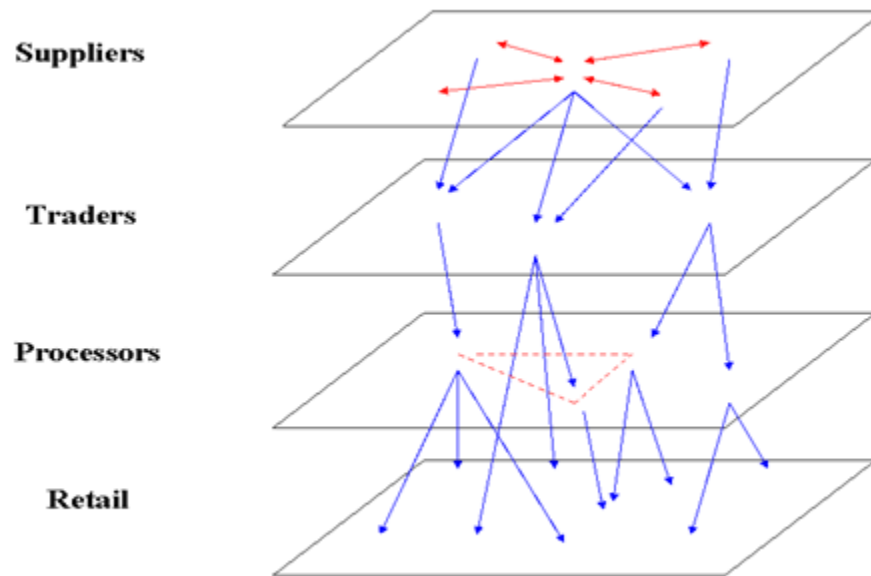


Source: Adapted from Anandajayasekeram and Berhanu (2009).

Value chain can be viewed as a set of actors and activities, and organizations and the rules governing those activities and management creating the added value at each link in the chain and a sustainable competitive advantage for the businesses in the chain. According to Porter (1985), value can be created by differentiation along every step of the value chain, through activities resulting in products and services that lower buyers' costs or raise buyers' performance. To food product value creation process has focused on commodities with relatively generic characteristics, creating relatively small profit margins.

In value chain analysis, vertical and horizontal integration are the two basic strategies that groups of farmers can use to improve their incomes. According to Lazarrini et al. (2001), diffing value chain analysis as network structure and linkage between the horizontal and vertical dimensions in value chains.

Figure 3 Relationships between horizontal and vertical dimensions of value chain



Source: Lazarrini et al., (2001).

The figure shows vertical relationships between the various value chain links and horizontal relationships between actors in the same link. Vertically relationships may follow all stages in the value chain like relationships between traders and retail. Horizontal relationships between actors can also have various shapes, such as farmer cooperatives or price agreements between traders. The structure of a network of figure is largely dependent on the market channel(s) that are chosen by various parties.

A marketing channel bridges the gap between producers and market and may be defined as a value chain or supply chain forming a “channel” for products and services that are intended for sale at a certain market.

III. RESEARCH DESIGN AND METHODOLOGY

3.1 DESCRIPTION OF STUDY AREA

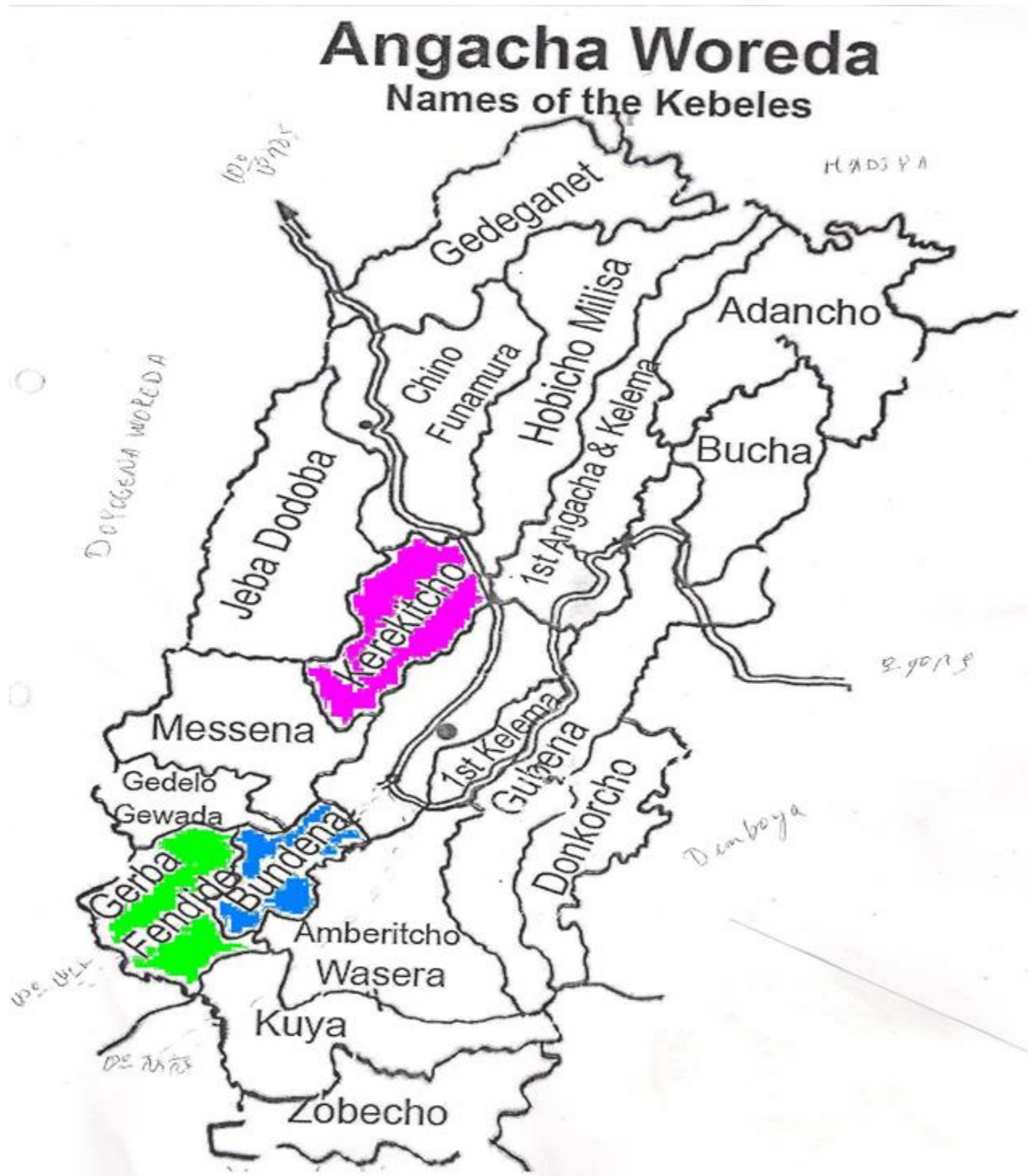
Kembata and Tembaro Zone (KT zone) is one of the 14 administrative zones within the Southern Nations Nationality and Peoples Region (SNNPR) of Ethiopia. It is situated approximately 250 km south west of the capital Addis Ababa. It contains seven woredes and one urban administration, Durame.

Angecha Woreda is one of the 7 Woredas in Kembata & Tembaro Zone. The administrative town of the Woreda is Angecha. Historically, the town is the first administrative center to be established in the Kembata region in early 1890s. Later in the early 1990s, Hosanna was established as a center of former Kembata Province. The land area of this woreda is estimated at 398.85 square kilometers, and bordered on the south by Kacha- Bira, on the west by Doyogena, on the east by Danboya, on the southeast by Kadida-Gamela woredas and on the north by the Hadiya Zone. Aggro-ecologically, woreda can be divided into Dega (35 %) and Woina Dega (65 %). The average elevation of the woreda varies from 1800 – 3020 meters above sea level. The average annual rainfall ranges from 1000 to 1400 millimeters with bi-modal rainfall pattern.

Based on the 2007 census, total population of woredas 98,726, and population of Household 16,730. Total land area coverage 17,454 ha. From this, cultivated land 14,203 ha. > 95% lives on agriculture, which is manifested by crop cultivation and animal husbandry. From cultivated land Enset covers 3,232 ha. Enset is the major food crop for peasant's families.

Out of the total cultivated land (14,203 ha) next to bread wheat *enset* ranks 2nd (3292 ha), 23%, in this woreda. The production of *enset* is most favored within the altitude range of 2000-3000. Some of the major benefits gained from the crop are: staple food for almost all of the farmers families and supplementary food for urban dwellers, covers about 50% of cattle feed, dried leaves sheathes used for carpet making & rope making, etc.(Woreda agriculture, 2007)

Figure 4 Location of study area



Source: Angacha woreda Administrative Office, 2012.

3.2 METHOD OF DATA COLLECTION

Cross-sectional data were used to collect the survey; different actors living in the selected districts of Kembata Tembaro Zone of Angecha Woreda and quantitative research approach were used to analyze data collection from household.

Primary data were collected by structured questionnaire from main value chain actors such as farmers, traders (wholesalers and retailers), processors, consumers (household and institutions). For each actor a separate questionnaire was used to gather information from respondents.

Secondary data were used to gather from Zonal and Woreda Bureaus of rural development offices, report of line ministries, journals, books, CSA and internet browsing, national policies, ILRI, and from Angecha *enset* project agro bio-diversity centers project. The outcomes of these studies were used to do a preliminary mapping of the relevant value chains and analyzing main finding. In addition, different literature and study findings were used as reference.

3.3 SAMPLING TECHNIQUES

3.3.1 Sampling Frame

For this study, in order to select a representative sample a two-stage random sampling technique was implemented. In the first stage, with consultation of woreda agricultural experts and development agent, out of 17 rural Kebeles of Angecha Woreda 7 *enset* producer kebeles were purposively selected based on the level of production, marketing and consumption potential. In the second stage, from identified or selected rural kebele 3 sampled kebele namely Bondena, Ambarich and Fundide were selected randomly. Then, stratified sampling methods were applicable to kept proportional size of selected kebeles. After selection of size of kebele, random sampling methods were applicable to select household.

3.3.2. Sample size determination

Farmers sampling

The sample size households were determined using a simplified formula provided by Yamane

(1967).
$$n = \frac{N}{1+N(e^2)}$$

Where: n = Sample size to be taken for the study

N = Total number of households living in three districts

e = Desired margin of error/ level of precision.

Accordingly, Angecha Woreda has 16,730 house hold according to 2007 census of woreda. With desire margin of error 0.091, total of 123 respondents were selected to represent the total population.

According to Kothari, the selection of sample size of kebele using stratified methods as follow

For strata with $N = 16,730$, we have $P_1 = 3454/16730$ $n = 123$

Hence $n_1 = n \cdot P_1 = 123 (3454/16,730) = 26$

$n_2 = 123(6060/16730) = 46$

$n_3 = 123(6902/16730) = 51$

Table 1 Sample size of each kebele

Woreda	Kebele	Total population	Sample size
Angecha	Bondmen	3454	26
	Ambaricho	6060	46
	Fundide	6902	51

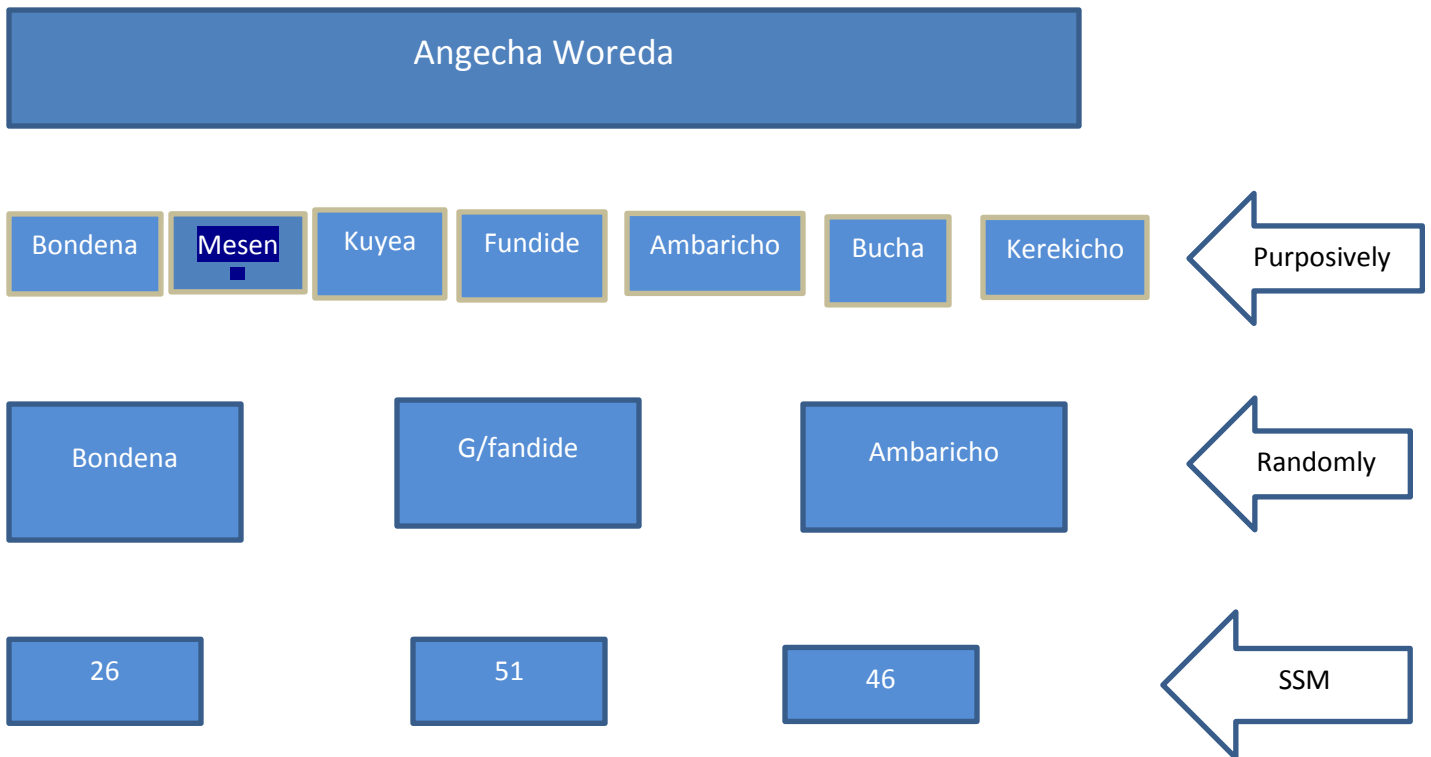
Retailers, Wholesalers, Processor and Consumer Sampling

For this study, data from traders and consumers were also collected. The two registered towns (Angecha and Halaba) were select proportionally based on their *enset* and *enset* products transaction and consumption potential. To obtain data from respective woreda on record list found of Retailer, wholesaler, and consumer. Only 1 farmer's *enset* product processor site in Angecha Woreda and 1 group-seven trading and industry factories found in Addis Ababa. To conduct formal survey, 9 and 5 retailers were interviewed from Angecha and Halab woreda, respectively by selecting randomly. In addition, only 2 wholesalers found taken Angecha woreda were and 1 *enset* producers' farmers association as *enset* product processors and G- seven factories included in survey. Furthermore, 18 and 12 consumers were interviewed from Angecha Woreda and Halaba Woredas, respectively by selecting randomly.

Table 2 Sampling respondent on *enset* value chain

<i>Enset</i> value chain Actors	Sampled selected
Producers (farmers)	123
Wholesaler	2
Consumers	30
Retailer	14
Processor	1
Fiber Factory	1
Total	171

Figure 5 Research design flow chart.



SSM – stratified sampling method.

3.4 METHODS OF DATA ANALYSIS

Two types of data analysis, namely descriptive statistics and econometric models were used to analyze the data collected from household and actors of the study area.

3.4.1 Descriptive

Method of data analysis included the use of statistics such as of ratios, percentages, mean and standard deviations, tables, and figures as well as value chain map were used to present the data in the process of comparing socioeconomic, demographic and institutional characteristics of households. Computer software SPSS versions 16 were used for analysis purpose.

3.4.2 Econometric analysis

To identify factors affecting farmers' participation on value addition, multinomial logit model was used. If there are a finite number of choices (greater than two), multinomial logit estimation is appropriate to analyze the effect of exogenous variables on choices. The multinomial logit model has been widely used by researchers such as Schup et al. (1999) and Ferto and Szabo (2002). It is a simple extension of the binary choice model and is the most frequently used model for nominal outcomes that are often used when a dependent variable has more than two choices. The results revealed that households accessed *enset* product value addition such as kocho, Bulla, fiber, processed kocho and combinations thereof. However, due to area practice/habit of choices, fewer representation and similar collection and operation practices, only households who had access to kocho, Bulla and fiber value addition were considered in multinomial logit regression. For estimation purpose, the base category used was value addition on kocho product; thus the model assessed the effects of various independent variables on the odds of two value addition versus access to kocho value addition. The general form of the Multinomial Logit model is (Greene, 2000):

$$P_{ki} = \frac{\exp(\chi_i \beta_i)}{\sum_{k=1}^J \exp(\chi_i \beta_j)}$$

For $i = 1, 2, \dots, N$; $K = 1, 2, \dots, J$

Where; i - represents i^{th} farm household, and $i=1, 2, 3 \dots 123$. J - Represents different value addition, $j=1$ for kocho value addition, $j=2$ for bulla value addition and $j=3$ for fiber value addition. P represents the probability of *enset* product value addition k to be chosen by farm household i ; x_i is explanatory variable vector that contains the set of factors about household attributes and socioeconomic and demographic characteristics; and b_j is a vector of parameters relating explanatory variables to the valuation of K value addition choice ($K=1, 2, 3$).

The marginal effects are obtained from the logit regression results by the following equation;

$$\frac{\partial P_{ji}}{\partial \chi_{ji}} = P_{ji} \left(\beta_j - \sum P_{ki} \beta_k \right)$$

Where β and P represent the parameter and likelihood, respectively, of one of the choices.

Marginal likelihood gives better indications and represents changes in dependent variable for a given change in a particular explanatory variable whereas holding the other explanatory variables at their sample means. The models are estimated under maximum likelihood procedures, which yield consistent, asymptotically, normal and efficient estimates. The data covered information necessary to make household the level of social, economic, demographic and institutional indicators comparable across different categories of households of *enset* value addition.

It is important to check Multicollinearity, Heteroscedasticity and Endogeneity problems before running the model. Multicollinearity problem arises due to a linear relationship among explanatory variables; and becomes difficult to identify the separate effect of independent variables on the dependent variable because there exists strong relationship among them (Gujarati, 2003). Variance inflation factors (VIF) technique was employed to detect multicollinearity in explanatory variable. According to Gujarati (2003) VIF (X_j) can be defined as:

$$VIF(X_j) = \frac{1}{1 - R_j^2}$$

Where, R_j is the multiple correlation coefficients between X_j and other explanatory variables. If the value of VIF is 10 and above, the variables are said to be collinear.

If there is Heteroscedasticity problem in the data set, the parameter estimates of the coefficients of the independent variables cannot be BLUE. Therefore, Breusch-Pagan test of heteroscedasticity was employed for detecting heteroscedasticity in this study.

The problem of Endogeneity occurs when an explanatory variable is correlated to the error term in the population data generating process, which causes, the ordinary least squares estimators of the relevant model parameters to be biased and inconsistent. The source of endogeneity could be omitted variables, measurement error and simultaneity (Maddala, 2001). Both Hausman test and Durbin-Wu-Hausman (DWH) test was applied to check the presence of endogeneity.

$$H_T = \frac{(\beta_{IV} - \beta_{PLS})^2}{V(\beta_{IV} - \beta_{OLS})}$$

3.5 VARIABLE SELECTION AND DEFINITION

In the course of identifying factors influencing *enset* product value addition choice decisions, the main task is exploring which factors potentially influence and how (the direction of the relationship) these factors are related with the dependent variables.

Value added product

This is a categorical dependent variable that represents *enset* value added product of the study area. The results revealed that households had three *enset* value addition and combinations thereof. However, due to mutually inclusiveness of addition, fewer representation and similar collection and operation practices, only households who had value added on kocho product, bulla and fiber product were considered in the regression. Accordingly, dependent variables were created from the data, which indicated value addition on (1) kocho product, (2) bulla and (3) fiber product. For estimation purpose, the base category used was value addition on kocho product; thus the model assessed the effects of various independent variables on the odds of two *enset* value added versus access to kocho value addition.

Distance to the market center (DIST)

This is a continuous independent variable measured in kilometer. The closer a household to the nearest urban center, the lesser would be transportation costs, loss due to spoilage and better access to market information and facilities. Berhanu and Moti (2010), found out opposite relationship between market participation and distance to the main market center. Therefore,

households who are at far away from urban center are hypothesized to affect the likelihood of value addition bulla product positively as compared with accessing other *enset* product.

Education of household head (EDU)

This is a dummy independent variable that takes the value 1 if a household head had attended formal schooling and 0 otherwise. Literate households are expected to have better skills and better access to information and ability to process information. Education plays an important role in adoption of new technologies and believed to improve readiness of a head to accept new ideas and innovations. It also enables a head to get updated demand and supply information. Therefore, formal education of household head is hypothesized to affect value addition on bulla product choice positively as compared with accessing other *enset* product value addition.

Age of household head (AGE)

This is a continuous independent variable that is measured in years. Tshiunza et.al, (2001), identified age of a household head as a major household characteristic that significantly affected the proportion of cooking banana plant for markets. They found out that young aged household heads tended to produce and sell more cooking banana than older aged household heads. Therefore, being young aged household head is hypothesized to affect both bulla and fiber value addition positively as compare with kocho value addition.

Sex of household head (SEX)

This is a dummy independent variable that takes the value 1 if the head of a household is male and 0 otherwise. Female contribute more labor in the area of feeding, cleaning of bans, milking, butter and cottage cheese making, sale and produce of *enset* products. However, such constraints as lack of capital and extension service, may affect female participation and production in *enset* crop. Due to their potential *enset* production advantages over female headed households, male headed households are expected to be more market oriented. Therefore, both male and female headed household is hypothesized to affect value addition of *enset* product choice positively as compared with other value addition.

Household size (HSIZE)

This is a continuous independent variable that is measured in the number of members in a household. Household size increases domestic consumption requirements and may render households more risk averse. Families with more household members tend to consume more *enset* product which in turn decreases *enset* market participation and marketed *enset* surplus.

Hence, controlling for labor supply, larger households are expected to have lower market participation. Heltberg and Trap (2002), Lapar et al. (2003), Edmeades (2006) and Berhanu and Moti (2010) found out opposite relationship between household family size and market participation of households. It is therefore hypothesized to affect value addition on bulla product is positively as compared with addition other *enset* product.

Access to extension services (EXT)

This is a dummy independent variable taking the value 1 if a household had access to *enset* product extension services and 0 otherwise. It is expected that *enset* product extension service widens household knowledge with regard to use of improved *enset* product technologies. Agricultural extension services are expected to enhance households' skills and knowledge, connect households with technology and markets (Lerman, 2004). The number of extension agent visits improves household's intellectual capitals and helps in improving *enset* production and impacts *enset* product value addition choices. Thus access to *enset* product extension service is hypothesized to affect value addition on bulla product choice positively as compared with value addition other *enset* product.

Access to market information (INFOM)

This is a dummy independent variable taking the value 1 if a household had access to market information services and 0 otherwise. Households marketing decision is based on market price information. Poorly integrated markets may convey inaccurate price information leading to inefficient product movement. Study conducted by Goetz (1992) on food marketing behavior showed that better market information significantly raised likelihood of market participation of households. Therefore, the variable is hypothesized to affect value addition on bulla product choice positively as compared with value addition other *enset* product.

Enset farming experience (EXP)

This is a continuous independent variable measured in the number of years a household has been engaged in *enset* farming. Households who have been in *enset* farming for many years are expected to have rich experiences regarding opportunities and challenges of *enset* production, processing and marketing. Therefore, the variable is hypothesized to affect value addition on bulla product choice positively as compared with value addition other *enset* value addition.

Landholding size (LAND)

This is a continuous independent variable measured in hectare. As input for enset production, land is very important for planting and development to enset crop. It is expected that as the size of land increases, the proportion of land allocated for feed development and improvement increases. However, in this study the variable is hypothesized to affect value addition on bulla product choice positively as compared with value addition other enset product value addition.

Income from non-farming activity (IFNFA): It is a dummy variable measured in terms of whether the household obtained income from other farming activities. It is one if the household is involved in non/off farm activities and zero otherwise. This income may strengthen farming activity on one side and may weaken it on the other side. But for this study it is assumed to have inversely relation with volume of enset product sales. Rehima (2006), who found that if pepper producer has non-farm income, the amount of pepper supplied to the market decreases.

Again, farmers who gain more income from non/off farm income want to supply their enset product decreases. Hence, off/nonfarm income is hypothesized to influence enset product value addition choice decision of producers.

Number of cattle (NUMCL): This is a continuous variable measured in house hold cattle unit. Farmers who have a number of cattle are anticipated to specialize in cattle production so that they allocate large share of their land for cattle production. On the other hand, it is assumed that household with larger cattle asset have better economic strength and financial position to buy sufficient amount of input (Kinde, 41 2007). But for these study cattle is hypothesized to influences volume of bulla value addition choice positively.

Membership of association (MEMA) it is binary variable and takes the value of one if the household is membership of any association engaged in any business, otherwise two. Thus association improves understanding of members about market and strengthens the relationship among the members. Therefore, it is expected to be associated with market value addition choice decision of enset producers.

Crop variety (CROV) it is continuous variable that house hold who has different crop variety experience at a given period of time. It is expected that at the community and household levels include a range of food-based activities that can maximize the availability of adequate amounts and greater variety of nutritious foods and who has different crop variety affect value addition on fiber product positively with value addition other enset product.

Own farm contribution (OWNF) a member of family size of respondent is a variable (nominal variable) measured family labor power. Enset production and marketing is labor intensive activity, since enset is bulky product in nature. Accordingly, families with more household members tend to have more labor which in turn increases the value addition choice of enset product. Therefore, the variable is hypothesized to affect value addition on bulla product choice positively as compared with value addition other enset value addition.

IV. RESULTS AND DISCUSSIONS

4.1. CHARACTERISTICS OF SURVEY RESPONDENT

4.1.1 Demographic characteristic of respondents

The total sample size of farm respondents handled during the survey was 123. Out of this interviewed *enset* producer householder, 65.9% of them were male-headed and 34.1% were female headed. Educational status of the respondent shows 28.5% are illiterates and 71.5% educated household. From this result we can understand that most of respondent have ability to read and write and get a chance to attending formal school. Which give them opportunity to fight extreme poverty and hunger in the study areas. The survey study also shows that, the community collects 66.7% income from crop production, 17.9% from animal rearing, 6.5% from *enset* production and 9% from trade. The results pointed out that, household produce *enset* mainly for home consumption, animal feed, home construction material and not for income generating.

Table 3 Demographic and socio-economic characteristics respondent

Variables	Items	N	Mean	S.D
Sex	Male	81	65.9	0.476
	Female	42	34.1	
Education	Illiterate	35	28.5	0.453
	Literate	88	71.5	
Marital status	Married	101	80.8	0.478
	Unmarried	22	17.6	
Source of income	Crop production	82	65.6	1.515
	Animal rearing	22	17.6	
	Enset production	8	6.4	
	Petty trade	5	4	
	Livestock trade	6	4.8	
N = 123,				

Source: own computations, 2016

Average ages of sampled respondents were 48.33 years; this shows that oldest household heads manage the family. The average family size of the respondents of study area was found 7.77. The minimum family member of respondent is 1 person and the maximum were 14 people. The family size is higher than the regional average of 4.9 (CSA, 2007). The reason for this seems to be that the community recognizes large number of extended family members as an asset. The average *enset* farming experience of respondents were 25 years.

Table 4 Respondent Demographic characteristics' of continuous variable

Variable	Minimum	Maximum	Mean	S.D
Age	27	80	48.33	10.805
Family size	1	14	7.77	2.130
Experience	6	58	25	10.579
N = 123				

Source: own computation, 2016

As most of other Ethiopian area, the farmers of the study areas were also engaged on rearing livestock aside crop production. The highest number of cattle was found in Bondena Kebele where mean low coverage of *enset* crop existed.

Table 5 Livestock ownership of the respondents by kebele

Livestock	Kebeles					
	Bondena		Fundide		Ambaricho	
	Mean	S.D	Mean	S.D	Mean	S.D
Milk cow	1.25	0.50	1.60	0.976	1.15	0.368
Cross breeding milk cow	1.05	0.218	1.33	0.651	1.21	0.592
Exotic milk cow	1.28	0.461	1.44	1.014	1.20	0.414
Non milk cow	1.14	0.378	1.29	0.461	1.16	0.376
Oxen	1.40	0.516	1.44	0.504	1.10	0.37
Total cattle	6.31	2.619	5.78	1.988	5.88	2.277
Donkey	1.20	0.414	1.03	0.18	1.03	0.174
Horse	1.33	0.816	1	-	1	-
N=123						

Source: own computation; 2016

4.1.2 Institutional Accessibility

Farmer distance to the nearest/village market and main/woreda market and access to information was institutional factors surveyed. Accordingly, from the survey, the sampled farmer's response that average distance to village market and main market were considered in Km was 1.68 and 6.48 and takes 22:35 and 1:26 minute for single walking respectively. Extension service was delivered by the woreda office of agricultural and natural resource office. Each sampled *Kebeles* had three development agents assigned to work; on natural resource, animal science and crop production.

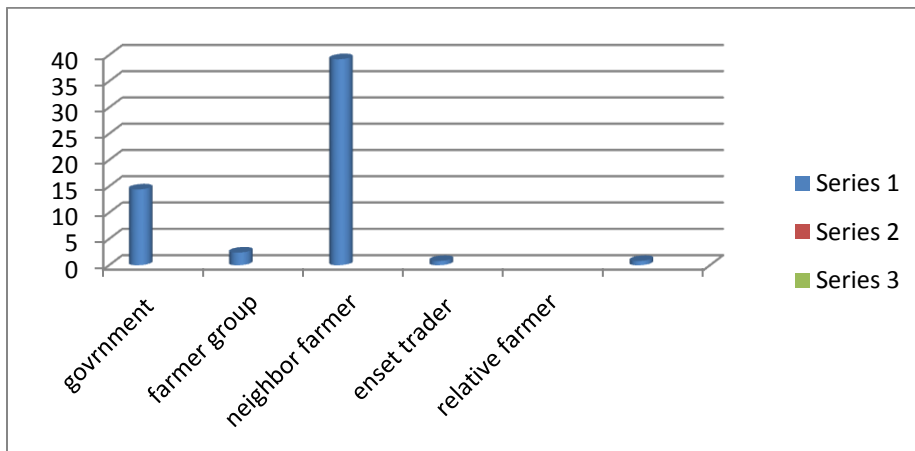
Table 6 Access to market and road

Distance to Village and Main market	Minimum	Maximum	Mean	S.D
From kebele/village Km.	0.50	6	1.6276	1.050
From woreda/main Km.	1	30	6.43	6.024
Time take at walking village market	1	55	22.18	10.217
Time take walking main market	1	90	20.37	19.152
N=123				

Source: Own computation; 2016

Survey data shows that, 50.4% householders have information before deciding to sell their product to market and 48% without any information: of the total householders 14.4% got information from government and 39.2% from neighbor farmer, 2.4% from farmer group and the rest has no any market information. It indicates that householders have weak market information.

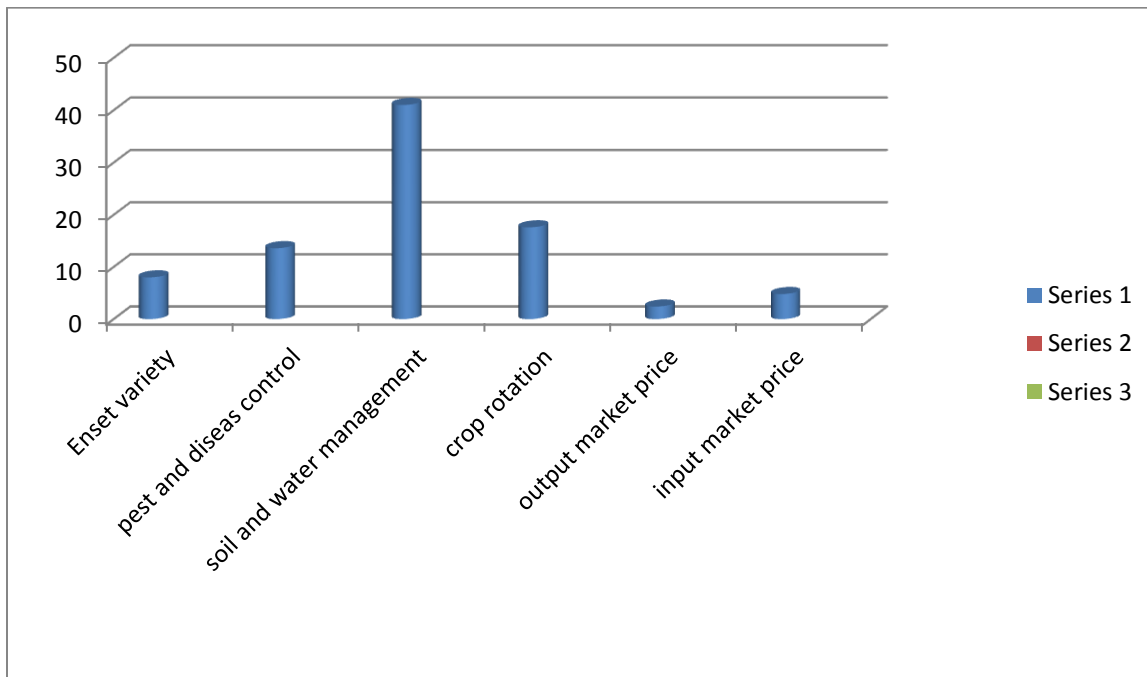
Figure 6 Market information



Source: Own computation; 2016

According to the survey, in the production year household received training and information from government extension service 41.6% on soil and water management, 13.6% on pest and disease control, 17.6% on crop rotation and only 2.4% on output market price and 4.8% on input market price given by NGOs.

Figure 7 Types of training



Source: own computation, 2016

4.1.3 Land size and Area Allocated to *Enset*

The average land holding size of the respondents was 0.86 ha which is lower than the national average holding size of household 1.22 ha respectively (CSA, 2007). Average land holding size coverage by enset product was 0.3218 ha. According to Nega B. et.al (n.d) size of land holding by enset (false banana) is very low in the dominant regions of the south, on average less than 0.25 ha, whereas wheat-dominant farming areas have the highest average size holding, about 1 ha. According to survey result average area of enset increases, averagely number of cattle decreases. Because of household feeding behavior is the main effect on enset crop.

Table 7 Land holding size of respondent by Kebele

Kebele	Total land holding		Area of enset covered	
	Mean	S.D	Mean	S.D
Bondena	0.4846	0.25672	0.1775	0.09327
Fundide	0.7614	0.36575	0.3884	0.70551
Ambaricho	1.1428	0.90516	0.3353	0.16144
N= 123,				

Source: Own computation; 2016.

4.1.4 Social net-work activity

According to survey, 52% relative, 48% non- relatives’ supporter engaged critical time of production, plantation and harvesting time. This activity increases the interconnectivity among the household and allow opportunity to share idea about crop. It also shows that, *enset* production is more labor intensive crop.

The survey show that, in market activity 31.7 % retailers, 21.1% wholesalers, 7.1% processors and 39.2% consumer trust to buy enset product from household. But producer highly trust to sale their product 24.8% to retailers, 13.6 % to consumer and 59.2 % wholesaler.

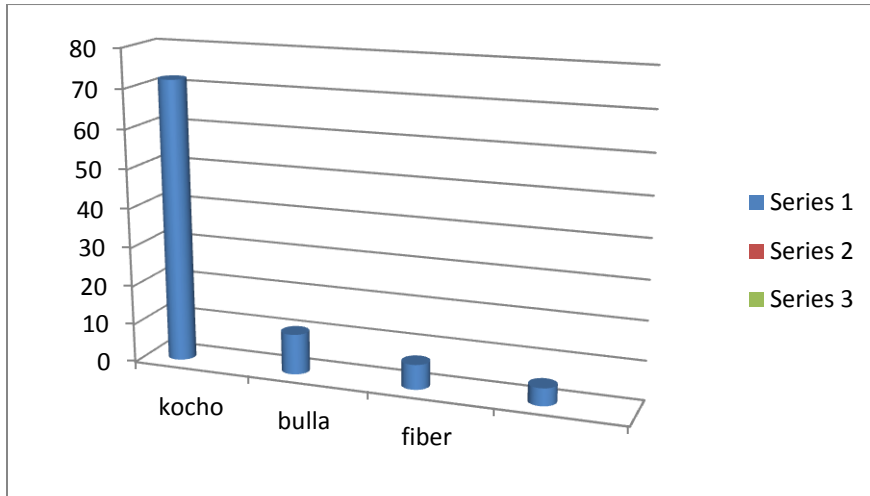
Figure 8 Trade linkage of chain actors



Source; own computation, 2016

From the total householder, 72 % kocho, 10.4% Bulla, 6.4% Fibers producers are willing to sell their product and the rest not like to sell. If the crop fail by drought or disease, 50.4% householders supported by government and 42.3% not.

Figure 9 Enset product sold by producer



Source: own computation, 2016

4.2 ENSET VALUE CHAIN ANALYSIS

Value chain mapping help to identify the different actors involved in the value chain, and to understand their roles and linkages. Therefore, understanding of value chain for *Enset* production is paramount important to examine factor that affecting smallholders' farmers to meet market requirement and demand conditions through improving competitive and efficiency. In this key informants were given to map *enset* product core process, actors, vertical and horizontal relationship, channels, and end market analysis, which summarized below.

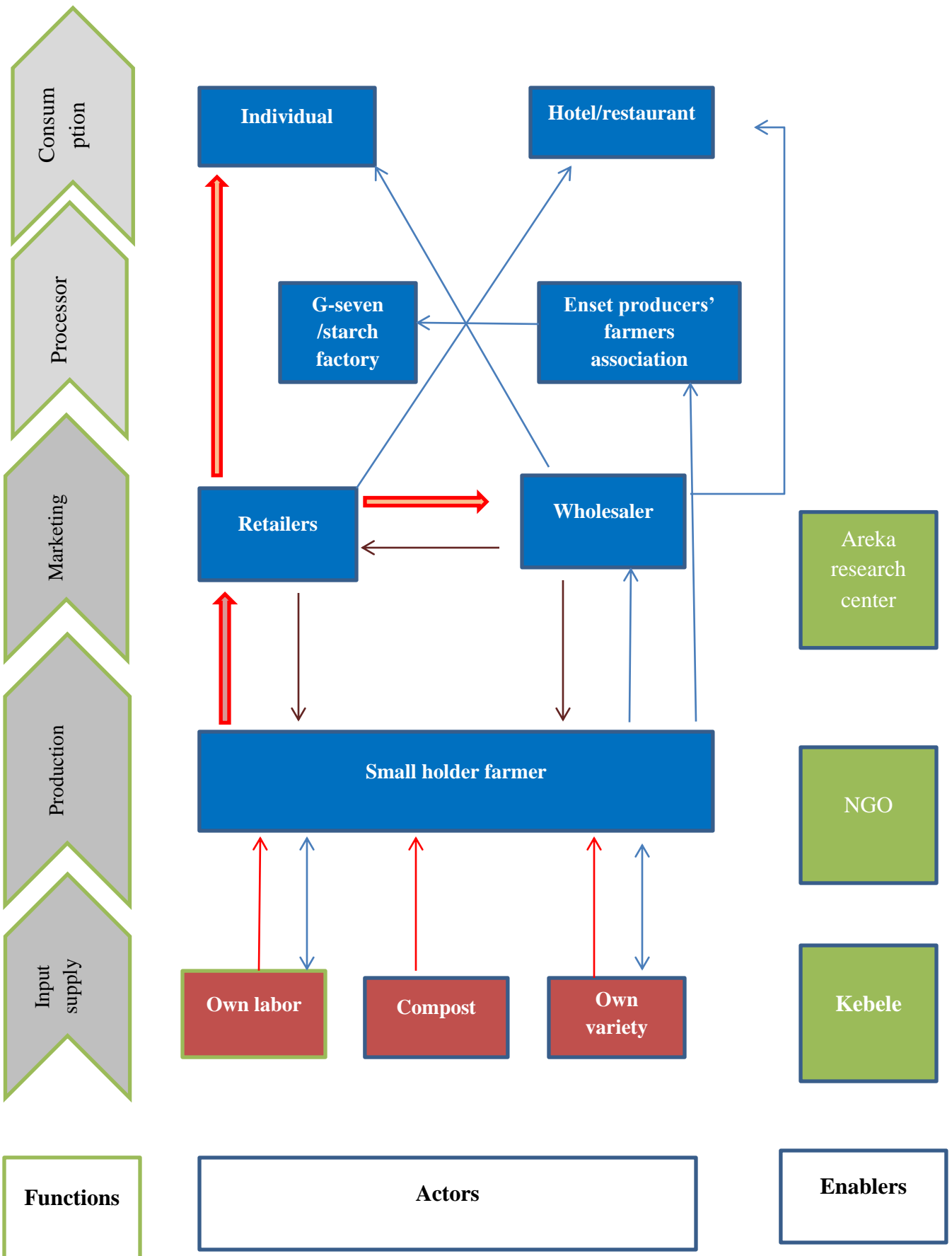






Figure 10 Current value chain map of Enset product in Angecha woreda

-  Represent the flow of much of product
-  One-way information flow
-  Physical flow of input and product
-  Two-way flow of information

4.2.1 Input supply

Input supplies are not core process in *enset* value chain. The study revealed that the major input supplies that required in producing value added *enset* products were: animal manure, compost, variety and labor contribution. Animal manure and compost produced locally by farmers and used local variety mainly from neighbors. According to the survey, all producers use local variety with traditional manner and own labor contribution. Production of *enset* is labor intensive and involves many steps to compare other crop in plantation, harvesting and post harvesting.

4.2.2 Enset production

The production is the basic segment for any value chain analysis and it is the pivotal point where interventions make the value chain to develop and attain competitiveness. The improvement made in this level of the chain could have a significant implication in enhancing competitiveness in all other levels of the chain for agricultural value chains. The smallholder *enset* producers produce mainly for home consumption and for animal forage. The *enset* producer interviewed indicated that *enset* is the most important sources of food to meet the household's hunger, medical purpose, home construction and less important to marketing activity and protect other household assets. This show that household *enset* product is not as first preference to sell and market activity because of absence of information, improved variety, quality problem and so on.

4.2.3 Enset Marketing

The study show, marketing is other core process of *enset* product value chain in study areas. Kocho, bulla and fiber are traded products of the study area. Marketing involved market decision, transportation and distribution to market and final to end users. Marketing decision was having willingness to sell and choosing types of *enset* product being sold. *Enset* product sourced from the study areas were moved from producers to primary, secondary markets and transported to final markets. The number of *enset* product marketed by the different actors to the various end markets depended on the ability of the actors and demand in the destination markets.

According to the survey, the main reasons for producer trade their enset product were to settle debt, replace older stock, cover school fee, and cover health and education.

4.2.4 Processing

Processing is one of the core value addition functions in enset value chain. It mainly for consumption purpose. The processing activity mainly done in study area by Angecha Woreda enset producers and exchange farmers association and Group seven/G-seven/ factories found in Addis Ababa. Not all enset product, bulla and fiber product only advanced.

4.2.4 Consumption

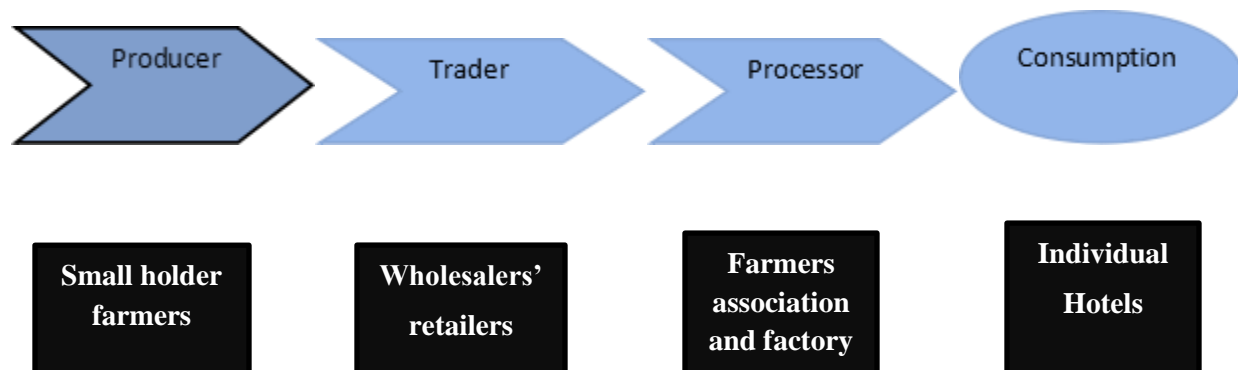
Enset products are consumed by the people of the small household producer and transported to other parts of the Woreda consumers. From study area especially Halaba Woreda more consume than other area towns.

4.3 ACTORS IN ENSET VALUE CHAIN

Value chain actors are classified as those individuals who take ownership of a product, through the exchange of money or equivalent goods or services, during the transaction process of moving the product from conception to the end user. It means that, directly involved in the value chain (rural and urban farmers, cooperatives, processors, traders, retailers, cafes and consumers). Therefore, understanding of these actors helps to identify factors affecting smallholder enset producer in value addition development.

The primary actors common to the enset value chains in the study areas were producers, traders, processors' and consumers.

Figure 11 Enset value chain main actors in study area



4.3.1 Producer

Production is the basic segment for any value chain analysis. Smallholder farmers are the main producer and input supplier in *enset* product value chain. The major value chain functions that *enset* growers perform include land preparation, planting, weeding, pest/disease controlling, harvesting and post-harvest handling.

The high altitude agro-climatic conditions can make growing *enset* crops highly productive, effective, competitive and provide vast opportunities in study areas. Unfortunately, these opportunities have not been exploited by the farmers due to the lower price they receive for their produce in the markets, disease wilt, as well as bearing the cost of post-harvest losses. According survey, 50% of household get low yield because of disease bacteria wilt, current product of variety and related problem.

Enset production are the main product of small farmers in study areas, produces as combination of other crop like white, potato, barely and other. According survey, house holders produce two times in a year (December and June) and get average 41.62 kg of kocho, 11.74 kg bulla and 3.22 kg of fiber from one *enset* plant and also indicate that, on average 7 *enset* crop uses in one production time. The farmers also supply to market on average 260.70 kg kocho, 44.90 kg of bulla and 14.21 kg of fiber in a year. Farmers supplied and produced own input like manure, compost and local variety. Producer use the *enset* product to home consumption for extensive family size. Post-harvest handling, which includes different activity like sorting, storing, packing, transportation, is done by the farmer themselves. All farmer use underground storage and *enset* life to packing. The survey result show that, more household use animal and human back and wholesalers use truck means of transportation.

Table 8 Average produced and supplied of *enset* (kg)

Product	Gain from one crop	Supply in year
kocho	41.62 kg	260.70 kg
Bulla	11.74 kg	44.90
Fiber	3.22 kg	14.21

Source: own computation, 2016

4.3.3 Traders

There are three traders existing in study areas as value chain actors such as retailers, farmer association and wholesalers.

Wholesalers

Mainly found rural wholesaler and involved in buying from producer and retailers in large volume than any actors and supplying them to retailers and consumer. According to the survey, wholesaler have no legally licensed and register, only two found in Angecha Woreda. This wholesaler buys *enset* product from retailers and producer directly, then transit to Halaba Town and they sell the product to consumer, retailers and hotel/restaurant. Moreover, they largely buy and sell kocho and bulla product, store product more than seven days before selling /until market day /and use truck as transportation.

Retailers

They involve in chain buying *enset* product, transport to main market, display and sell to consumer and wholesalers in study area. According to survey retailers have no legal licensed and registered they buy and sell largely the product kocho and bulla from farmer. Retailers buying the product considered color, texture, smell and water/moisture contain of the product. Wholesaler transit from Angecha Woreda, sell the product to consumer and retailers. January, February and May month are the peak month of selling and buying *enset* product to retailers. In the case of Alaba, retailers are the final link between producer and consumer. Consumers usually buy the product from retailer because they offer according to requirement and as ability of buyers.

Farmers association

These farmers' association found at Angecha woreda level and act like processing and selling. They buy *enset* fiber from farmers and bulla product large volume and sell to factory and consumers respectively.

4.3.4 Processors

There were only one Angecha Woreda *enset* producers and exchange association as processors found 2004 E.C. According survey association main function are buy *enset* product directly from producer specially bulla and fiber, upgrading bulla product means filtering and puking by plastic means of increasing utility then sell to hotel, consumer and starch factory.

Another activity association is buying fiber product from producers and sell the fiber product to G- seven PLC. They buy fiber product directly from association for further processing. Factories found in Addis Ababa and fabricate sack, rope, mat, and other product. Sack product produce mainly for coffee exporters.



Figure 12 fiber product produced by G -seven factories

Source; Own survey computation, 2016.

3.3.5 Consumers

The consumers are final end users of products. The final end users in the study are individual household consumers, hotel, Angecha and Halaba special woreda.

Individual consumers

Consumers are those purchasing the products for consumption. The private consumers are employees, urban and rural dweller who has high family size consume as staple food than less family size and income. Private consumers purchase *enset* product directly from producers, retailers and wholesalers though most of the consumers purchase from producers and retailers. Farmers also make important segment of the rural consumers since they consume part of their produces. The survey result also showed that, average 71% of *enset* products were consumed by producers.

Consumers prefer quality like color and less water contain, texture, nice smell and variety. In general consumers have their own quality and trained criteria to purchase enset product.

Hotel/restaurant

Hotels are important actors in enset product value chain. Hotel owners buy kocho, bulla either from producers, wholesaler and retailers in the market. At current time most hotels found in two towns use *enset* product kocho and bulla product to produce cultural food kitfo.



Figure 13 Major types of food of enset production

Source: own survey computation, 2016

4.4 SUPPORTING ACTIVITY

Actors who support the main value chain by designing the way how handle raw materials for the product, giving training and extension services, information, financial and research service.

4.4.1 Training and extension service

Government of kebele and NGO like Agro-bio diversity *enset* project of Angecha site, the main source of training in the woreda. The survey result revealed that 13.4% sample of respondent participate *enset* training that organized in last year by *enset* project. The result also shows that most of training given by government body on soil and water management, cereal disease control and crop rotation. The implication tells even governmental has not given attention to *enset* crop and no training given marketing, variety, and disease control.

4.4.2 Information

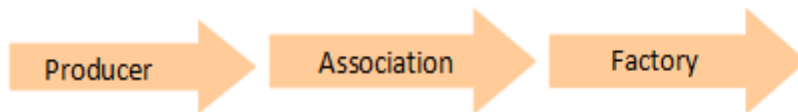
Information in value chain is important to know the market level of product whether cost of the product increase or decrease and compete with other producers. From the survey 49.6% has information of market the rest 42.3% no information. From the above informant 32.5% get information from neighbor farmer, 13% from government.

4.5 MARKET CHANNEL AND OUTLET

A 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 (Kotler and Armstrong, 2003). The analysis of marketing channels is intended to provide a systematic knowledge of the flow of the goods and services from their origin (producer) to the final destination (consumer). Enset markets channel start from producer and the marketing activity also collection of rural traders on terminal of market. The final users of product are consumer with in woreda and outside. Enset product are channeled, association, traders, hotel/restaurant, factory, then consumers.

Figure 14 Enset product marketing channel of Angecha Woreda

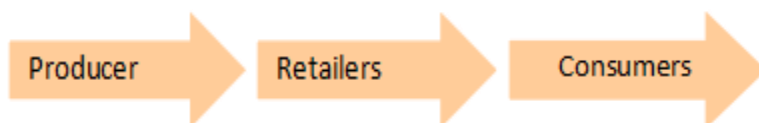
Channel 1; Enset product purchased by factory for further production process.



Channel 2; Enset product directly purchased by consumer in study area



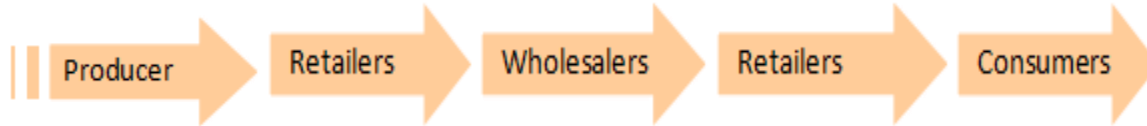
Channel 3; product purchased by retailers, then consumers



Channel 4; Enset product purchased by wholesaler for further sell.



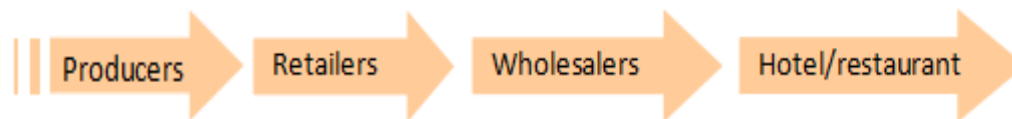
Channel 5; Enset product purchased by further marketing activity purpose.



Channel 6; Enset product purchased by hotel/restaurant from retailers.



Channel 7; enset product purchased by hotel from wholesalers



Source: own computation, 2016

4.6 Calendar

It shows activity of enset production of Angecha Woerda starting from land preparation to marketing activity.

Figure 15 Enset product calendar

Month	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	may	June	July	Aug.
Land preparation												
Planting												
Weeding												
Harvesting												
High Marketing												
Low price time												
Medium price time												
High price time												

Source; own survey composition, 2016

4.6 IDENTIFICATION OF FARMERS PARTICIPATION ON VALUE ADDITION

As a results of rising in population, urbanization and economic growth, the demand for value added *enset* products are hastily increasing. These rapid growths will have a strong impact on the markets both creating opportunities for the smallholders but also posing significant threats. It will make trade chains are becoming more complex with the standardization and food safety requirements. In these increase sector, many factors limit smallholder participation in value added production and marketing activity. Within this context, this chapter is focused on identification of factors that determine participation of smallholder *enset* producer value addition so that they develop effective, market-oriented *enset* production capacity that can potentially increase output quantity, quality and prices; and improve margins with more efficient production and distribution technology.

4.7 PARTICIPATION IN VALUE ADDITION (multinomial regression)

To analyze factors affecting farmers' participation on value addition, multinomial regression was employed. Fifteen explanatory variables (eight continuous and four discrete), were hypothesized to influence the probability of participation decisions and included in the analysis. However, prior to running the final regression analysis, both the continuous and discrete explanatory variables need to be checked for the existence of multi-collinearity using Variance Inflating Factor (VIF).; i.e. VIF are below 10 according to robust (stata) there is no strong association among the explanatory variables the results presented in Table 9 therefore, all of the proposed potential explanatory variables were included in the final multinomial logit regression.

Table 9 VIF test result for continuous explanatory variables

Variables	1/VIF	VIF
HSIZE	0.905	1.105
AGE	0.432	2.316
EXP	0.409	2.445
LANDE	0.609	1.642
CRPV	0.553	1.807
CL	0.849	1.178
DISTV	0.647	1.545
DISTM	0.477	2.098
OWNFC	0.628	1.593

Source: Survey result, 2016

Endogeneity test results show that Durbin Watson test is 1.990 means that the Durbin Watson test around 2 is that no correlation between among error terms or not reject the model or it free from endogeneity detection. When it neither come around to zero nor free from endogeneity problem.

Table 10 Endogeneity test

R square	S.E	Durbin Watson
0.71	.636	1.900
.142	.618	
.207	.599	

Source; own computation, 2016

Factors affecting *enset* product value addition choices.

The multinomial logit model has been estimated by the maximum likelihood method. The overall model was significant at 0.01 significance level indicating 95% confidence level that the explanatory variables included in the model assessed the effects on the odds of two *enset* product to other *enset* product kocho to value addition producers as indicated by the log pseudo likelihood value of -62.409781. Moreover, based on the pseudo R² of 0.3132, the model appears to have a good fit to the data.

Out of 15 explanatory variables included in multinomial logit model seven variables to bulla value addition and five variables to fiber value addition found to affect value addition choice as compare to kocho product value addition.

Table 11 Multinomial Regression

Symbol	Bulla	Marginal effect (bulla)	Fiber	Marginal effect (fiber)
Constant	1.675924 (0.669)	-	14.04277 (0.040)	-
HSIZE	0.418228 (0.779)	7.76106 (0.785)	0.2257631 (0.419)	7.76106 (0.559)
SEX	-2.761429 (0.023)**	0.707965 (0.029)	-1.108687 (0.585)	0.707965 (0.889)
AGE	0.0116583 (0.813)	49.0265 (0.808)	0.0598082 (0.423)	49.0265 (0.542)
EXP	0.0882824 (0.073)*	25.8053 (0.069)	0.0732970 (0.358)	25.8053 (0.599)
EDU	1.3242208 (0.086)*	0.716814 (0.032)	-1.539081 (0.184)	0.716814 (0.445)
LANDE	4.585196 (0.075)*	0.287248 (0.057)	-13.80082 (0.041)**	0.287248 (0.424)
CRPV	0.082122 (0.462)	8.39823 (0.430)	0.7434782 (0.021)**	8.39823 (0.409)
INFOM	0.8622843 (0.192)	4.43363 (0.193)	-1.513765 (0.158)	0.530973 (0.486)
DISTV	0.0616238 (0.866)	0.530973 (0.195)	-4.2654 (0.006)***	1.68761 (0.409)
DISTM	0.1548611 (0.086)*	1.68761 (0.820)	0.1079867 (0.457)	6.47345 (0.409)
OWNFC	0.2336842 (0.481)	6.47345 (0.068)	-2.035719 (0.038)**	1.78761(0.512)
EXT	1.237558 (0.068)*	1.78761 (0.453)	1.01342 (0.364)	1.20354 (0.414)
NUMC	-2.543799 (0.001)***	1.20354 (0.069)	2.539073 (0.045)**	1.46018 (0.770)
MEMA	0.2356713 (0.201)	1.46018 (0.001)	0.1646754 (0.516)	4.43363 (0.550)
IFNFA	-1.644677 (0.160)	4.43363 (0.193)	-0.8796008 (0.644)	1.27434 (0.770)

Number observations =123; LR χ^2 =56.93; Prob > χ^2 = 0.0021; Pseudo = 0.3132; Log likelihood = -62.409781. ***, **, and * indicate the significance level of 1, 5 and 10%, respectively. Numbers in bracket indicate that significant value. Source: own computation, 2016.

***Enset* farming experiences**

Number of years a household has been in *enset* farming positively and significantly affected accessing value addition on bulla product as compared with kocho product. The marginal effect indicates that the likelihood of participating in bulla product value addition increases by 6% as compared with kocho product for an increase in daily farming experiences by year.

Education

The obtained result for this variable confirms that access to education significantly influences the likelihood of participating in value addition. It shows that, household who are more educated likely to participate than their counterparts, *ceteris paribus*. The marginal effect indicates that the likelihood of bulla value addition increases by 3% as compared with kocho product as the farmer level of education increases by one unit.

Land size of *enset* plant

Landholding sizes covered by *enset* plant were positively and significantly affected bulla product and negatively and significantly effect on fiber product value addition as compared with kocho product value addition. The marginal effect of land size of *enset* covered shows that the likelihood of bulla product value addition increases by 7% and 6% decreases fiber as compared with kocho value addition for a hectare. This tells that house holder increase coverage of *enset* crop mainly for consumption and different *enset* variety. This different variety is not safe for fiber product means be tender this cause bulla production increase.

Crop variety

Number of crop variety negatively and significant factors on value addition on fiber value addition as compared to kocho product value addition. The marginal effect shows that the likelihood of fiber value addition decreases by 40% as compared to kocho value addition for a variety increases.

Distance to the market center

Distance to the main market center positively and significantly affected value addition on bulla product and distance to village market center negatively and significantly affect value addition on fiber product as compared to kocho product. The marginal effect indicates that the likelihood of bulla value addition increases by 82% and fiber product decreases by 40% as compared with kocho value addition for a km distance to market center. House hold gets more bulla consumer at

district/main market and decreases value addition on fiber in village market because of low price in village market.

Number of cattle ownership

Numbers of cattle owned by a household negatively and significantly affect the value addition of bulla product and positively and significantly affect fiber product value addition as compared to kocho product value addition. The marginal effect shows that the likelihood of value addition on bulla product decreases by 1% and 7% increases by fiber product value addition as compared to kocho product for an addition by one cattle population. This shows that households use enset product highly to animal feed and affect value addition on consumption part and increase fiber product value addition to produce animal rope and home construction.

Access to extension service

Access to enset product extension service positively and significantly affect value addition on bulla enset product as compared with kocho product value addition. The marginal effect shows that the likelihood of value addition on bulla product increase by 6% as compared with kocho value addition for an addition of household who accessed extension service.

4.8 CHALLENGES AND OPPORTUNITIES IN ENSET VALUE CHAIN

A number of factors that affect farmers value addition on *enset* product, traditional production system, absence of improved supply of inputs (variety, pesticide, insects), inadequate extension service, poor marketing infrastructure, lack of marketing support services and opportunity for upgrading the product. In this subsection, the major challenge and opportunity on value addition are briefly discussed.

4.8.1 Production constraints

There are factors that hinder the production of *enset* products in the study area. According to survey, majority of the *enset* producers indicated that absence of improved variety, pesticide, diseases, insects, drought, absence of improved technology and lack of good management practice.

Table 12 Major constraints of enset production

Major constraint	Frequency	%
Lack of improved variety	123	98.4
Disease/wilt	93	74.4
Drought	22	17.6
Pest	6	4.8

Source: own survey, 2016

Limited access and supply of agricultural inputs

The most important physical inputs for *enset* production are local variety, compost, and rain water. Research and extension services, information and appropriate technological support are non-physical inputs that are equally important for lower yields. Among the total sample of respondents, 98% replied limited access and supplied local input (Table, 12). Absence of improved seed variety can make current production low. Utilization of improved seed mainly focuses on few crops like maize and wheat. This is caused mainly due *enset* product less productive and improvement in technology.

Diseases and pests

This is directly related to improve input access problem. 74.4% bacteria wilt mainly creates these problems in addition to the problem of seeds and chemical fertilizers. This causes by using poor quality and unimproved local variety seeds. The other reason for this problem is the problem of management skill. Traditional farmer skills and knowledge on production and farm management creates such problems. This is mainly related with poor extension service in the areas.

Figure 16 Enset killed by bacterial wilt



Source: own survey, 2016.

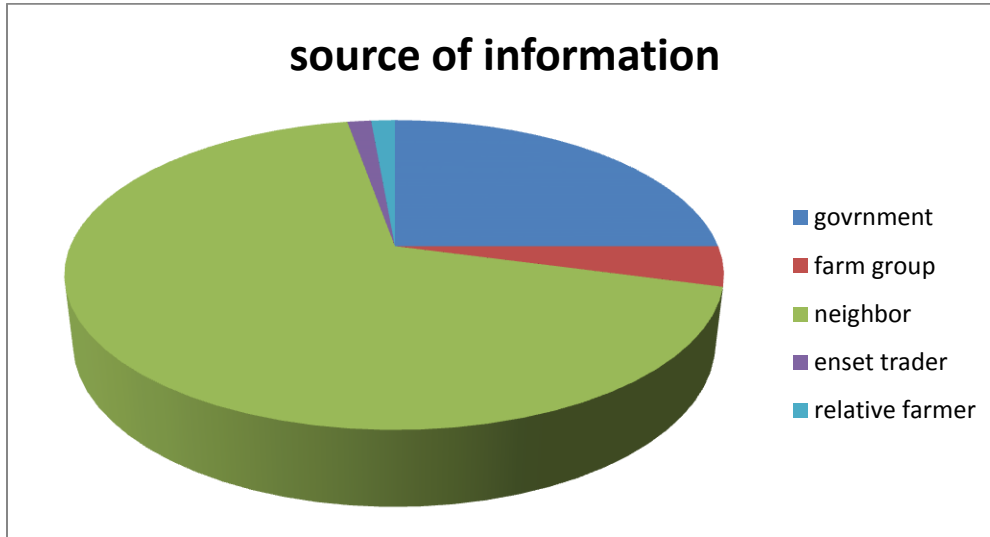
Householders have listed some of the measures used to control these diseases. Among these, use of healthy, disease-free suckers for planting material; destruction and controlled movement of diseased plants; cleaning of equipment that has come in contact with diseased plant material; and rotation of crops.

Marketing constraints

Low market opportunities associated by low price of product, lack of transport, low quality product that cannot meet consumers demand. Traders engage in *enset* value chain confirmed that there is marketing problems in *enset* product value chain. The major marketing constraints

mentioned by traders are related market information flow hence 50.4% householders inform before to sell product, 48% has no information. It depends on neighbor farmers and traders price information for marketing decisions.

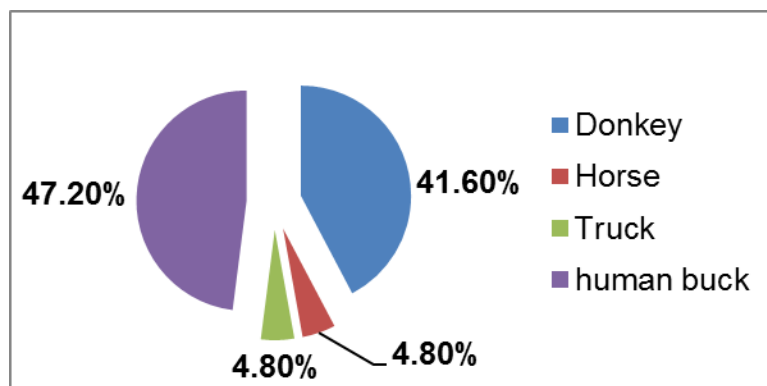
Table 13 Source of information



Source: own computation, 2016

According to survey, 22.4% consumers in Angecha woreda and Halaba woreda mansions' qualities are low quality problem and for 68.8% high problem. Traders also mention that the main causes of these problems are quality of input, lack of processors and normal chain condition of the market. The survey shows that, 7.9 Birr average price kocho, 25 Birr for bulla and 16.5 Birr for fiber. Prices are determined with visual observation and approximation weighing with hand. This the limited power of price setting, the problem of supply shortage product.

Table 14 means of transportation



Source: own computation, 2016

Supportive actors

Poor access of extension services: DAs in the sample PAs, SMSs and officials from DoARD identified lack of technical skill on enset production and management, absence of manpower who are specialized /have experience on enset production, absence of training and production manual, high work load with non-extension activities (mostly of political), and lack of transportation and material facilities as main challenges faced to provide quality extension service.

From the side of research, absence of researcher challenge to develop appropriate enset technologies and deliver technical back stopping for respective end users. Currently, agronomic research activities have been under taken by researchers from cereal research program as a part time. Moreover, the key informants reported that, since enset is recently introduced crop and the researchers are also young and recently recruited, there is limited knowledge among the researchers about pre and post-harvest handling of enset production.

Officials from primary association in the sample household member of association also identified the major challenges that they encountered in carrying out of their role like; participate in enset product marketing and provision lack of transport facility to distribute their product to association, and absence of storage facility.

Furthermore, low level of managerial skill of primary association committee members and their bias to their personal business were pointed out as a cause for inefficient service provision of such members.

Natural factors

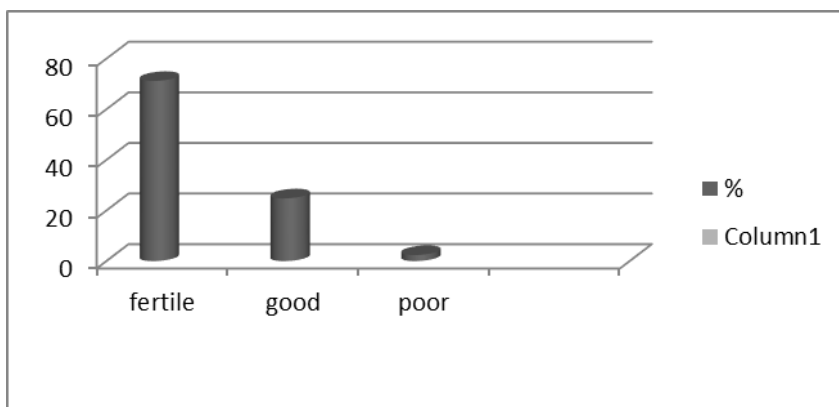
Natural factors such as drought, frosts, rainfall, water supply and flood are often beyond the control of farmers and institutions.

4.8.2 Production opportunities

Availability of favorable soil type, abundant underground water potential, climatic conditions, length of time of production, high productivity in small land area, drought tolerance, high crop preference for household consumption especially of its compatibility for traditional food making like *kitfo* and *Kocho* and high market demand were some of the opportunities of the crop by most of the producers.

Angecha is one of the potential areas of the south region to grow enset crop. According to CSA (2007), average elevation of the woreda varies from 1800 – 3020 meters above sea level. The average annual rainfall ranges from 1000 to 1400 millimeters with bimodal rainfall pattern is appropriate to enset production. The survey result show that 71.2% fertile, 24.8% good and 2.4% poor soil structure and respondents mentioned the availability of favorable land (soil with vertical nature and high water holding capacity) and climatic condition as an opportunity to grow enset in the area.

Table 15 soil type



Source: own composition, 2016

Presence of high consumer demand

The study revealed that existing of high demand for *enset* products in the domestic consumption have induced rapid growth in the *enset* value added production and marketing system. Even though *enset* marketing has not been fully developed yet in the area, there is high *enset* product demand for consumption purpose in the study area or neighboring areas; Angecha and Halaba Districts. There is a growing demand for food self-sufficiency and food security since Alaba area is one of low land area which frequently drought taking place and dominant on maze production. For this especially august up to October, high *enset* product demand for consumption in area. According to survey, 72% of hotel consumers prefer kocho or bulla to eat with kitfo from enjera.

Increases institutional demand

The growing demand of institution more influence producer to produce and specialize on *enset* product. Two factory group seven /G-seven/ trading and industry PLC and starch factory. According to survey, G-seven industry buy fiber product from farmers' association and pay with 1 kg special A fiber 17 birr. This is better price for normal market price. And starch factory buys bulla product from farmers' association and it also pay 40 birr in 1 Kg which is two-wise from normal price. But the area of producers or shortages of supply challenge the factory.

Table 16 Enset product price

Product	Price of normal market	Price of institution
Bulla	25	40
Fiber	13	17
N=123		

Source; own computation, 2016

Source of smallholder income, employment generation and poverty reduction

The study depicted that existence of huge stock *enset* product with potential of value additions, has considerable opportunities for smallholder income and employment generation. According from survey, 6.4% get income from the sector. Even, value added *enset* product increase margin of producer, employment generations for processors and traders, and competitiveness of the value chain. Furthermore, a high-value *enset* product in producer community and development of the sector has strong potential to contribute significantly to poverty alleviation and consumption in the country as well.

Existence of supportive enset development actors

According to study results, there are the presences of different projects such as Agro-bio diversity enset project have been implementing in study areas in improving the livelihood of the enset producer communities, collecting *enset* crop variety to genetic purpose and asset building interventions. These collection and interventions in the enset production and marketing could generate the lion's share of the household income of the enset producer and save enset variety to further study.

Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis of enset value chain Development in Angecha.

Strength <ul style="list-style-type: none">- High consumer demand- High product yield per crop	Weaknesses <ul style="list-style-type: none">- Lack of market information- Poor market access- Small number of market actors- Low quality- Local variety- Limited transportation system- Absence of input supply- Lack of technology- Low extension services
Opportunity <ul style="list-style-type: none">- Labor intensive- Favorable land and climate condition- Presence of high institutional demand- Presence of high consumer demand- High productivity potential	Threats <ul style="list-style-type: none">- Drought- Flood- Bacteria wilt- Diseases

V. SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 SUMMARY AND CONCLUSION

Food insecurity is the greatest barrier to sustainable development in Ethiopia, which affects thousands people annually and cause for depend on food aid from abroad. Researchers and policy makers have been particularly concerned with finding long-term and sustainable solutions to Ethiopia's food security needs. But country still face with complex poverty and insecure rate increase from year to year which has to been aggravated by erratic weather, catastrophic droughts, land degradation and civil war which has triggered famines for centuries.

To alleviate the problem and to overcome country food insecurity, must adopt drought tolerance crop like *enset* and agricultural technologies should be given emphasis to achieve long term and sustainable food insecurity.

Enset crop cultivated as a food and fiber crop in Ethiopia for several years and over more than 80% of the production is concentrated in the south and south-western part use as staple food. But weak relationships between value chain actors, weak supporting service, different socio-economic factors, lack of market information, such as end market quality and quantity requirements and delivery timing needs and poor development of production of the sector becoming smallholder farmer poor and poor.

In globalized world, research on economic development of agricultural farmers can no longer afford to limit itself only to optimization and livelihood support strategies and agricultural technology. It should also seek strategies to improve identification constraint and prioritization of economic development.

This study was aimed at analyzing value chain of *enset* in Angecha Woredas of south region. The specific objectives of the study include understanding the existing *enset* value chain, developing value chain maps; analyze challenge and opportunity of product and identifying the role of main actors and a socio-economic factor that determines farmers' participation in value addition.

The study used both primary and secondary data were collected. The primary data for thesis study were collected from 123 households from Angecha Woredas, 18 traders from Angecha and Halaba special woreda markets; and from 30 consumers.

Initially, this study mapped value chain in study areas so as to understand existing enset value chain actors, functions, relationship, channels and end markets. The result of value chain mapping indicated that the major actors in the *enset* value chain were producers, traders, processors, hotels and individual consumers. And it also indicated that there were no strong vertical and horizontal linkage between producers and other actors along the value chain.

The linkage between value chain actors is somewhat weak type. There is no any plat form or responsible body who is working for effective and efficient linkage between value chain actors. However, there is strong linkage among some actors like; farmers with farmers, and farmers with retailers. The market channel of enset product shows short route as compared to other agricultural commodities. The market actors in the marketing channels were producer, retailer, wholesalers, processors and consumers. It shows that more channels of product are long to selling from farmers to consumers.

The analysis was made using descriptive statistics and econometric model using SPSS and STATA software. All the sampled households were *enset* producers. Multinomial logit model (MNL) was employed to identifying factors affect the value addition on *enets* product.

The result of the multinomial regression model indicates that Number of years' experience, education, land size coverage by enset crop, distance to main market, number of cattle and extension service are significantly influencing farmers' on bulla product value addition positively. Land size of enset, crop variety, distance to village market and number of cattle significantly influence farmers on fiber value addition negatively. Furthermore, the study identified opportunities and challenge on value addition of enset product. The result showed that existence of huge enset product stock, high demand both domestic markets, supportive developmental actors such as NGOs and conductive developmental policy and strategies were main opportunities need to be maximized.

5.2. RECOMMENDATIONS

Given the potential of the area for enset production and its significant contribution to ensure food security and self-sufficiency as well as source of additional income for farmers in the study area, these findings suggest several points for further consideration.

- ✓ According to survey market channels are weak linkage. To Strengthening the linkage/interaction among value chain actors are a need to change the attitude of actors, i.e. developing a wide set of attitudes, practices. In particular, positive attitudes toward partnership, interaction, networking and learning need to be nurtured among main actors in the value chain. That increases the participation of various market actors (retailers, whole sellers, etc.) and consumers to get and Consumes quality enset product. It important all chain actors to benefit from the development of the sector.
- ✓ From the descriptive statistics result of the study, the most prevalent problem of enset production was bacteria wilt disease, which can transmit at a time. To solve this problem policy makers, research and extension groups, NGOs and other actors interested and find solutions. It important to develop agricultural product general.
- ✓ Value addition decision was influenced by sex of the household head negatively. Contrary to the expectation sex of the household head was found to influence value addition decision negatively and significant. The most probable reason for this result could be labor intensive, traditional cultivation system, low land size and poor management practices and ability of decision making by female-headed households that cause less probability to participate in value addition practice. Therefore, training on equality and resource management practices should be provided by giving due attention to female headed households.
- ✓ To start with, dissemination of modern input technologies and information's are essential in increasing the productivity of enset crop. Given that farmers are small-scale and unorganized in the study area; this state of affairs clearly needs strong government intervention. Not only does it require providing input facilities, but also their dissemination to ensure optimal access. Effort should also be made to strengthen farmers' cooperative and encourage collective action of farmers to improve variety and gain information about market.

- ✓ Distance to the woreda main market also influence bulla value addition decision positively. The positive relationship of the variable on bulla value addition decision can be explained as, as the distance is far from the woreda market demand of the product would be high and price also high. Therefore, government and non-governmental organizations can play their role in providing recommended solutions for this problem. Among the recommended solutions of the problem, one could be developing a linkage between the producer and consumer and this can be done by improving the infrastructure in the areas in order to reduce transportation and other related costs resulted from distance to farm get.

- ✓ The core constraints of enset value addition could be tackled through appropriate institutional support and extension services. *Enset* crop extension services should be positively significance effect on value addition on bulla product. Continuous training should be arranged and delivered on enset production, management, pre and post- harvest handling techniques to farmers and service providers to create sustainability of crop.

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APPENDIX

Annex- A: Household Survey Questionnaire

Household Survey Questionnaire for the study titled ‘Enset value chain analysis: The Case of Angecha Woreda in Kembata Tembaro Zone of south Regional State, Southern Ethiopia.’

Dear Sir/Madam, I would like to ask you some questions regarding enset value chain analysis and it's voluntary to be part of this study. I would like to thank you for your willingness, devotion, commitment and above all for the precious time you spend to assist me with this very useful information. Every effort you made will be ensured and any information you give us via our enumerators is kept private and confidential and the study is conducted only for the research purpose.

This study will be conducted to fulfill the following four specific objectives.

- ✓ To understand the existing *enset* value chain in the Angecha Woreda
- ✓ Develop value chain maps and identify the major *enset* value chain actors
- ✓ Assess challenges and opportunity in enset value chain
- ✓ To identify socio economic factors that determines farmers' participation in value addition

1.0 RESPONDENT AND SITE IDENTIFICATION

1. Region: _____, Zone: _____, Woreda: _____, Kebele: _____

Family code	Total numbers of family size	Sex Respondent.	Position in h.h	Marital status	Age (years)	Education (years)	Own farm labor contribution
		Code A	Code B	Code C	Respondent	Code D	Code E
1	2	3	4	5	6	7	8
01							
02							
03							

CODE				
A	B	B	C	D
0-Female	1.head	1.Married	0-Non/Illiterate	1-100%
1-Male	2.wife	2. unmarried	1.Educated	2-75%
	3.son	3. divorce		3-50%
	4.douter	4. widower		4-25%
				5-10%
				6-Not a worker

1.1 How long have you practiced production of enset products? ----- Years

1.2 What type of enset production system do you adopt?

1. Sole cropping
2. Mixing different enset crops
3. Mixing with other crops
4. Others _____

1.3 The major use of *enset* crop?

1. Food
2. Animal forage
3. Home Construction
4. Other -----

1.4 Amount you get from one enset plant (Shekim)

1. Kocho -----
2. Bulla -----
3. Fiber -----

1.5 How many enset crop use in once production time? -----

1.6 Length of time takes to produce of enset production

1. Kocho-----
2. Bulla-----
3. Fiber -----

1.7 How many times produce enset product in a year? -----

1.8 Distance to the nearest village market (km).....minutes of walking time

1.9 Distance to the nearest main market (km)..... minutes of walking time

1.10 Frequently used market types for enset production and why?

1. Village market
2. Main market
3. Farm get
4. Other

1.11 Single trip transport cost (per person) to the main market using car (Birr/person)

.....

2.0 SOCIAL NETWORKS

2.1 Number of people that you can rely on for critical support in times of production need

Number of Relatives

Number of Non-relatives.....

2.2 Types of enset traders who could buy your enset product?

A. Retailers B. wholesaler C. processors' D. broker

2.3. Which types of enset production do you sale?

1. Kocho 2. Bulla 3. Processed kocho 4. Fiber

2.4. Would you say that most traders can be trusted your enset product?

A. Strongly disagree B. Disagree C. Slightly disagree

D. slightly agree E. Agree F. strongly agree

2.5 Which one is more trust enset product and why?

A. retailer's B. wholesaler C. Processer's D. consumers

2.6 How many chain of the enset market do you know?

2.7 Government support (subsidies, food aid etc.) if your enset production fails?

a) Yes b) No

3.0 Household Sources of income and amount annually in last 12 months (tick)

Source	Annual cash income	Tick
Crops production		
Animal rearing		
Salary		
Petty trade		
Livestock trade		
Enset production trade		
Other specify		

Codes C		Codes E	Codes J
1. Owned	4. Borrowed in	1. Good	1. Irrigated
2. Rented in	5. Borrowed out	2. Medium	2. Rain fed
3. Rented out	6. Other, specify....	3. Poor	

7.0 LIVESTOCK PRODUCTION AND MARKETING

Livestock type	Number of livestock (including bought ones)
1. Cattle	
Indigenous milking cows	
Cross-bred milking cows	
Exotic milking cows	
Non milking cows (mature)	
Trained oxen for ploughing	
Calves	
2. Goats	
Number of goats	
3. Sheep	
Number of sheep	
4. Other livestock	
donkeys	
Horses	
Mules	

8.0 Marketing of crops

Product type	Market type	Month sold	Quantity sold (kg)	Who sold	Price	Buyer
	Codes A	Codes C	In 1 production year	Codes B	(ETB/kg)	Codes D
	1	2	3	4	5	6
Kocho						
Bulla						
Processed kocho						
Fiber						

Relation to buyer Codes E	Quality	Mode of transport
	Codes F	Code G
7	8	9

Code A	Codes B	Codes C	
1. Farm gate	0. Female	1. January	7. July
2. Village market	1. Male	2. February	8. August
3. Main/district market	2.both	3. March	9. September
		4. April	10. October
		5. May	11. November
		6. June	12. December

Codes D		Codes E	Codes F	Code G
1. Farmer group	7. Urban wholesaler	1. No relation but not a long time buyer	1. Below average	1. human
2. Farmer Union or Coop	8. Urban enset trader	2. No relation but a long term buyer	2. Fair and Average	2. donkey
3. Consumer or other farmer		3. Relative	3. Above average	3. horse
4. Broker/middlemen		4. Friend		4. truck
5. Rural grain trader		5. Money lender		
6. Rural wholesaler	9. Other, specify.....	6. Other, specify.....		

9.0 Market access

Crop	Did you get market information before you decided to sell the product?	If yes in column 2, where did you get the information?	Ever failed to sell due to			No. of buyers who came to buy at farm gate			
			Lack of buyers	Poor price	Quality problem	Processers	Whole sellers	Retailer	Consumers
Kocho									
Bulla									
Processed kocho									
Fiber									

Codes A	Codes B			
0. No	1. Government extension service	4. enset traders	8. School	10. Mobile phone
1. Yes	2. Farmer groups	5. Relative farmers	9. Radio/TV	11. Other, specify.....
	3. Neighbor farmers	6. NGOs	7. Research center	

9.1 Why do you sell enset product?

1. To settle government debt 2. To cover school fee 3. To cover health fee
 4. To replace older stock 5. To mitigate risk 6. Other (specify) _____

9.2 Do you a member of enset producers' farmers association?

- A. yes B. no

9.3 What are the major problems in enset?

Production related problem: -----

Post-harvest related problem: -----

Market related problem: -----

11.0 What are constraints in enset crop production (tick)

Input and production constraints	Enset	
	Constraint?	Rank its importance (only those with Yes in column 2)
	Code A	
1	2	3
1. Drought		
2. Floods		
3. Pests		
4. Diseases		
5. Soil fertility		

12. Enset activity calendar in your locality, mark with (☐)

Main activity	Sept.	Oct.	Nov.	Dec.	Janu.	Feb.	Mar.	April	May	June	July	Aug.
Land preparation												
Planting												
Weeding												
Harvesting												
Marketing												
Low price time												
Medium price time												
High price time												

Annex- B Traders (wholesalers) questionnaire

To be filled by enumerators with selected traders along the supply chain.

A. Background Information

1. Region: _____; Zone: _____; Woreda: _____; Kebele _____

2. Sex (M/F) _____

1. Male 0. Female

3. Age: _____

4. From whom do you buy *enset* product?

1) Farmers 2) collector/retailers 3) cooperatives 4) others specify _____

4. What types of *enset* product do you buy?

1. Kocho 2. Bulla 3. Processed kocho 4. Fiber

5. To whom do you sell kocho, bulla or fiber?

1) Whole sellers 2) retailers 3) consumers 4) others specify _____

6. Price to buy for 1 (shekim) of

1) bulla----- 2) kocho ----- 3) processed kocho ----- 4) fiber -----

7. Sell price for 1 kg of

1) bulla----- 2) kocho ----- 3) processed kocho ----- 4) fiber -----

8. How long do you store kocho/bulla/processed kocho/fiber before selling? -----

9. How do you transport kocho/bulla/processed kocho to market?

1) On donkey back 2) by truck 3) on human back 4) other specify-----

10. Single trip transport cost (per person) to the market using car

(Birr/person).....

Annex – C Traders (retailers)/collectors

1. Region: _____; Zone: _____; Woreda: _____; Kebele: _____
2. Sex (M/F) _____ 1. Male 0. Female
3. Age: _____
3. How long since you have started enset product retailing/collecting? _____ Years.
4. From whom do you buy enset product?
 - 1) Farmers 2) collectors 3) wholesalers 4) others specify-----
5. What types of enset product do you buy/collect?
 1. Kocho 2. Bulla 3. Processed kocho 4.fiber
6. To whom do you sell products?
 - 1) Consumers 2) café/hotel 3) wholesaler 4. collectors
7. Price of buying enset production trading on (shekim)
 - 1 kocho ----- 2. Bulla ----- 3. Processed kocho ----- 4. Fiber -----
8. Price of selling enset production trading on (kg)
 - 1 kocho ----- 2. Bulla ----- 3. Processed kocho ----- 4. Fiber -----
9. Single trip transport cost (per person) to the main market using car (Birr/person)
10. How long do you store enset product before selling? -----
11. How do you transport enset production to retail site?
 - 1) Mini bus 2) on human back 3) on donkey back 4. Other
12. Which months are peak to buying? -----
13. Which months are peak to sell? -----
14. How do you now quality of product? -----

2.0 Quality attributes considered when buying *enset* products

Attribute	Kocho/bulla or Fiber				
	Considered when buying? Use codes Codes: 1.Yes 0.No	How important is this attribute in affecting the price of fiber? 1. Not at all 2. Minor importance 3. Very important	Three main assessment methods used – Use codes Rank 3		
			1 st	2 nd	3 rd
1. Color					
2. Texture					
3. Smell					
4. Water/moisture content					
5. Variety					
6. Locality/ geography					
7. Cooking trait					

Annex – D Processors Questionnaire

1. Region: _____; Zone: _____; Woreda: _____; Kebele : _____

2. Name: _____;

3. Sex (M/F) _____ 1. Male 0. Female

4. Age: _____

5. How long since you have started enset product processing? _____ Years

4. From whom do you buy enset production?

1) Farmers 2) collectors 3) Wholesalers 4) others specify _____

5. What type of enset product do you buy?

1. Kocho 2. Bulla 3. Processed kocho 4. Fiber

6. To whom do you sell product?

1) Restaurant 2) hotels 3) consumers 4) others specify _____

7. Quantity to purchase in monthly? -----

8. What type of product do you process? -----

9. Buying price of product Kg? 1. Kocho ----- 2. Bulla ----- 3. Fiber -----

10. Selling price of processed product? -----

Annex – E Consumers /Restaurants Questionnaire

1. Region: _____; Zone: _____; Woreda: _____; Kebele: _____

2. Name of consumer: _____;

3. Sex (M/F) _____ 1. Male 0. Female

4. Age: _____

3. Household size: _____

4. Income (Birr/month): _____

5. Do you consume *enset* product in your household? _____

6. Quantity purchased per week:

1) Peak season _____ kg; scarce supply season: _____ kg

7. What type of *enset* product do you buy for consumption?

1. Kocho 2. Bulla 3.Processed kocho

8. From whom do you usually buy *enset* production?

1) Farmers 2) collectors 3) wholesalers 4) Retailers 5) Others specify _____

9. Preference (form of *enset* production needed) _____

Annex- F Factory questionnaire

1. Name of factory -----
2. Region: _____; Zone: _____; Woreda: _____; Kebele: _____
3. Type use enset production -----
4. From whom do you buy?
 - 1) Farmers 2) collectors 3) wholesalers 4) others specify-----
5. From which area do you usually buy more input production?
6. How long since you have started product processing? _____ Years
7. Please indicate your costs, transaction volume and price of input production trading just last on /kg/ 1. fiber ----- birr
8. What types of product do you fabricate?
9. To whom do you sell your product?
10. How do you evaluate enset product price over the years in the market?
 - 1= highly improving 2= improving 3= mild
 - 4 deteriorating 5= highly deteriorating
11. Which month the highest supply of product? -----
12. From which area qualities supplied? -----
13. What are the major problems in supply? -----

Annex –G

Picture – 1 Enest producer asked for survey questionnaire by enumerators



