Designing a business model linking smallholders to commercial farmer: Strategic access local and export market.

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By

Lorette Zee

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DEDICATION

I dedicate this thesis work to the family who showed interest and encouragement throughout the year.

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ABBREVIATIONS

ATA	Agricultural Transformation Agency
BSP	Business service provider
CCP	critical control point
CBO	Cooperative Bank of Oromia
CFC	Common fund for commodities
COFAMI	Collective farming marketing initiative
EIAR	Ethiopian Institute of Agriculture research
EGTE	Ethiopian grain trade
ETB	Ethiopian Birr
FFS	Farmer field school
FGD	Focus group discussion
GIZ	German Agency for International Cooperation
GoE	Government of Ethiopia
GPS	Global positioning system
GDP	Gross domestic products
ICCO	Inter church organisation for development cooperation
IMF	International monitory funds
KPI	Key performance indicators
MoA	Ministry of Agriculture
MFI	Microfinance Institution
MRLs	Maximum residue levels
NBM	New business model
NGO	Non-government organisation
PO	Producer organisation
QTL	Quantile
RSE	Regional Seed Enterprise
STARS	Strengthen African rural smallholders
TIMA	Tef international market access

ABSTRACT

Abstract

This research was conducted to design a business model with good support systems that links smallholder to the commercial farmer(Nufoli) to supply quality products and gain market entrance both local and export. The commercial farm is in Sodo Zuria Woreda amongst the smallholders in the Wolaita zone situated in the SNNPR region of Ethiopia having a population of 184,432 comprising of 90,372 males and 94,060 females. Most of the farmers produce tef, barley, maize, pulse and potatoes in the traditional manner with majority living in the rural areas whose livelihood largely rest on subsistence agriculture. The farmers sell on the spot market in Sodo Zuria experiencing price volatility stemming from no direct relationship with traders, placing them in a vulnerable position further eroding their livelihood. An extensive study on the literature review was done to established what is central in forming a successful business model in a sustainable way. A survey study using descriptive analysis was done on 30 cohort participants of which 15 were individual smallholders and 15 cooperative smallholders who all live in Haba Gerera Kebele and grow tef, barley, maize and pulses, located in proximity to the commercial farm and possess a land certificate. The focus group discussion composed of smallholders and Nufoli using the link methodology principle to examine what works and the gaps in the system of a new business model. A semi structured interview with 9 key informants exposed how they work with smallholders and found their link to commercial farmers very favourable for their support. An in-depth case study interview with the commercial farmer revealed the specific activities they want to implement into the business model which was further discussed in the focus group together with the smallholders using the link methodology principle tools. The result findings revealed that there were many challengers amongst the smallholders who experience some being: the microfinance support was minimal; 90% of the them indicated a short surplus of food in the community; just under half of what they produced was eaten and yields were low in comparison to commercial standards and experienced reduce product price from traders due to low quality. The study revealed that certain design features in the business model would work if implemented such being: credit facilities from the financial institution; The agronomist and extension agent who assist in agriculture; The Sensor Unit technology which is an innovation in the agricultural project; The voucher purchase and payment system helped to reduce financial risk; contract design mechanism to work together effectively and provide quality products for the buyers; the kiosk system provided quality fertilizer, chemicals; The logistics system support the farmers with transport and reduce product damage; collection centers were designed enhance efficiency and reduce transaction cost; market linkage formed with the buyers enabled a direct market channel; business service providers delivering agricultural services to the smallholder and collaboration with key partners which is important to upgrading a commodity chain. Gaps were identified in the study and several recommendations were given to develop a sustainable business model. These included: to Raise financial support for smallholders in the initial years to build capacity through training and education and get the smallholders agricultural practices at an acceptable level; integrate the microfinance voucher system that supports the smallholders to purchase input supply through the proposed kiosk system and business service providers services; to further investigate on smallholder's agricultural practices between the individual and cooperative stallholder; The implementation of the sensor unit technology that enhances communication and transparency in the system as well as feedback forms for the smallholder's input on the business model system and develop a contract including price mechanism and cost sharing that will strengthen the partnership relationship.

CHAPTER 1: INTRODUCTION

1.1 Background

Tef is grown by 6.62 million farmers occupying 22% of the total cultivated area in Ethiopia. Most tef is grown in Ethiopian highlands and in the rift valley areas. It is a source of employment and lively hood to around 25-30 million people. Tef is essential in Ethiopia since it is the daily staple food and consumed by 60% of the population (+-60 million people). It is grown at middle elevations between 1,800 and 2,200 meters above sea level where the rainfall is high (Minten et al, 2013).
The tef farmer uses traditional farming practices with farm implements such as a plough, sickle, forks, fans or sieves to produce tef. The farm implements are made by the farmer or the local manufacturers who are farmers (Hauenstein, 2015). The farmers and trading assemblers who purchase tef from farmers use animals such as donkeys to transport the grain to the villages or regional markets to sell their tef to the rural trade assemblers (Assefa, Demeke and Lanos, 2015). The farmers are at a disadvantage point in the market with limited bargaining power whilst the brokers have the power to influence the price since they link rural and urban traders through price information (Assefa, Demeke and Lanos, 2015; Hauenstein, 2015). The government services in providing inputs to farmers have not been effective up to now since the farmer makes provision in using and selling their own seed from the previous year and 90% of the farmers use inorganic fertilizer with a few using fertiliser which is applied below recommended rates due to limited finance and access to credit (Hauenstein, 2015).

The Agricultural transformation Agency (ATA), has recognise tef as one of Ethiopian's key supportive value chain programme (Assefa, Demeke and Lanos, 2015). ATA has realised intervention was needed to stimulate the export market of tef (ATA, 2015). In 2016, ATA changed their policy to allow the export of tef grain and stimulated the commercial farmers to export themselves with no linkage to small scale farmers. The smallholders who were members of a high performing cooperatives are planned to export tef in 2018 according to the Tef international market access (TIMA) project and Growth and transformation programme (GTP 11), (ATA, 2016). During the test interview with ATA this idea to export tef has been changed and the TIMA programme is on hold (See Annex C no 10).

Tef is not the focus of the thesis topic, but the focus is on designing a business model. Tef was one of the cereal crops used as a vehicle but could easily have been Barley. A test interview, this year 2017, was done with the agricultural transformation agency (ATA) who are directly linked to government, revealed that the tef international market access (TIMA) programme is not being pursued which was the vehicle in promoting tef exports. (See C. Annex 10). For this reason, the research began to focus on barley and potatoes which are cultivated by both the smallholders and the commercial farmer. The agricultural practice and trade relationship for both barley and tef is similarly amongst the smallholders as observed during the research. The problem with good agricultural practice, strategic access to market and literacy status results from a poor support system that farmers are facing. The development of a business model that links smallholders with a commercial farmer creates a partnership which has the following effects according to Dijk and Trienekens (2012):

- Access to knowledge and technology will assist in reducing pre-post-harvest losses, enable farmers to make sound judgements and implement good agricultural practices.
- Access to affordable credit increases the farmers purchasing power and ability to improve their process and product quality.
- Market opportunities resulting in: annual purchasing commitments; price guarantees; reduce reliance on traders and brokers and annual pre-planting.
- Farmer organisation or cooperative union follow a hierarchical model which is directed by the commercial farmer and this model ensures a clear structure, ownership, market volumes, eases monitoring and control of products.

The Oromia region has an elevation between 1800 to 2300 meters above sea level and produces 48% of the total tef production in the country covering a total area of 1,293,514.25 ha (Hauenstein, 2015). Compared to SNNPR where the elevation is between 1500 to 3200 m.a.s.l with the average rainfall of 1200mm per annum and produce on average 9% of total tef production (Balta, Tessema and H/Wold, 2015; Hauenstein, 2015). Nufoli strategic positioning in both Regions can capitalize on the opportunity to maintain various crop volumes with consistency of supply for the buyers.

Table 1: Tef area cultivated by producer Region

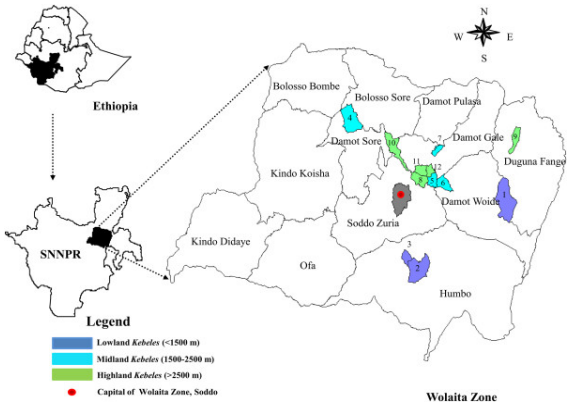
Tef Area Cultivated and Production by producer Region, 2011/2012

Region	Area (ha)	% share of total area planted	Production (QT/100kg)	% share of total production
Tigray	152,740	5.59	1,938,456	5.54
Amhara	1,003,380	36.73	13,102,807	37.46
Oromia	1,293,514	47.36	16,765,432	47.93
SNNPR	257,794	9.43	2,937,669	8.39
Benishangul	23,615	0.86	232,256	0.66
Total/average	2,731,044	100	34,976,623	100
Source: Country Stat, 2013				

Country Stat, 2013 cited in Assefa, Demeke and Lanos, 2015, p.4

Sodo Zuria Woreda in Wolaita Zone

Figure 1: Sodo Zuria woreda in Wolaita Zone



Source: Research Gate (n.d)

Nufoli plc is an agricultural company with the farm situated in Sodo Zuria Woreda within the Wolaita Zone of the Oromia Region in Ethiopia. Meset Consult company was commissioned by Nufoli plc to establish the farm in Haba Gerera Kebele. The farmers in that area do tef, barley, potatoes, wheat and pulses similarly done in the Oromia Region, using the traditional methods. The trading market in Sodo Zuria follows the same trading behavioural patterns as the tef market, with majority of the farmers' sending their crops to one trading market which has many small traders. The smallholders sell on the spot market during periods when the prices are generally low since they need the cash and do not have storage capacity. The smallholders are not always satisfied with the prices given by the trader but have no alternative than to accept the prices.

The Kebele administrator and the community wanted to know how the commercial farmer is going to assist the smallholder to improve their products. Meset Consult took the initiative and decided to investigate how smallholders can be linked in a sustainable way to Nufoli, the commercial farmer, since this linkage would benefit both smallholders and Nufoli. For, Nufoli it would secure and increase

their barley and potatoe supply for their direct buyers in Ethiopia and the livelihood of the smallholder would improve overall.

Market trading

Tef is mostly produced for market due to its high price and lack of alternative cash crops like coffee, tea or cotton in the main tef growing areas of Gojam (Amhara) and Shoa (Oromia). Tef is sold in three colours white, mixed and red (Assefa, Demeke and Lanos, 2015).

Market transactions cost are elevated due to a complex supply chain which has 5 or more handovers of tef between producer and consumer, with trader and broker taking a profit margin as well as incurring transport and storage costs (ATA, MOA and EAIR, 2013). The market is influenced by there being: no formal grades and standards to measure the tef grain; minimal or no warehouse facilities; unreliable market information; mistrust between producer and traders and the contract enforcement mechanisms are inadequate (Assefa, Demeke and Lanos, 2015). Pricing is influenced by the brokers and traders who exclude the farmer in the decision-making process on tef prices (Assefa, Demeke, and Lanos, 2015). The individual smallholders have little to no say in the marketing for their tef since it is dominated by the traders, and the Ethiopian Grain Trade Enterprise (EGTE) does not interfere in the tef market leaving the players to sort matters out however, ATA is focusing only on individual commercial farmers and the smallholders who are members of the cooperative in the export of tef grain and flour (ATA, 2015; ATA, 2016). The smallholders receive unreliable market information for their tef and during trading there is no real adequate formal measuring grades (Assefa, Demeke and Lanos, 2015).

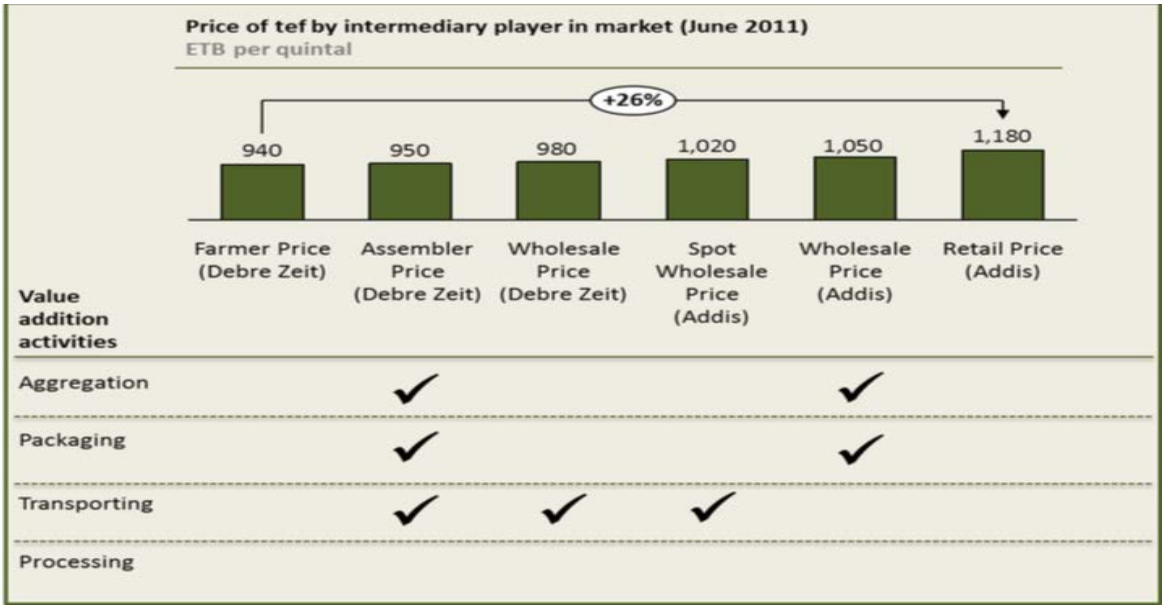
The market is under developed having numerous small players who influence the market volatility contributing to insufficient standardisation and unclear quality-grades. Farmers are pushed to sell directly after post- harvest, where prices are usually at the lowest, to pay their credits and government tax on time. (ATA, MoA and EAIR, 2013; Haile et al, 2004).

Market Price along the value chain

The Agricultural transformation Agency (ATA), has recognise tef as one of Ethiopian's key supportive value chain programme (Assefa, Demeke and Lanos, 2015). In 2011, the price hike was 26% between farm gate and end consumers. This price hike is in keeping with other cereals, however there remains an opportunity to reduce the number of transaction (ATA, MoA and EAIR, 2013). During the test interview with ATA, since 2011 tef prices have slowly escalated due to external demand, and raises the fear that if tef is formalized it could replace the staple foods which is not in the interest of the nation (See annex C no 10).

Figure 2: Market price along tef value chain

Market price increase along tef value chain from farm gate to end consumer



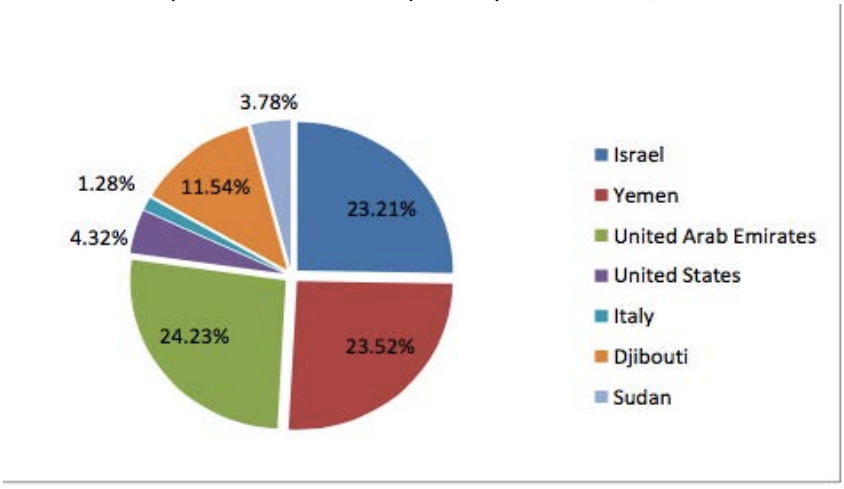
Source: Bekabil, et al. (2011)
Bekabil et al, 2011 cited in ATA, MoA and EAIR, 2013. P.68

Informal market for tef grain

The formal market for tef grain has not been developed but the informal market is operational. Djibouti received 11 thousand tonnes recorded in 2012. The tef grain is routed to the port of Ashdod in Israel where 80,000 Ethiopian Jews live. Other countries who receive tef are Yemen, United Arab Emirates, United States, Italy and Sudan. (Assefa, Demeke and Lanos, 2015). This informal export market will not contribute to the tef problem compared to if tef was formally exported according to the test interview with ATA (See Annex C no 10).

Figure 3: Share Ethiopian informal tef export

Share of Ethiopian informal Tef Exports by Destination, 2000 to 2012



Source*:* Global Trade Atlas 2012
Global Trade Atlas, 2012 cited in Assefa, Demeke and Lanos, 2015, p.9

1.2 Research problem

The government services in providing inputs to farmers have not been effective up to now since the farmer makes provision in using and selling their own seed from the previous year and 90% of the farmers use inorganic fertilizer with a few using fertiliser which is applied below recommended rates due to limited finance and access to credit (Hauenstein, 2015). In 2016, ATA changed their policy to

allow the export of tef grain and stimulated the commercial farmers to export themselves with no linkage to smallholders. The market is under developed having numerous small players who influence the market volatility contributing to insufficient standardisation and unclear quality-grades. Farmers are pushed to sell directly after post- harvest, where prices are usually at the lowest, to pay their credits and government tax on time.
The research is to develop a designed business model with good support systems that links smallholders to the commercial farmers benefiting smallholder farmers to produce quality products through improve agricultural practices and strategically enter the local and export markets.

Problem owner

Meset consult plc's purpose in doing this research is to develop a designed business model with good support systems, that can secure the product supply for Nufoli plc from the local smallholders in the farming community in a sustainable way, whereby it improves their livelihood and adds benefit to the growth domestic products (GDP) of Ethiopia.

1.3 Research objective

This study is to develop a designed business model with good support systems that links smallholders to the commercial farmer (Nufoli plc), to supply quality products and gain market entrance both local and export**.**

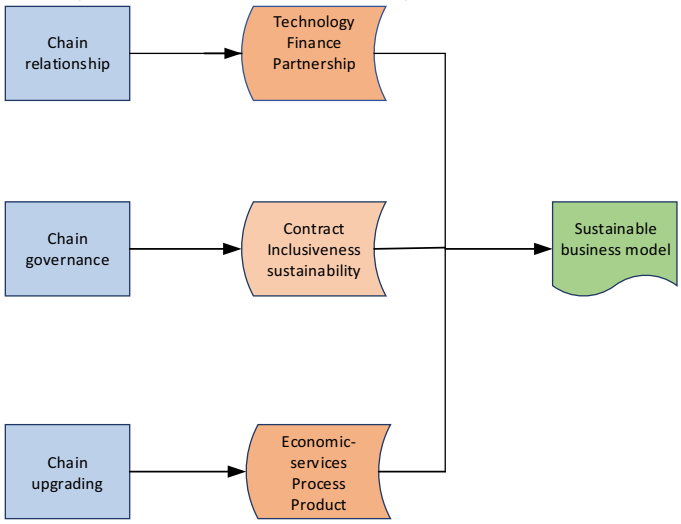
1.4 Main research questions

1. What is the present value chain structure that relates to smallholders and commercial farmer?
   - What key stakeholders are in partnership with the farmer, cooperative and commercial farmer's business?
   - What supporting factors influence the smallholders, cooperative and commercial farmer's present business model?
   - What are the challengers in the present value chain structure of the smallholders, and commercial farmer?
2. What will be essential in developing a sustainable new business model in linking the smallholders and cooperative to the commercial farmer?
   - What factors will lead to cost efficiency for the smallholders and commercial farmer in the new business model?
   - What design mechanisms and governance are required to capture the business model's new values?
   - What key supporters are needed in developing the new business model that links the smallholders to the commercial farmer?

1.5 Conceptual framework

After extensive literature review the conceptual framework was formed to develop a business model that links smallholder farmers to a commercial farmer in gaining market entrance both locally and externally through designed mechanisms**.**
The literature revealed there being three designed elements: content, which is selected activities; structure is the way activities are linked and governance is who performs the activities. These design elements of being interdependent between activities are essential to the concept of an activity system. This activity system is important to comprehend the firm's business model (Zott and Amit, 2009). Likewise, the chain relationship relates to the structure element; the chain governance to the governance element and chain upgrading to content element.

Figure 4: Conceptual framework
Conceptual framework to develop a sustainable business model



source: Author (2017)

1.6 Defining concepts

The concepts are explained in line with the business model's design mechanism that links smallholders' to Nufoli to gain market access and translated to describe a specific phenomenon. The literature explains these concepts of economic services, process, product, technology, finance, partnership, contracts, inclusiveness and sustainability according to the researcher's meaning within the context of the study.

Smallholder

For this study purpose a smallholder in Ethiopia is a farmer who has landholding of 4 hectares and less.

Sustainable development for business enterprise

the business enterprise, sustainable development means embracing business strategies and activities that meet the wants of the enterprise and its stakeholders currently while protecting, sustaining and improving the human and natural resources that will be required in the future. These activities will be focused in reaching environmental, social and economic sustainability. (Business strategy. (1of19)

Value Chain

The description of a value chain is the complete range of activities required in bringing a product of service from conception, going through all the phases of production involving physical transformation and contribution of various producer services, to the delivery of the final consumer and the end disposal after use (Kaplinsky and Readman, 2001).

Business model

A business model is defined a collection of defined activities that are steered to satisfy the perceived needs of the market, including the requirements of the parties that conduct these activities that is the principle firm and partners, and how these activities are connected to each other (Amit and Zott, 2010). These activities are interdependent and enables the firm with its partners to create value and when designing the activities, the design elements which are: content relating to chain upgrading; structure relating to chain relationship and governance relating to chain governance are considered since they describe the architecture of an activity system (Zott and Amit, 2010). These activities are built on the grounds of economic services, upgrading, product, technology, finance, partnership, contract, inclusiveness and sustainability.

Contract farming
Contract farming is a contract between farmers and firms to produce and then supply the product to the firm who also helps to link the smallholder to the markets, plus, includes the following elements: provision of inputs, technical assistance to the growers; quality control; pricing system; guarantee to purchase quality products from smallholders that meet the agreed quality standards and an approved price by all parties (Holtland, 2017)

Upgrading
Is the farm's capability to be innovative through technology or management for the purpose to be more competitive with the capacity to recover immediately from adversity and ultimately enhance their position in the value chain (Van Wijk and Kwakkenbos, 2011), with focus on process, product and economic services which relates to the business model content

Economic services
The economic services relate to support services that assist smallholder in production, added value on products and marketing support with other stakeholders in the value chain.

Technology
For the research, technology is the usage of scientific knowledge for the practical reasons, specifically in the design of a new business model that is using Agricultural practices, mechanization and sensor technology on grounds for innovation.

Partnership
For the research, partnership is a voluntary collaboration agreement between actors from different sectorial fields that are institutionalized and strive towards a sustainable goal to achieve access to knowledge, credit and market opportunities.

Product
For this research, products produced must meet the quality standards of the buyer or improving the old varieties through agricultural technic quicker than the competitors with attention on new varieties and quality standards.

Finance
For the research, finance is agriculture and value chain finance. Agricultural finance or external finance is when finance is supplied through an outside agent, such as microfinance institution banks or other agents. Value chain finance results in connecting two or more value chain actors with the financial service providers. The financial institutes, bank or MFI link into the value chain based on contractual relations in the chain (KIT and IRR, 2010). The finance can come in the form of input voucher, revenue sharing and credit system.

CHAPTER 2: LITERATURE REVIEW

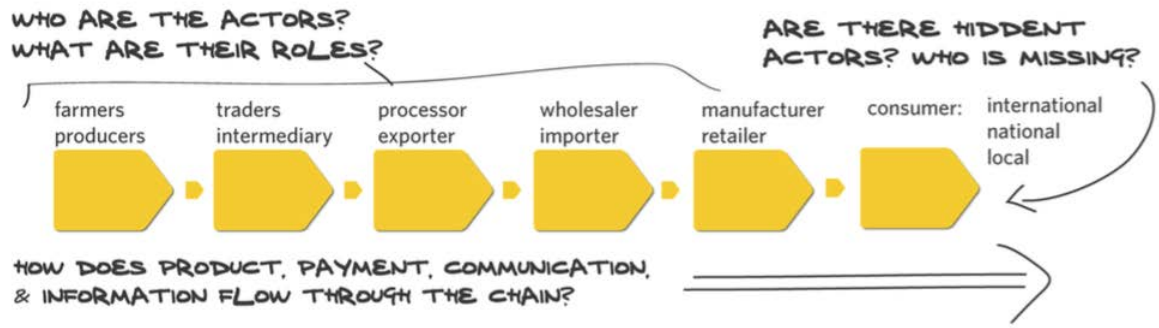
2.1 Introduction

The purpose of this study is to design a business model that will link the smallholder to the commercial farmer in a sustainable manner to gain market entrance both local and export. In the study, the literature was reviewed to discover if any other studies had been done on developing a business model specifically on the farmers in Sodo Zuria. Adding to this, in the review key concepts relating to designing a business model was searched to find out how other authors viewed the same topic and identified: what is relevant in designing a business model; the essential activities for a sustainable business model to link smallholders to a commercial farmer; the factors that lead to cost efficiency for the smallholder and the key supporters needed in developing a new business model.

2.2 Value chain analysis

The description of a value chain is the complete range of activities required in bringing a product of service from conception, going through all the phases of production involving physical transformation and contribution of various producer services, to the delivery of the final consumer and the end disposal after use (Kaplinsky and Readman, 2001). At the most basic point of the value chain analysis is to thoroughly map the actors involved, production, distribution, marketing and sales of a specific product. This information is collected through survey, PRAs, informal interviews and secondary data (M4P, 2008).

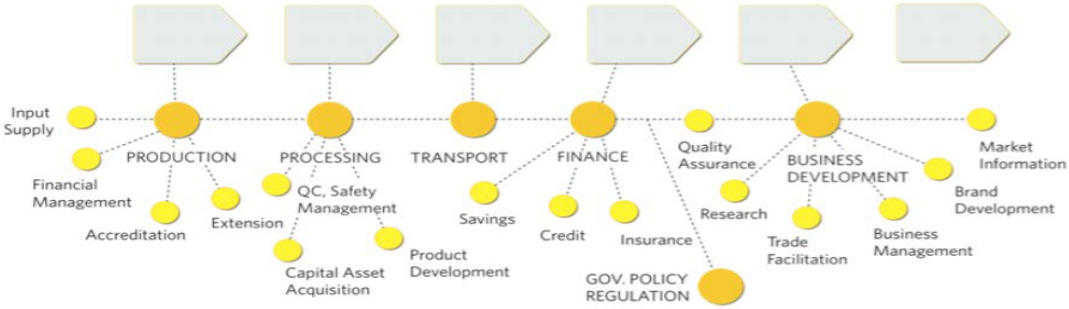
Figure 5: value chain core processes



Source: Lundy et al, (2012)

A visual map of the actors, product volumes, products origin, the interest of the actors, types of relationships, linkage and product payment assists to assess the chain map clearly (Lundy et al, 2012).

Figure 6: Value chain mapping the partner network



Source: Lundy et al (2012)

Partners are not included in the value chain's core stages but are external actors occupying a significant role in the performance of the business and assists the chain to operate efficiently (Lundy et al., 2012).

2.3 Upgrading

Upgrading challenge in value chain

According to Kaplinksy and Readman (2001) innovation needs to be balanced since it is not sufficient by itself. One would ask how firms know that they have achieved innovation and upgrading? The firm requires to scrutinizes their capabilities to recognize those aspects or elements which:

- Delivering customer value.
- They are comparatively unique with few competitors acquiring such attributes.
- barriers of entry are formed making it difficult to copy.

The ability to innovate comes from focusing on the firm's competences and outsourcing those functions that the firm cannot perform to meet the three criteria. The firm's profitability over time is not sustainable through market control, but through the growth of dynamic capabilities which comes because of the firm's:

- internal processes which enables learning, incorporating the ability of come up with something differently to what the firm has done in the past.
- Position, meaning access to specific competences from its own activities or externally.
- Path, its course since change depends on the path taken.

Both above related concepts are helpful to understand the occurrence of upgrading and what both drives and enables improvement in products and processes which stem from the activities in the firm.

Four trajectories are identified to upgrade which firms can adopt, namely: Processing upgrading is when the internal process efficiency increases significantly that they are better than your competitors for example in some cases frequent on-time delivery of small amounts more often is better; product upgrading; functional and chain upgrading (Kaplinksy and Readman, 2001).

Figure 7: Upgrade categories in value chain

The value chain framework: four categories of upgrading

- *Process upgrading:* Increasing the efficiency of internal processes in such a manner as to ensure that they are significantly better than those of rivals, both within individual links in the chain (for example, increased inventory turns, lower scrap), and between the links in the chain (for example, more frequent, smaller and on-time deliveries).
- *Product upgrading:* Introducing new products or improving old products faster than rivals. This involves changing new product development processes both within individual links in the value chain and in the relationship between different links of the chain.
- *Functional upgrading:* increasing value-added by changing the mix of activities conducted within the firm (for example, taking responsibility for, or out-sourcing, accounting, logistics and quality functions) or moving the locus of activities to different links in the value chain (for example from manufacturing to design).
- *Chain upgrading:* moving to a new value chain (for example, Taiwanese firms moved from the manufacture of transistor radios to calculators, to TVs, to computer monitors, to laptops and now to WAP phones).

Source: Kaplinsky and Readman (2001, p.30)

In (KIT, et al., 2006) smallholders may improve their position in the value chain in several ways:

Table 2: Chain development smallholder upgrading

Chain development smallholders upgrading
Processing upgrading is where products are produced efficiently through new technology or management techniques which can be achieved by: exchange varieties to increase product volume and applying fertilizer; reduce pests and diseases; use integrated pest management to save cost on chemicals; use a machine for post-harvest instead by hand and build sheds to improve storage.
Product upgrading is using various techniques to improve the products by: planting new varieties with more desired features; use less chemicals and comply to food health and safety regulations and standards.
Functional or intra-chain upgrading occurs when smallholders move upstream or downstream by doing new activities such as: begin grading, sorting or bulking their products; dry or mill though processing to increase the value and storage life.
Chain or inter-chain upgrading is the smallholder moving into a new value chain through: cultivating new crops; stocking a new breeding herd; developing a new business or convey their past experiences and skills.

Source: KIT et al (2006)

Partnership addressing institutional barriers to value chain development and business model

Most of the farmers in Africa are smallholders that confront barriers when entering the market both locally and internationally never the less access to these markets are crucial for growth in Africa. Van Dijk and Trienekens, (2012) and Van Wijk and Kwakkenbos, (2011) both express barriers for smallholders to enter the commercial value chain as:

Table 3: Partnership address institutional barriers

Partnership addressing institutional barriers to value chain development and business model
Access to knowledge and technology which farmers need to develop and meet the quality standards expected by the lead firms in the chain. The farmers need to spend time in developing structural and procedural initiatives that attract the trust and confidence of the buyer concerning their products quality and safety mechanisms
Access to credit is lacking with the smallholder and inhibits their improvement on their process and product quality. Financial institutions hesitate to release finance since agriculture is considered high risk but with finance the farmer has a chance to adopt technology and allocate resources.
Market predictability creates a more stable business climate for smallholders since they are exposed to highly volatile markets hindering investments in the agricultural sector. This stable business climate is created through buyer commitment and price stability which motivates farmers to increase production capacity and improve on quality.
Farmers' organisation system is needed for smallholders to group together to meet the buyer's demand for quantity, quality and consistency of supply. This coalition enables risk sharing and the pooling of resources.

Source: Van Dijk and Trienekens (2012)

Partnership using Sorghum for beer in Africa

The findings on the research done by Van Wijk and Kwakkenbos (2011) on Guinness, Heineken, Eager Larger using Sorghum for beer partnership in Africa found the following.

Table 4: Partnership using Sorghum for beer in Africa

Partnership using Sorghum for beer in Africa
Access to knowledge and technology was disseminated and farmers bought certified seed every year, NGO complemented the existing government extension service training in: farm management; understanding in the importance of quality and the need for documentation and traceability; the role of technology such as equipment usage for sorghum production; farmer training; financial matters and farmer organisation.
Access to affordable credit was improved allowing farmer through the partnership to: apply for credit from development bank and government funds; tap into external funds from commercial bank; 60% of farmers could source credit from banks; microfinance institute made loans available to farmers. Banks were only interested in group lending.
Market opportunities were address due to its volatility in setting the pricing structure whereby a guaranteed annual price was negotiated with the farmer and given in the pre-planting period. Sorghum is sold locally therefore the price is set slightly higher than the local market price to prevent side selling. Purchase commitment with the breweries is done through an annual purchase agreement with the private commodity trader or nucleus farmers.
Farmer organisations comprise of registered smallholders who are grouped around a nucleus farmer which is facilitated by the NGOs. The farmer organisation follows a hierarchical structure which is managed and control by the commercial farmer.
The nucleus farmer will upgrade and take on the role of the NGO when their project terminates.

Source: Van Wijk and Kwakkenbos (2011)

The institution hindrances that discourage farmers to invest, also obstruct private companies that strategically source locally and develop backward linkages with agricultural producers in the region. The private companies join alliance with development organisations coined as 'value chain partnership' to form a commercial supply chain and therefore can tackle the institutional environment consisting of rules that regulate the behaviour of value chain stakeholders be it formal or informal (Van Wijk and Kwakkenbos, 2011).

In the study, partnership was effective in the upgrading of farmers according to Van Wijk and Kwakkenbos, (2011) and found in (KIT, Faida MaLi and IIRR, 2006), it promotes chain development. As seen in the table below the plus sign is where upgrading of farmers occurred.

Table 5: Partnership effects with stakeholders

Partnership effects: Stakeholder perceptions of upgrading at the farm from Guinness-techno serve, Ghana(G-T, Gha); Guinness-ACDEP, Ghana(G-A Gha); Heineken, Sierra Leone(Hein SL); Eagle larger, Uganda(EL UG) and Eagle Larger, Zambia(EL Za).

	G-T Gha	G-A Gha	Hein SL	EL Ug	EL Za
Process upgrading					
Productivity increase	+	-	+	+	+
- Increased use of certified seeds	+	+	+	+	+
- Better farm management	+	+	+	+	+
- Investment in technology	+	-	-	-	-
Product upgrading					
Shift to varieties accepted by the brewery	+	+	+	+	+
Enhanced attention to quality aspects	+	+	+	+	+
Functional upgrading*					
Collecting, storing, cleaning, checking, bagging and transporting sorghum	-	-	-	-	-
Inter-chain upgrading					
Diversification actively encouraged by partnership	-	+	-	-	-

* Refers to farm level only; some functional upgrading opportunities for traders and nucleus farmers have increased

Source: Partnership Effects cited in Van Wijk and Kwakkenbos, 2011, p.14

Production using mechanization and traditional methods

At the agricultural training centre in Kalumsa, trials between mechanised tef production and traditional practices was carried out on a small plot size but this is relative to most smallholders since their land size starts from half hectare to one hectares. The trial showed a significant difference in the output between mechanised technique and tradition methods in yield results which was 54.30 percent higher in the mechanised approach compared to the traditional method (Loos, 2016).

Table 6: planting technology and traditional trial

Tef planting technology and traditional trial 2013 at agricultural training center, Kulumsa

Crop	Variety		Total Output (Bulk)			Total Output (sample)		
			Area (ha)	Yield (qt)	Productivity (qt/ha)	Area (m^2)	Yield (kg)	Productivity Qt/ha
Tef	Kuncho	Drilled 2.1 kg/ha	0.88	18.56	21.10	40	17.64	44.10
Tef	Kuncho	Broadcasted 25 kg/ha	0.88	13.70	15.60	40	9.58	23.95

Source: Adapted from Loos. 2016, p.4

Sustainability in Short food supply chain

Short food supply chain (SFSCs) has potential to add towards increased sustainable food system, rural expansion and healthier community whereby (Galli and Brunori, 2013) identified sustainability in the following:

- Environmental sustainability in short food supply chain considers the production methods, processing, packaging, cooling, distribution, transport and waste when referring to sustainability. The proximity of producer and consumer within SFSCs: reduces the transportation of product; influences the length of tie between harvest and sales; delivery of fresh products; reduces energy for storage having positive effects on sustainability and methods of production are highly sustainable since customers are informed on Agricultural practices.
- Social sustainability in SFSCs considers and contributes to the influence on fairness among food chain actors, food security and sustainability of local communities which is embedded in trustful, fair and personal relations. The producer and consumer become active and equal owners. Numerous SFSCs put value in local products, production, marketing methods and knowledge strengthening local cultural identity, social capital and inclusiveness.
- Economic sustainability tackle matters relating to: competitiveness and economic feasibility of food chains and the related actors; well organized use of resources and input, and creating jobs and income in the community. SFSCs is a solution to increase viability to small medium farmers who are: less competitive and no easy access in conventional chains; inconsistent in product volume, quality and consistency of supply.

2.4 Governance in the value chain

Three forms of governance in the value chain can be identified as being, legislative, judicial and executive governance which also characterize the rules that form the basis of participatory rules in the value chain (Kaplinsly and Morris, 2003).

These participatory rules follow the international standards such being: ISO9000 based on quality; ISO14000 based on environment; SA8000 based on labour standards; phyto-sanitary standards according to industrial or agricultural standards and HACCP (Hazard analysis and critical control points)

and ISO22000 focus on food safety. (FAQ, Schoenmakers, 2009; Kaplinsky and Morris, 2003).
The meaning of legislative governance refers to the power to make the laws that set boundaries in the value chain for growers to deliver quality products on-time. Judicial governance refers to the administration of justice on conformance to the set boundaries by monitoring the producers' performance in meeting the set standards. The executive governance refers to putting plans or action into effect by aiding the value chain participants that is training in agricultural practice for the smallholder to meet the set standards (Kaplinsly and Morris, 2003).

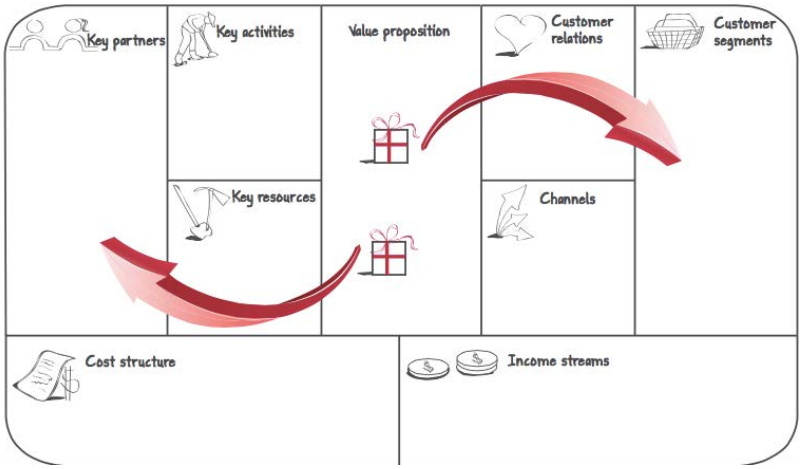
Table 7: Value chain governance
legislative, judicial and executive value chain governance

	Exercised by parties internal to chain	Exercised by parties external to chain
Legislative governance	Setting standards for suppliers in relation to on-time deliveries, frequency of deliveries and quality	Environmental standards Child labour standards
Judicial governance	Monitoring the performance of suppliers in meeting these standards	Monitoring of labour standards by NGOs Specialised firms monitoring conformance to ISO standards
Executive governance	Supply chain management assisting suppliers to meet these standards Producer associations assisting members to meet these standards	Specialised service providers Government industrial policy support

Source: kaplinsky and Morris (2003, p.31)

2.5 Business model

Figure 8: Double facing value proposition business canvas model



Source: Lundy, et al (2014).

This concept is significant for buyers to incorporate smallholder into the supply chain. In inclusive business model the value proposition is looked at from two viewpoints that is the producers' and customers' perspective.

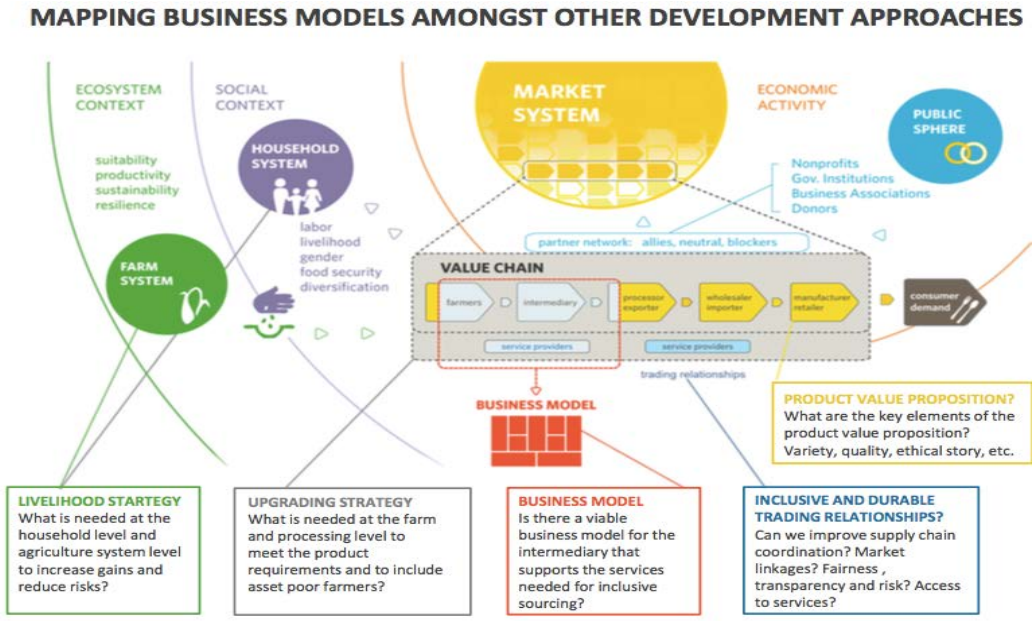
In Lundy et al (2012) indicates the different elements of the business canvas model.

Table 8: Business canvas model elements

Business canvas model Elements	Description
Customer segment	one or several customer segments receive services from an organisation
Value proposition	The needs and problems of customers are satisfied by the value proposition.
Channels	Customers receive the value proposition through communication, distribution and sales channels.
Customer relationship	The relationship with customers are established and continued with each customer segment.
Revenue streams	The value propositions offered to customers is successful then the revenue streams will flow into the business
Key Activities	various key activities are performed that contribute towards the success of a business.
Key Resources	Key resources define those physical, financial, intellectual or human resources that are important to produce and support the value proposition.
Key Partnership	Key partnership is direct where the company operates its main business model, or indirect in facilitating or growth of the business model.
Cost structure	Cost structure defines all costs incurred to deliver the value proposition.

Source: Lundy et al (2012)

Figure 9: mapping business models amongst development



Source: Seville, Don. Sustainable food lab for linking world conference.
Seville, Don. Sustainable food lab, cited in Lundy et al, 2012, p.7

The link methodology hopes to build bridges between the smallholders and buyers to engage more effectively in the emerging market opportunities both locally and in the developed economies. In the link methodology, an understanding of the current operation of the market chain, key business model and design innovations is revealed (Lundy et al, 2012).

KEY TOOL – THE NEW BUSINESS MODEL (NBM), PRINCIPLES

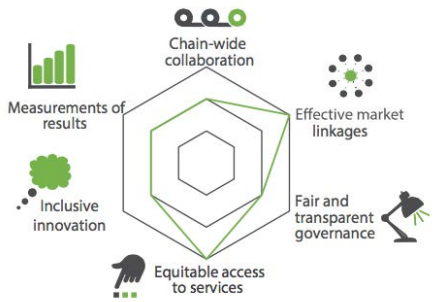
The new business model (NBM) principle constructed solutions for smallholders. The principles operate as a lens and assisted in examining: critical features of the business model; prioritized and select areas for innovation and upgrading (Lundy, et al., 2012 and 2014).

Table 9: Principle of new business model

Principle	Activity
CHAIN – WIDE COLLABORATION - Principle 1	Collaboration is key to upgrading a commodity chain relating to quality, sustainability and smallholder inclusion
EFFECTIVE MARKET LINKAGES – PRINCIPLE 2	smallholders and their organisation need to be linked to a stable, profitable market.
FAIR AND TRANSPARENT GOVERNANCE PRINCIPLE 3	Formal and informal rules that are set, monitored and enforced along the chain.
EQUITABLE ACCESS TO SERVICES PRINCIPLE 4	Access to service assists smallholders to participate continuously in the market place.
INCLUSIVE INNOVATION PRINCIPLE 5	Innovation in products or services, links directly to differentiation in the market place being the chief driver in maintaining a competitive position
MEASUREMENTS OF OUTCOMES PRINCIPLE 6	Measurements of outcomes are done continuously to centre in on identifying and reacting early to issues and problems before they jeopardize the trading relationship.

Source: Adapted from Lundy, et al., 2014.

Figure 10: Scorecard evaluate the principles



source: Lundy et al (2014)

A tool used to assess the application of the guiding principles concerning an inclusive business relationship. To see how it works going from theory to practice (Lundy et al., 2014).

Refine business model

The business model is a tool which can be brainstormed to create new business models in the joining of various enterprises to work together, analyse business opportunities and whether the business proposal is viable. The business canvas model does not include some elements in its structure and is

indicated in the refined business model canvas

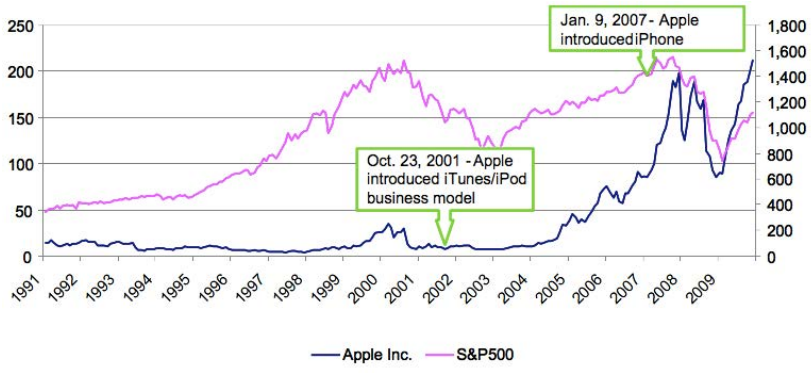
Figure 11: Refined business model

Source: Brussee and de Groot (2016, p.6)

Business model Innovation

Business model innovation that is visualized may add towards innovation in products and services, production, distribution or marketing methods, and markets. An innovative business model can either generate a new market or allow the firm to generate and develop new opportunities in existing markets. To be more specific, the business model is defined as the content, structure, and governance of transactions designed to develop value through the utilization of business opportunities. Transaction content refers to what is being exchanged and performed, transaction structure refers to how the exchanges are linked, and transaction governance refers to issues of control. The researchers found through large-sample, cross-sectional empirical analysis that business model innovation conceived as novel (new to the state-of-the-art) transaction design positively influences firm performance. To innovate the business model there are important design elements that portray an activity system such being its content, structure, and governance. These design elements can be used as an influence, separately or together to engender business model innovation (Amit and Zott, 2010)

Figure 12: Stock price of Apple



Source: Amit and Zott (2009, p.4)
Stock price of Apple, 2009 cited in Amit and Zott, 2010, p.5

Activity system key to understanding firm's business model

The activity system is important to comprehend the firm's business model. The activity design considers the design elements (content, structure and governance) and the design theme (novelty, lock-in and complementary). The activity system is a group of interdependent structural activities

focused on the lead firm and the interdependencies between the activities are essential to the concept of an activity system. These interdependencies are formed by manages and entrepreneurs who develop and mold the company's activities and transactions, interlinking them together into a system. This intentional design that operates within and across the firm's boundaries is the essence of the business model. The construction of the lead firm's activity system is formed by the activities, the links and who does them embedding itself in the system of the network of suppliers, partners and customers. The lead firm's bargaining power depends on the business models control and the more superior the total value is formed the greater the bargaining power of the lead firm. The amount of valued captured by the lead firm hinges on its pricing strategy or revenue model. The business model is defined as the content, structure, and governance of transactions designed to develop value through the utilization of business opportunities. The following design elements:

- Activity system content denotes the selection of activities performed for example Bank Colombia accepted activities to offer microfinance but had to train their own staff and hire and train them as well first to deliver such activities. These new activities had to be linked to its existing system.
- Activity system structure defines the way activities are linked that is the sequencing between them capturing the importance of the business model in relation to its core and supporting activities. IBM switched from being a supplier of hardware (old core) to a service provider (new core).
- Activity system governance considers who performs the activities and franchising represents an activity system governance. The franchising of Seven-Eleven stores in Japan adopted the activity system governance and formed value through qualified management and local adjustment (Zott and Amit, 2009).

Supporting factors for business model.

Improving market institutions is a strategy that will improve trading. According to KIT and IIRR, (2008) such improvement can be achieved by:

- Standardize quality, weight and measures help trade to be more efficient, reduce handling costs, improve business returns, client satisfaction and higher prices due to quality of product
- Develop contract enforcement mechanisms eases the trade transaction making it more efficient. The benefits achieved are: traders or purchaser trusts the agreements; One is positioned to be able to buy or sell on credit and invest in business growth.
- Develop market information systems stimulates accuracy in buying and selling of commodities which is crucial for efficient trading.
- Providing financial services known as trade finance assists chain actors with capital for their investments.
- Provide business support services in the form of transport, accountancy, training, research and development influences better trade performance.
- Strong chain relations create strong organisations, trusting relationships among the players and the relations are relatively stable whereby the farmer trader or commercial farmer will benefit.

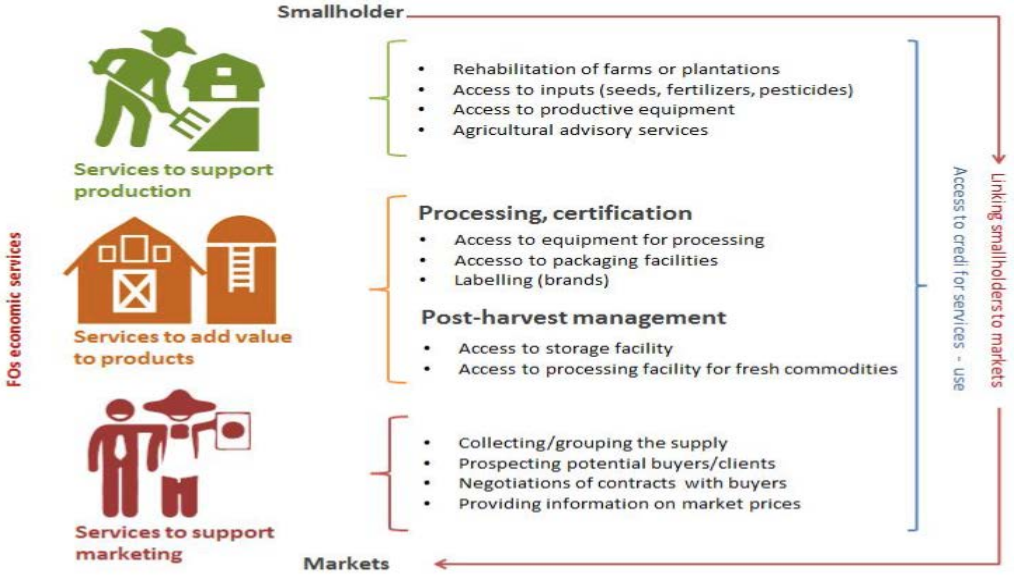
Support to farmers' organisations business model

The farmer organisation (FO) business model is strengthened where by the smallholders are positioned to benefit from market opportunities if focus is on the areas of Financial resources, economic support services and partnerships with other stakeholders in the value chain identified in Longo, et al. (2016) in the following areas:

- Financial resources access through advance payment mechanism to support smallholders access to inputs which allows farmers to receive inputs before produce is sold to the market.
- Warehouse receipt system allows the smallholder to get loans using the voucher system which acts as the collateral against their products. The smallholder gets funding from Microfinance institute against these vouchers

- Production support services in the form of planting material, input access, farm mechanization and improved agricultural techniques will help smallholders to improve productivity.
- Add value to products through the services of storage facilities to prevent sales when prices are at the lowest and apply quality improvement strategies through product certification enabling smallholders a better price for quality.
- Marketing support services for smallholders secures better sales prices and reduces the risk of price volatility.

Figure 13: Economic services for smallholders



Source: Longo, et al (2016, p.2)

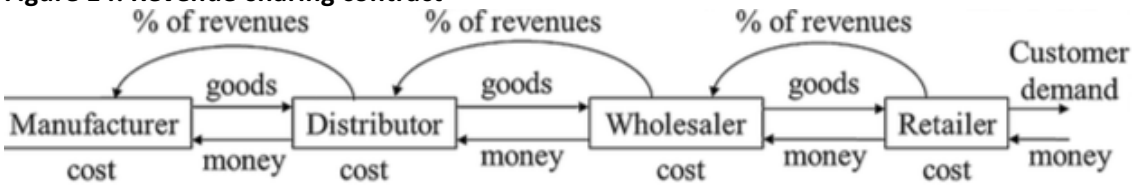
2.6 Contracts

Contracts have multiple reason but they link the farmers and buyers for producing and marketing their products (world bank group, 2014). In the case of contract farming where the smallholders are linked to Nufoli through a business agreement stating that the farmer will supply quality produce and Nufoli will source and sell the produce into the market. This arrangement reduces market uncertainty and transaction cost for both parties (Holtland, 2017). Within the contract focus is given to input, technical assistance, quality control, price system and payment.

Revenue sharing

In revenue sharing contracts many companies want to increase their revenue through market expansion by outsourcing which reduces costs. Traditionally the actors in the supply chain have performed independently creating a decentralized supply chain. This decentralized chain can be suboptimal for every participant due to conflict of interest with the consequence of incentives not lining up among the companies. On the other hand, a centralized supply chain can maximize its profit when one central planner possesses information but each supply chain partner is incentivized to sign and act in accordance to the contract while still acting in their best interests, maximizing their own profit and optimizing the profit in the total supply chain leading to a win-win situation for every other partner. In revenue -sharing contracts, the risk is shared across the supply chain. The income of the wholesaler depends on the retailer's revenue who relies on the uncertain market demand making the wholesaler's profit also uncertain. Creating a smart revenue-sharing contract where parameters in which the wholesale price and revenue share percentage can be set so that both parties will benefit and a win-win situation is achieved compared to the decentralized situation.

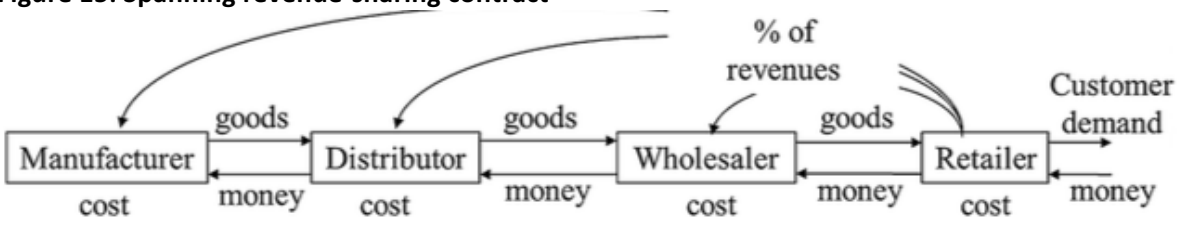
Figure 14: Revenue-sharing contract



Source: van der Rhee, et al. 2010
Revenue-sharing contracted cited in Van der Rhee et al, 2014, p. 476

A two-firm contract approach produces problem in a multi-stage supply chain. In a situation when the wholesaler and retailer sign a revenue sharing contract together ensuring higher purchasing quantity than all other actors outside of the contract but in the chain, could ask for a higher wholesale price since the wholesaler has set the demand for the entire supply chain. therefore, every unit the retailer orders from the wholesaler it must order from the distributor who must order it from the manufacturer. The firms outside of the revenue contract increase their profits but the profits decrease for those partners who are part of the contract.
A spanning revenue sharing can be demonstrated in the case of the football player Arjen Robben. In the transfer from club Chelsea to Real Madrid, payment was made to Club Chelsea plus to his previous club and amateur club during his childhood years. The payment compensated the various upstream clubs and the downstream revenue will be realised at the time of transfer. In using the revenue sharing contract in a multi supply chain the football example can be used where a firm known as the pinch point in the chain takes the lead to form a contract that involves everyone in the supply chain simultaneously as shown in the spanning revenue-sharing contract diagram.

Figure 15: Spanning revenue-sharing contract

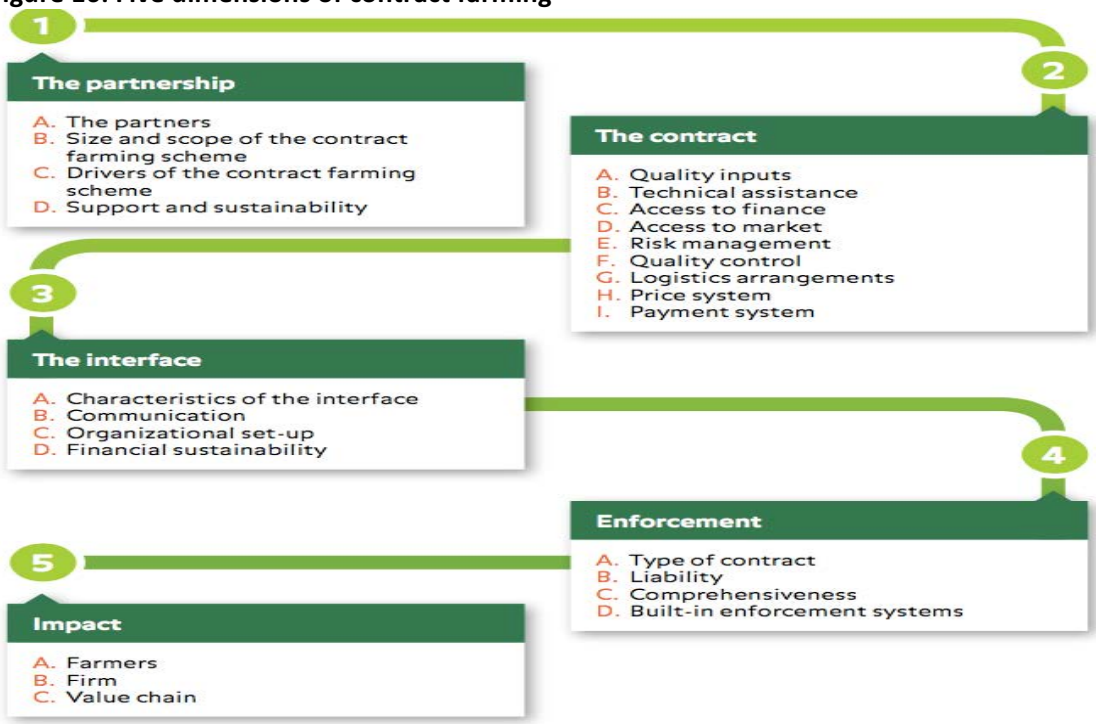


Source: From van der Rhee, et al. 2010
Revenue-sharing contracted cited in Van der Rhee, et al. 2014, p. 478

The proposed spanning contract has challenges but requires: the involvement of multiple parties and planning; the variable costs shared or determined throughout the supply chain; create a win-win situation and perceived fairness amongst the players. Spanning revenue-sharing contracts have the potential to enhance outcomes for all players within a supply chain (Van der Rhee, et al., 2014).

Contract farming in Ethiopia
Contract farming is well liked in Ethiopia. policymakers, consider it as a priority. In the Growth and transformation plan II of Ethiopia, contract farming is one of the main strategies to advance agricultural development through commercial farming (Holtland, 2017).

Figure 16: Five dimensions of contract farming



Source: Holtland (2017, p.18)

Heineken and Selet Hulling contract farming was revealed in the following areas below (Holtland, 2017).

Table 10: Contract farming Heineken and Selet Hulling

Contract farming Heineken and Selet Hulling		
	Heineken	**Selet Hulling**
Quality input & support	Introduced new seed varieties – yield 40 to 70 qtl/hectare; local variety yield 12qtl/ha. They partnered with the CREATE programme which is supported by ICCO, EUCORD and DGIS	Introduced the approach to use rented tractors, improved seed, organic fertilizers and labour.
Technical assistance	CREATE's agronomist plan training and demonstration on good agricultural practices. They do trials on seed variety and with new fungicide which indicated an additional yield ranging from 3 to 12qtl/ha depending on variety. Heineken provided the trial chemicals to the farmers. The lead farmers and cooperative received quality inspection training.	Farmers are certified organic by the control Union. Technical assistance to the farmer is provided for organic fertilizer and pesticide production. On farm coaching and farm visits to transfer knowledge and skills ensuring no contamination with pesticide residue on the sesame.
Quality control	Heineken hired a firm, Star Ethiopia to do quality checks at village level and delivery points. The parameters used: purity of variety; quantity of foreign matter; grain size; moisture content, colour and smell.	Quality parameters are reviewed every year. The sesame standards required: need to be clean; uniformity of seeds size; colour white and limited moisture content and free of chemical contamination.

Contract farming Heineken and Selet Hulling		
	Heineken	**Selet Hulling**
Price system	There are various bouquets of pricing amongst the brewing companies. One year Heineken agreed on 1,050ETB/qtl plus transport for large quantities of 2,500qtl. In the next season, Heineken offered a new contract offering a premium of 10% on the base price but cooperative was directed to charge 12ETB/qtl for direct handling cost plus 2% for commission. Quality accepted standards are confusing since the competitors' standards differ.	Sesame is purchased by cooperative at the going market rate plus a premium of 50-100ETB/qtl for quality. Selet Hulling then purchases sesame at ECX platform price taking place at the cooperative's store gate where no transaction cost and marketing cost occur but save 100ETB/qtl. Selet Hulling assists the cooperative by sharing 50% on their deficits when ECX price is lower than the cooperative purchase price.
Payment system	Heineken uses a payment structure where they pay the interface after receiving an approval from the quality inspection through a smartphone application. The interface can be the cooperative union, lead farmers and primary coops.	The cooperative pays the farmer in cash on delivery but first deducts their loan repayment. Selet Hulling pays with a bank cheque a few days after receiving the sesame from the cooperative.
Risk management	Risks for farmers is very minimal since growing barley is known and the can sell it to many buyers. Heineken has substantial risk. It offered 17% of the barley value to 6000 farmers but at the start of the next season 6% was still outstanding.	The main risk is the farmer does not repay the loan due to side selling and receiving contaminated sesame. To reduce side selling the firm puts effort into building trust and a strong relationship with the cooperative and members. It offers competitive incentives that what is in the market. Conflicts are resolved amicably with consideration to the context. The natural elements, drought, pests, disease are risks for the farmer. No mitigation suit has commenced.

Source: Holtland (2017, pp.29, 31, 32, 57, 58)

Table 11: Contract farming risks

	FARMERS	BUYERS
PRODUCTION RISKS		For those not already engaged in production (e.g., processors), investing in production will involve them in production risk, though contract farming can also be used to mitigate this same risk
Weather related	Unchanged in likelihood, but the threat may be reduced by infrastructure, such as irrigation, or by crop insurance schemes organised by the buyer or others, including government	
Biological	Risk may increase with a new crop, but availability of inputs and credit to make them accessible, plus the provision of good extension and training by the buyer, can reduce the risk	Poor crop management skills by small-scale farmers, perhaps with limited literacy, can be overcome by good extension
Diversification	Risk averse small-scale farmers tend to rely on a diversity of crops plus non-farm income. The consequences of crop failure are more severe in production focused on a single crop, which may contribute little to the household nutritional balance	
New product or technology	Might be inappropriate for the region; might require technical support and learning; needs to be minimised through support from the buyer	
Loss of control	Loss of flexibility to adjust to market opportunities	Loss of flexibility to seek other sources
Asset or investment risk	The investment by all parties in contract farming can be substantial, for the buyer in infrastructure, human resources and procurement structure, while the producers of poultry or tree crops have significant set-up costs. Long-term commitment and trust is needed	

Source: World bank group (2014, p.8)

2.7 Inclusiveness measurements

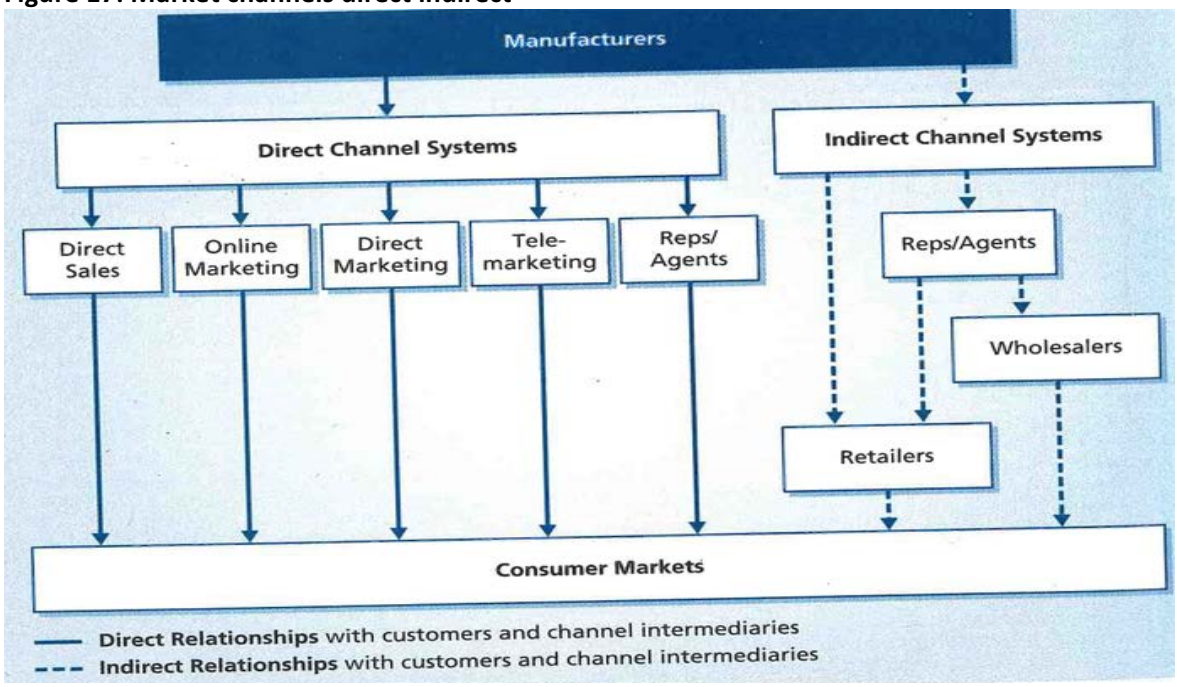
According to world bank group (2014) the measurement of inclusiveness has greater importance in contract farming investment. Inclusive agribusiness success can be judge through evidence of decreased vulnerability and insecurity among beneficiaries. Generating increase income in smallholders can be measured through indicators which include:

- Increased job opportunities and permanent jobs resulting from contract farming.
- Increase farm-gate incomes due to: increased yields; improved quality; technology transfer; training; complying to specified standards; the market chain is shorter and bulk purchasing reducing input cost.
- Influence in improving the food security and rural nutrition.
- Contribution to exports

2.8 Market

Cost efficiency depends on operating efficiently which depends on the market channel used to reach the customer. There are two marketing channels, direct and indirect. The direct marketing channel gives higher margins but must cover all marketing expenses. The indirect marketing channel gives lower margins but the cost of channel management and marketing are less.

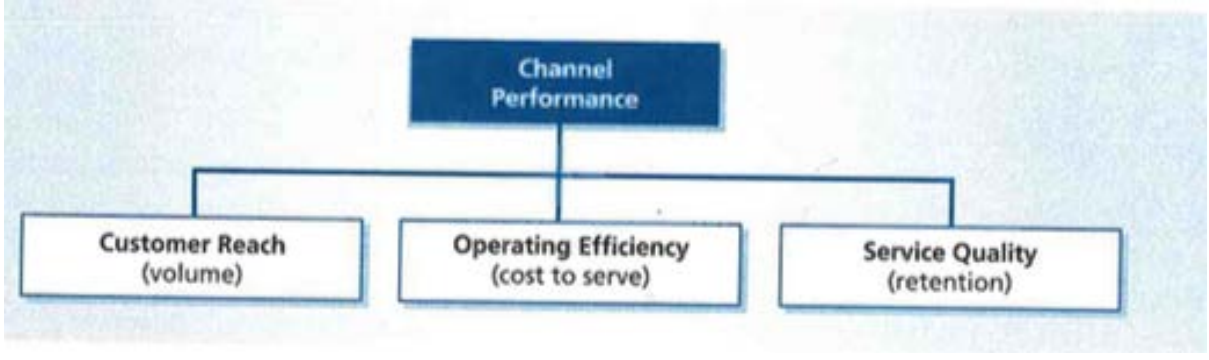
Figure 17: Market channels direct indirect



Source: Best (2009, p. 318)

The company needs to perform well in all three areas such as, customer reach, operating efficiency and service quality to achieve the desired sales and profits. In customer reach companies like to use direct market channels although in some cases with indirect market channels the company uses wholesalers, distributors, retailers and other intermediaries. The company uses direct marketing channels to operate efficiently resulting in higher margins but bears the cost of channel management and marketing expenses. If channel operation is inefficient then serving customer is too expensive rendering the channel unprofitable. Improving cost efficiency through making its products easily available enables the company to lower customers' transaction costs. If products are not readily available then customers will source elsewhere other than their preferred points of purchase which makes customer transaction expensive. If customer service is poor then the ability to retain the customers are lost and at the same the benefits achieved through good customer reach and operating efficiently will be reduced (Best, 2009).

Figure 18: Channel performance



Source: Best (2009, p. 313)

marketing constraints that relate to the context of low economic development in Africa according to KIT and IIRR, (2008) are:

- Poor physical infrastructure of roads, telecommunication and rural infrastructure increases

- costs and transport risks resulting in lowering the farmer's income opportunity.
- Limited purchasing power since the householders dedicate a large share 60-80% of their income for buying food very little is left to purchase high-value products as a result the process of value adding in the value chain is limited.
- Limited business skills due to undeveloped entrepreneurial skills because the education attained is at a low-level, which results in the lack of commercial knowledge to market the products by themselves.

Collective farmers marketing

The outcome of collective farmer marketing initiative (COFAMI) research shows the dynamics observed to strengthen the position of farmers, to increase rural incomes and employment, and to develop collectively viable adjustment strategies towards the future. The new upcoming collective marketing initiatives go beyond the classic mechanisms of traditional agricultural marketing cooperatives which was to countervail power by pooling volumes jointly to strengthen the negotiation position of producers in relation to downstream supply-chain actors, creating cost advantages by having economies of scale, influencing the price levels and conditions of exchange. However, the increasing scale of operation of the food supply chains and concentration of processing and retail industry has increasingly undermined the strength of the classical cooperative model although they have not completely lost their importance. Based on the COFAMI research the following initiative to develop and focus on are:

- high quality food products;
- on regional food products;
- producer-consumer relations;
- develop markets for non-food products and establish a regional brand.

The new initiatives attempt to offsets the loss of producers' control over food supply chains by formulating coalitions and co-operation with other market actors. Therefore, the new collective marketing initiatives employ diversity of strategies and sometimes are combined to realise the potential impact in the market place (Schermer, Renting and Oostindie, 2010).

One of the conclusions drawn from a study is for the cooperative to pursue a commercial purpose they should serve their farmers in two ways and not only by procuring cheap farm inputs but also through collecting and selling farm outputs described as collective marketing. Collective marketing is a key activity for smallholders to enter the Agri-commodity markets however, the observation made is that half of the Ethiopian rural cooperative do not participate in collective marketing but would protect the semi-subsistence farming systems from market competition. Collective marketing activities are more sustainable when introduced voluntary by the cooperative rather than those formed by the government or NGO. External intervention raises the probability for the cooperative to initiate collective marketing at an early stage (Francesconi, 2009).

Cooperatives based are spontaneously initiated by farmers aim for commercial objectives. Cooperatives who neglect market services to their members are working within the context of rural communities being subject to social value inclusion and norms. This often clashes with professional, business oriented company's conditions to compete in the marketplace. Under the influence of social inclusion and solidarity the cooperatives include subsidized poorer performance farmers at the cost of better performers, thus undermining the rewards for efficiency and innovation. Village leaders or elites generally manage agricultural cooperatives and lack the skills and resources to maintain the business over time. Cooperatives in developing country fail to re-adjust strategic performance to maintain competition in the marketplace and often need Government and NGO support. Ethiopian government support and intervention to cooperative management interferes on members' decision creating internal corruption and conflict such as providing output services for government in sales and distribution of fertilizer contrary to their business interest. These interventions in Ethiopia are invasive and generate rural dependency than entrepreneurship. Cooperatives in Ethiopia seem to be used as

tools to implement government policy design without cooperative agreement (Francesconi, 2009).

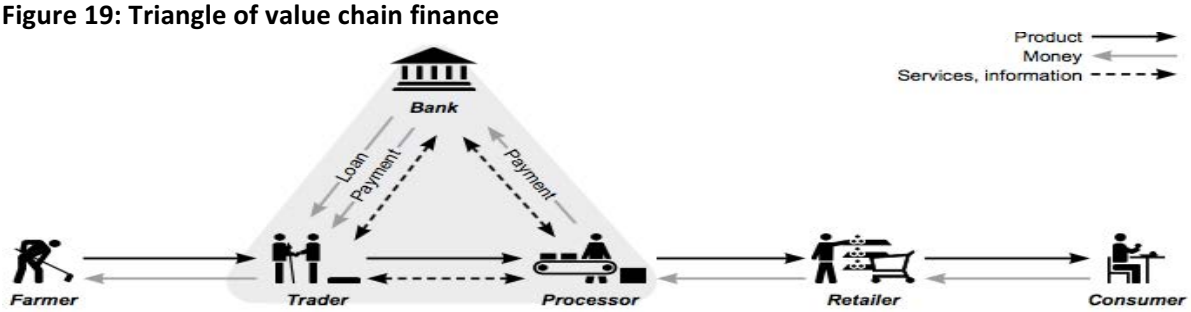
2.8 Finance influencing the value chain

Value chain Finance

Agriculture finance or external finance is when finance is supplied through an outside agent, such as microfinance institution, banks or other agents. Commercial banks use the microfinance system to indirectly give financial service to the rural entrepreneurs. Value chain finance results in connecting two or more value chain actors with the financial service providers. The financial institutes, bank or MFI link into the value chain based on contractual relations in the chain. The benefits to the smallholder is finance to produce and deliver the product, information exchange and the way to manage risk.

The triangle value chain finance demonstrates the relationship with trader, processor and financial institution that requires the following process: product flow, where by the farmer receives finance to produce the product; financial flow, involves disbursement, interest rate shared, repayment and liability for the loan and risk management focuses on contract, product and guarantees from neighbours, family and peers (KIT and IRR, 2010).

Figure 19: Triangle of value chain finance



Source: Kit and IIRR (2010, p. 28)

Business model A3 service providers

Farmers receive vouchers and use them to buy services from a provider. The provider redeems the voucher form the bank, which has been financed through a grant from donors or government. In this case farmers can select the service provider in other situations they must use only one provider but choose the kind of services required. The NGO use this system when they give finance to cooperatives to hire in services. The cooperative has the option to choose which company to hire.

Figure 20: Business service model

Business model fully paid up services/Voucher for services

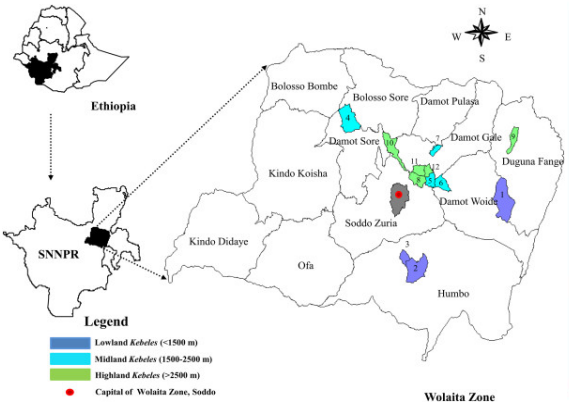
Source: Wongtschowski et al (2013, p. 26)

CHAPTER 3: METHODOLOGY

3.1 Study Area

Wolaita Zone in SNNPR Region indicating Sodo Zuria Woreda where Haba Gerera Kebele is situated in Ethiopia.

Figure 21: Map, Wolaita Zone in SNNPR Region



Source: Research Gate (n.d)

Source: Research Gate (n.d)

Nufoli the commercial farm is situated in both Arsi Zone in Oromia Region and Wolaita Zone in SNNPR region. The studies original researched area was in the Arsi Zone of Oromia Region but due to political unrest and tension it was directed to the SNNPR Region of Ethiopia. The total population in Sodo Zuria Woreda is 184,432 comprising of 90,372 males and 94,060 females taken from the Woreda administrator's office. In Sodo Zuria Woreda there are 31 rural Kebele administrative, land area of 40805 hectares, most are living in the rural areas whose livelihood largely rest on subsistence agriculture. The area lies at an altitude between 1500 to 3200 m.a.s.l with the average rainfall of 1200mm per annum. The smallholders produce products such as: maize for their own consumption and the market; Tef, wheat, barley, potatoes and pulses using agricultural traditional methods and sold in Sodo Zuria trading market (Balta, Tessema and H/Wold, 2015).

3.2 Research design

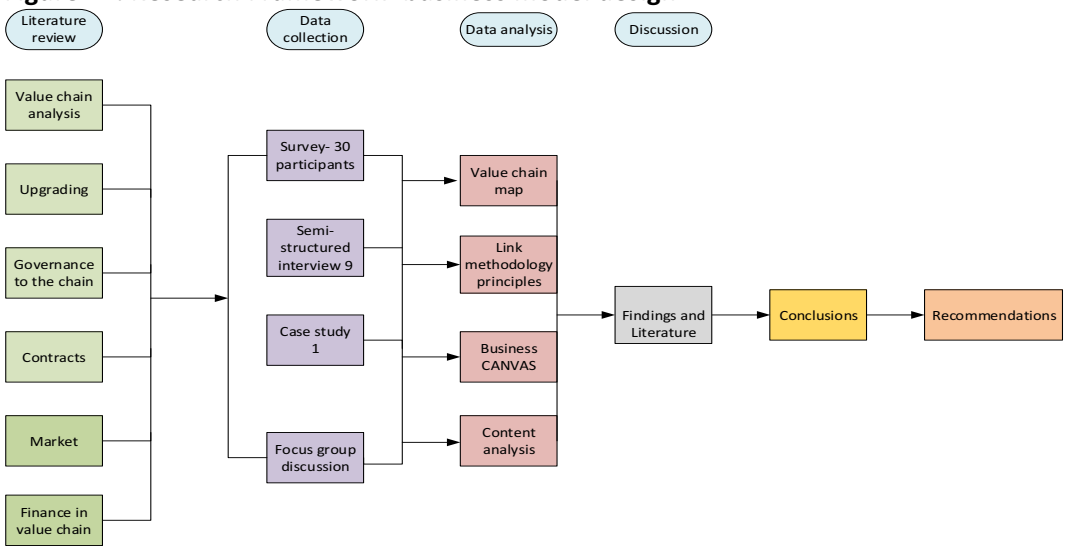
The research design for this study first developed the objective and from this the questions both core and sub questions were formulated. Out of this formulation the conceptual framework was develop. This research took place in Sodo Zuria in the Wolaita zone of SNNPR region of Ethiopia. The research framework was developed and indicated the steps needed to reach the outcome of the thesis (Verschuren and Doorewaard, 2010).

The research includes qualitative and quantitative approach and applied an empirical research to gather relevant data from the field and secondary data from literature and documents. Data collection was done through surveys, semi structured interview with key informants, case study and focus group discussion. Data collection was taken from the 25th June to 10th August 2017.

Research framework

The research framework graphically characterizes the study which is to design a business model linking small holders to commercial farmers, and indicates the steps needed to reach the outcome (Verschuren and Doorewaard, 2010).

Figure 22: Research Framework- business model design



Source: Adapted from Verschuren and Doorewaard (2010)

Desk Research

A literature survey was done using books, articles, research reports to examine business models and the related concepts that exist in the researched business model to discover what has worked before and if there are any similar cases to the one under study.

Secondary data, used empirical data gathered by other researchers on the strategies, market channel approach and the design for develop a business model that links small scale farmers to the commercial farmer. The data was collected from: databases where secondary material is stored.

Survey

Figure 23: Pic Smallholder group for survey

An explanation of the process and survey questions.

Source: Author (2017)

The survey was done on 30 (n=30) farmers who were randomly selected according to certain criteria and divided into two clusters:

Cluster 1 represented 15 smallholders as members from the cooperative union.

Cluster 2 represented 15 individual smallholders who are not members of the cooperative Union.

The research population was a cohort of smallholders with average hectare of 0.5, who grew tef, barley, maize and pulses as well as having a recognised land certificate in their region (Federal Rural Land Administration, Proclamation No. 89/1997. Part two 5(4), 6(1)). The smallholders selected are in proximity to the commercial farm, Nufoli in Sodo Zuria, growing the same crops as the commercial farmer as this promotes an easier working relationship in the business model.

The survey questionnaires focused on:

- the existing situation of the smallholders which covered product, sustainability/social, technology, process, economic services/market.
- supporting and challenging factors that influence the farmer in their business model design.
- To identify partners working with them.

The questionnaires were administered in groups having 5 participants in each group. Prior to our meeting there was a heavy storm where roads were washed away and vehicles could not get to the rural areas. The Woreda and Darwit (interpreter) took the initiative to implement this plan. Some questions were altered to bring more clarity and others added.

Figure 24: Case Study with Nufoli staff

Source: Author (2017)

The case study was done with the general manager, farm manager and the legal representative of Nufoli in Sodo Zuria. The reason for choosing certain personal from Nufoli:

- The general manager, it was hoped to gather information that encapsulated Nufoli's vision and the general plan to link with smallholders
- The farm manager, it was to extrapolate the procedure on how Nufoli would work with the smallholders
- The legal representative, was to find the acceptance level from the government and smallholders on Nufoli's business model.

The case study focused on:

- mapping out Nufoli's business model
- How Nufoli intends to work and link with the smallholders in Sodo Zuria.

Figure 25: Pic Focus Group Discussion in SodoZuria

Focus group discussion in Sodo Zuria at the premises of the Woreda.

Source: Author (2017)

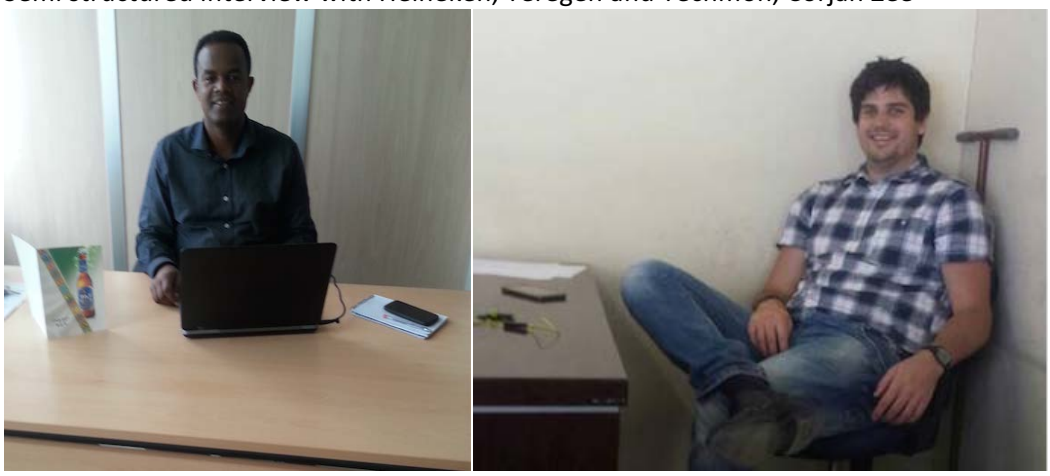
Figure 26: FGD comparing business model
Focus group discussion comparing their business canvas model with Nufoli

Source: Author (2017)

Organised a focus group discussion with the commercial farmer and the same smallholders who also participated in the survey. During the focus group discussion, various aspects were covered:

- Identification of smallholder and Nufoli's value chain.
- The smallholder and Nufoli's business model and compared them.
- What they would like to develop in the new business model.

Figure 27: Semi structured interview Heineken & Techmon
Semi structured interview with Heineken, Teregen and Techmon, Corjan Zee



Source: Author (2017)

Figure 28: Semi structured interview with Kebele and woreda

Source: Author (2017)

A semi structure interview with Heineken, Techmon, Woreda and Kebele was done together with a checklist covering points of the discussion (See Annex C no). A purposive sample was done on 9 key informants who had knowledge on agricultural industry or who are working in the sector.
Based on the interview with ATA (See C. Annex 10), the business model development does not only start with tef but includes other commodities.
The 9 participants who have influence and knowledge in the tef sector and other commodities such as Barley, wheat and potatoes were selected for the semi structure interview, are as follows:

- Zegeye Teklu – Agribusiness market linkage manager from the Agricultural transformation Agency (ATA) who influence the policy of exporting tef and commercial linkage with small scale farmers.
- Kabele and Woreda who influences the members in a cooperative.
- Fransien wolters – microfinance advisor Ethiopian & Getachew Mekonin – microfinance advisor for strengthening African rural smallholders (STARS) programme for the Inter church organisation for development (ICCO), Non-government organisations working in the region where farmers are farming.
- Tezera Kebede CEO (MBA in financial management; BA degree in economics) of Poverty eradication & community empowerment (PEACE) Microfinance services working with small scale farmers.
- Gutema Dibaba, Director, cooperative Banking processing, of the Cooperative bank of Oromia for group financing with cooperative smallholders.
- Tarekegn Garomsa; Local sourcing manager for Heineken who have a business model design with small scale farmers.
- Gerrit Holtland, Team leader for SNV working on the project called 'Hoti-life program'.
- Corjan Zee, Technical designer working for Techmon to develop a Sensor Unit for the agricultural industry.
- Nicolaus Cromme, Project manager & TA facility manager for impact investment funds (AATIF and Moringa fund), who works for the Common fund for commodities (CFC) in the Netherlands. Fund supporter for projects with a sustainable business model that has links between smallholders and commercial companies.

3.3 Data analysis and processing

Link methodology tool

The link methodology is a toolkit that links rural producers with current markets focusing to build inclusive commercial relationship. In the research three aspects of the link methodology were used,

namely: the value chain map to comprehend the concepts in which the business operates; the business canvas model was used to understand how viable the organisation functions with the idea to design a new business model tool and the new business principle were used to gauge how inclusive is the trading relationship (Lundy, et al., 2014).

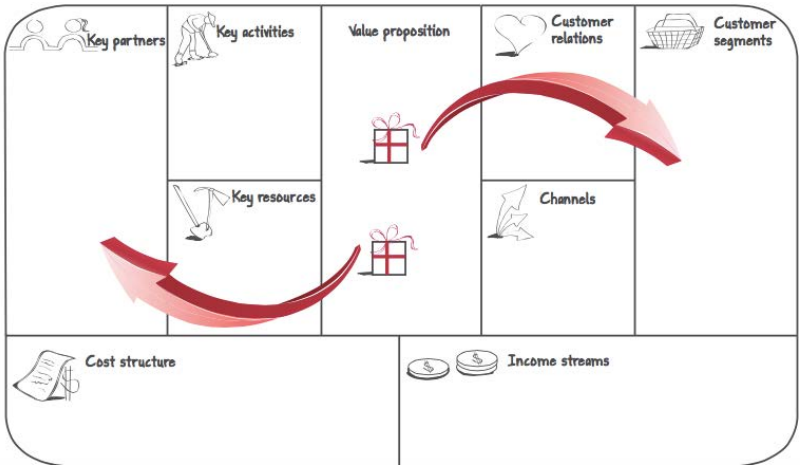
Stof model technology design

The technology design is linked to the business model design in the way that the organising between actors regulates their responsibilities, relationships, allocation of costs, benefits, tasks and risks. In the research the technology design was used to understand how the sensor technology unit works and the benefits it brings to the new business model design (Bouwman et al, 2008).

Business canvas model

Double facing value proposition business canvas model

Figure 29:Double Face business canvas model



Source: Lundy, et al (2014).

This concept is significant for buyers to incorporate smallholder into the supply chain. In inclusive business model the value proposition is looked at from two viewpoints that is the producers' and customers' perspective (Lundy, et al (2014).

Ethical Considerations

- Informed consent from smallholders: All names of participants is written on one sheet of paper whereby each person ticks to verify themselves and the whole document is verified and signed by the Kebele personal with a witness from the department.
- Data source: The information received from the participants was given as data for the research so could be used in the thesis report.
- Permission to hold the research and use the facilities in the area: the Kebele board was approached explaining what the research entailed. Permission by the Kebele committee was granted and the use of their facilities.

3.4 Limitations

Limitations in the scope of this study have been considered:

- The survey and focus group discussion was intended for the smallholders in Bakoji Zone of Oromia Region but due to political hostility the survey was done in Sodo Wolaita Zone of SNNPR Region where Nufoli plc is also located agriculturally. Although the designed business model is developed with the smallholders in Sodo Wolaita the concept can provide insight and help in developing a business model for the smallholders in Bakoji Zone.
- In conducting the survey, a couple of questions where ambiguous for the interpreter which affected the respondent's answer influencing the evaluation of the survey slightly. The unclear questions where changed at the time of the survey.

- The agricultural transformation Agency(ATA), who work in line with government policies are still unclear on how the policy for tef exports will be constructed and have halted in promoting the export of tef. Based on the interview with ATA, the business model development does not only start with tef but includes other commodities. (See C. Annex 10).
- The sample taken for the survey was limited to only those farmers who were near to the commercial farm located in Haba Gerera Kebele and not randomly taken from the 31 rural kebeles in Sodo Zuria Woreda due to the time frame of the research. Therefore, this is not a true representation of the population in Sodo Zuria.
- This research project turned out to be bigger than I anticipated since many areas needed to be covered to arrive at delivering a solid business model therefore it was advised to only hand in the thesis after 4 weeks giving time to complete writing up the thesis.

3.5 Expected output

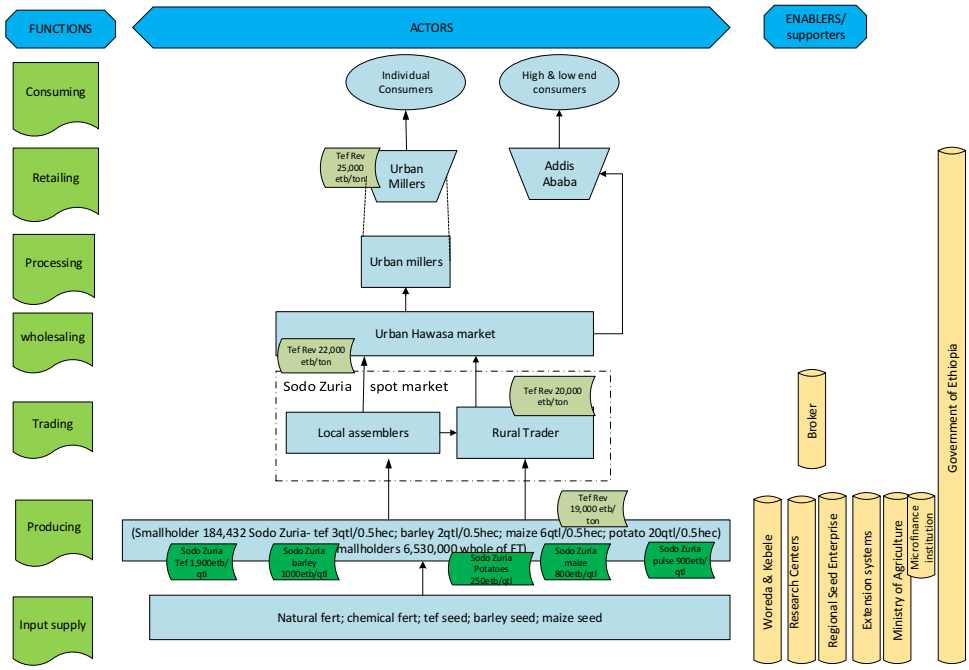
This research will yield recommendations on an ideal business model having developed a designed business model with an improve market oriented approach that is sustainable to link smallholders with a commercial farmer with the effect: to upgrade in the value chain; improved agricultural practices; achieve economy of scale; reduce transaction cost; increased crop yields and income.

CHAPTER 4: RESEARCH FINDINGS

4.1 Value chain mapping

The Value chain was developed based on information collected from smallholder in Sodo Zuria during focus group discussion. The smallholder's group identified: the actors and supporters; their roles in the chain; prices, cost and yield for tef grain, barley, maize, pulse and potatoes which all go to the same trading market Sodo Zuria and the farmers trade on the spot market.

Figure 30: Smallholders value chain map in Sodo Zuria/focus group



Source: Author (2017)

Table 12:Stakeholders role smallholders value chain

Taken from the focus group discussion

Stakeholders role smallholders value chain		
Function	**Player**	**Role**
Trading	Local assemblers	Collect tef at smallholders' farm gate and sell to traders.
	Rural traders	Buy tef from farmers who sell to traders with highest price and assemblers and sell it to urban traders.
	Urban Hawasa market	Buy tef from rural traders, sell it to mills and in Addis Ababa to consumers
Supporting in trading	Broker	Connect rural with urban traders and communicate price information.
Input suppling	Woreda	Distribute fertilizer such as Nitrogen, phosphate sulphate and urea to smallholders based on a loan facility for 5 months. Distribute seed and give advice on how to sow the seed. Land administration – monitor the smallholder if planting schedule is being done.
Input suppling	Regional seed enterprise (RSE)	Certified seed production and marketing coordination of seed production.
Government supporting	Kebele	Distribute land to the smallholders. They organise the cooperative group. They participate in the microfinance system by acting on default payments from the smallholders. Appoint the manager, secretary and finance personal for cooperative
Gvt supporting & input suppling	EIAR	Provides pamphlets on product information and research. Do seed production and disseminate improved seed.
Enabling	Government of Ethiopia (GoE)	Implement different programmes measures to address major issues of poverty reduction and food security.
Enabling	Ministry of Agriculture (MoA)	Certifies improved seed
Enabling	Research Center	Breeding, basic seed production and dissemination of improved seed.
Supporting	Extension system	Agricultural practice, fertilizer application and education
Supporting	MFI	Financial institution – loans to smallholders. 60% smallholders were financially supported whilst 40% had no financial support.

Source: Author (2017)

4.2 Cultivation practice - Product

Table 13:Barley cost price and yield

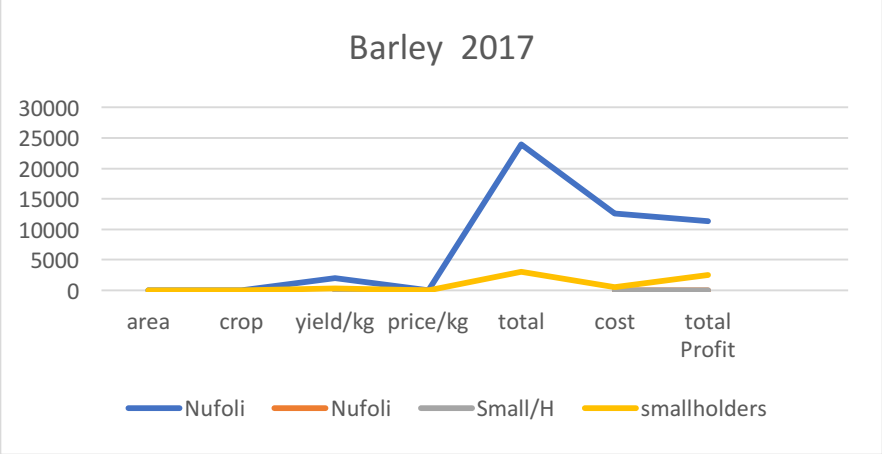
Taken during focus group discussion

2017	Nufoli	Nufoli	Small/H	smallholders
area	0.5hectare	Diff%	Diff%	0.5hectare
crop	barley			Barley
yield/kg	2,000	87%	13%	300
price/kg	12	55%	45%	10
total	24,000			3,000
cost	12,650	96%	4%	500
total Profit	11,350	82%	18%	2,500

Source: Author (2017)

There is a difference in the barley crop over price, cost and profit between Nufoli and smallholders

Figure 31: graph barley cost, price and yield



Source: Author (2017)

Table 14:Potatoe cost, price and yield

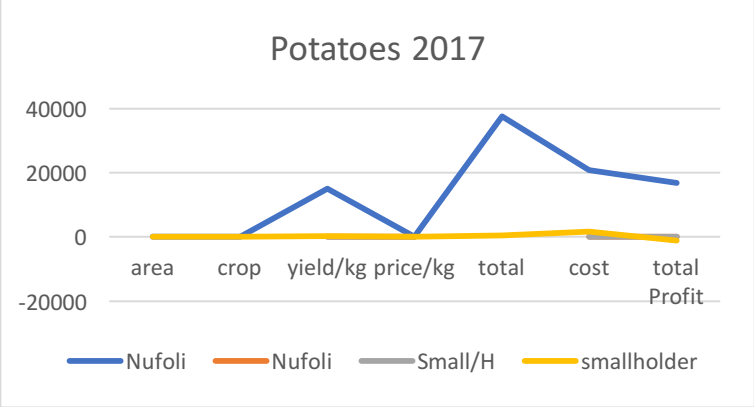
Taken from Focus group discussion

	Nufoli	Nufoli	Small/H	smallholder
area	0.5hectare	Diff%	Diff%	0.5hectare
crop	Potatoes			Potatoes
yield/kg	15,000	98%	1%	200
price/kg	2.5	50%	50%	2.5
total	37,500			500
cost	20,700	98%	8%	1600
total Profit	16,800	107%	-7%	-1,100

Source: Author (2017)

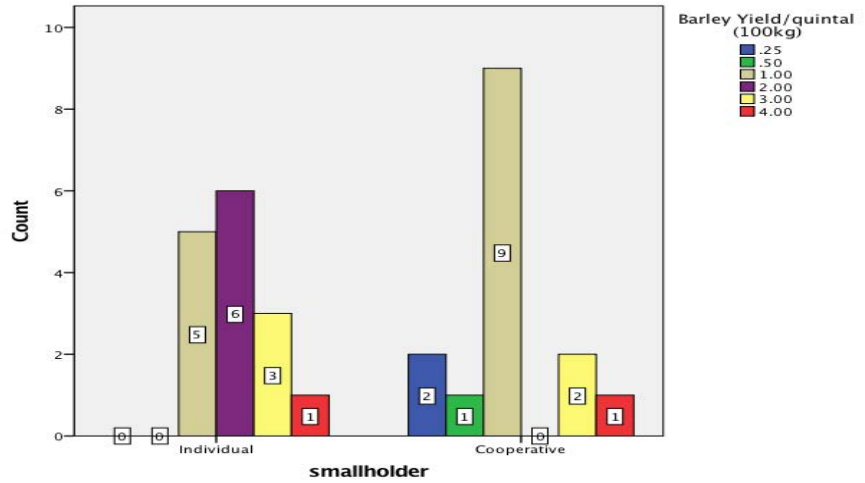
There is a difference in the potatoe crop over yield, cost and profit between Nufoli and the smallholders

Figure 32: Graph Potatoe cost, price and yield/Focus group



Source: Author (2017)

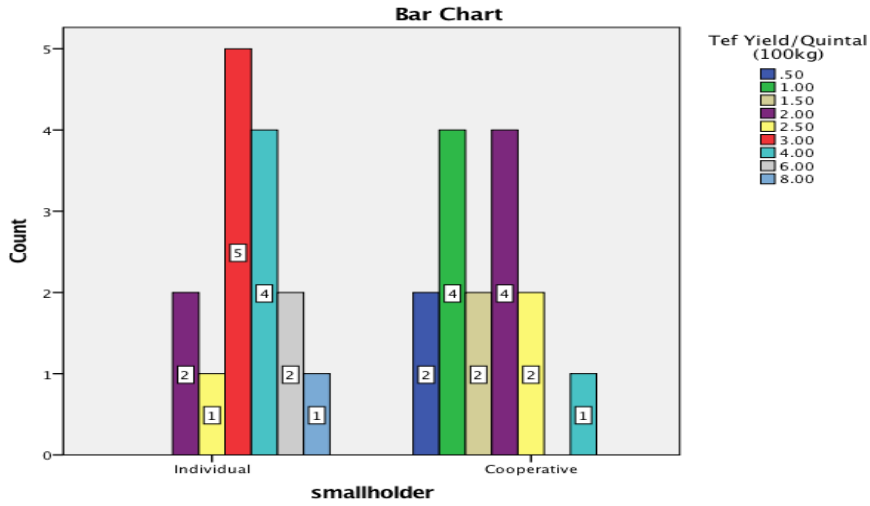
Figure 33: Bar chart Barley yields/qtl(100kg) smallholders/Survey



Source: Author (2017)

Conclusion: There is no difference in the barley yield between Individual and cooperative farmers (p=.082) (See Annex)

Figure 34: Bar chart Tef yield/qtl(100kg) smallholders/Survey



Source: Author (2017)

Conclusion: There is a difference in tef yields between individual and cooperative farmers (p = .001) (See Annex 14)

4.3 Challengers of smallholders

Figure 35: Statistics Tef and barley yields/Survey

Statistics		Tef share sold in Market/quintal(100kg)	Tef produced eaten/quintal(100kg)	Products/kg returned after market sales	Barley Yield/quintal(100kg)	Tef Yield/Quintal(100kg)
N	Valid	30	30	30	30	30
		0	0	0	0	0
Mean		1.4667	1.2883	40.83	1.6667	2.7500

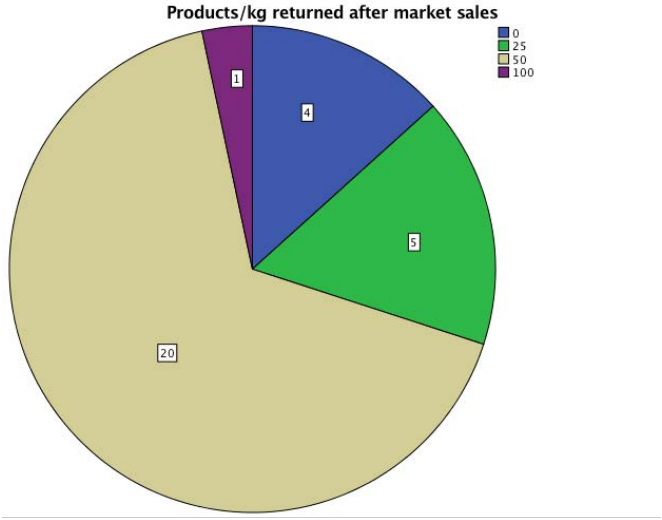
Source: Author (2017)

Table 15: Tef Barley yields

Barley yield/kg	Tef yield/kg	Tef sold/kg	Tef eaten/kg	Products return/kg
166.7	275	146.7	128.8	40.83

Source: Author (2017)

Figure 36: Pie graph products/kg returned from market



Source: Author (2017)

Table 16: Products returned after-market sales

Respondent	Products returned/kg	Respondent	Products returned/kg
20	50	5	25
4	0	1	100

Source: Author (2017)

Products sales in one day: 87% respondents returned on average 40.83kg from the market and 13% respondents sold all their products on the market.

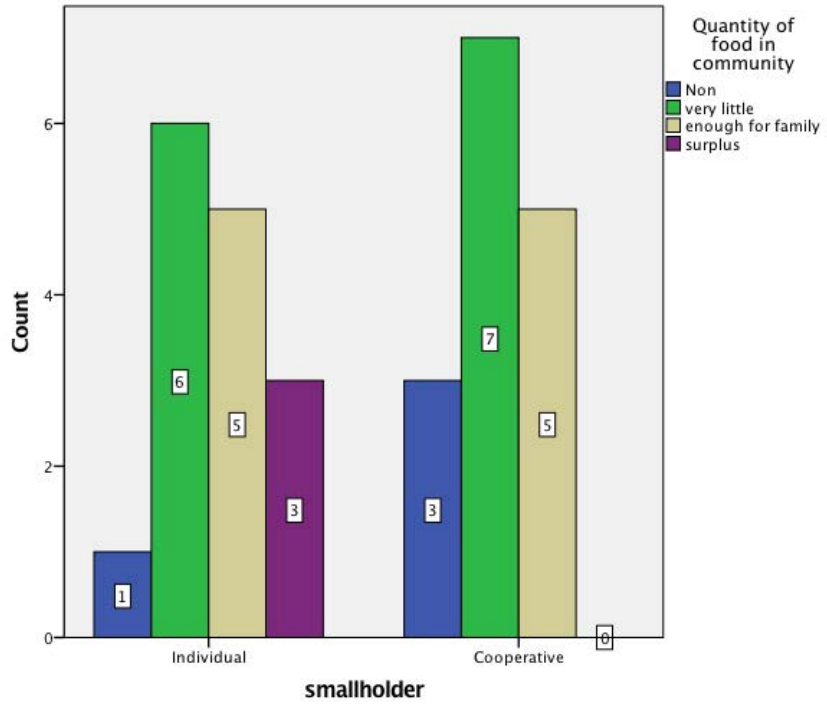
Figure 37: Products sold to trader consumer/Survey

Products sold to whom					
	Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	trader	29	96.7	96.7	96.7
	consumer	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

Source: Author (2017)

Products sold to trader on the spot market is 96.7% and consumer is 3.3%

Figure 38: bar chart Quantity community food/Survey



Source: Researcher (2017)

90% indicate a short surplus of food for their community

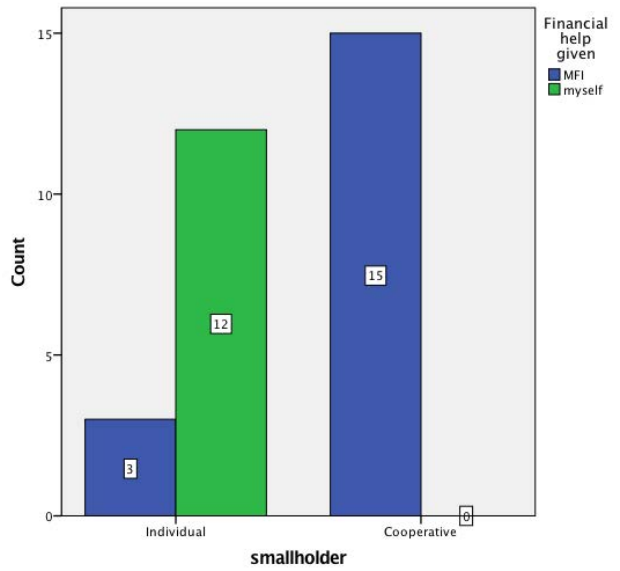
Table 17: Food quantity Haba Gerera Kebele community

Taken from survey

Quantity of food community	Individual	cooperative
Non	1	3
Very little	6	7
Enough for family	5	5
Surplus	3	

Source: Author (2017)

Figure 39: Bar chart Financial assistance smallholder
Taken from survey



Source: Author (2017)

The microfinance institution support 60% of the farmers financial and 40% no financial support but had to support themselves.
Individual farmer: MFI financially supported 3 farmers, 12 supported themselves
Cooperative: MFI financially supported all 15 farmers

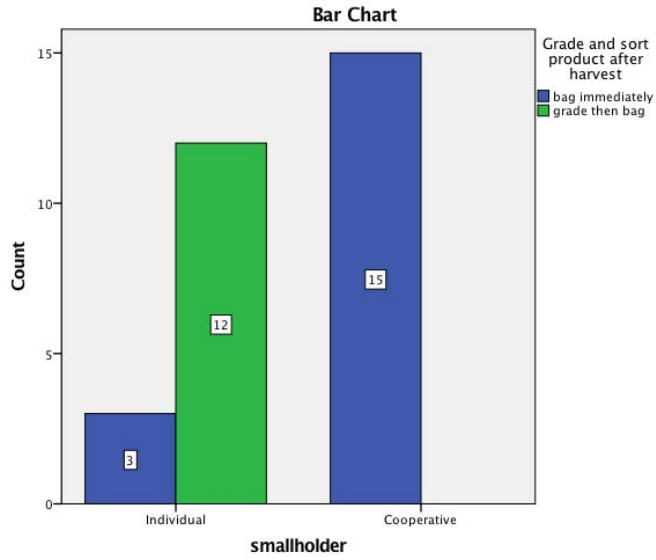
Challenges faced by the smallholders, taken from survey report

- In the trading market the farmers sold 96.7% on the spot market and 3.3% directly to consumers. No relationship formed with traders.
- The farmers yielded on average275kg of which 146.7kg was sold and 128.8 was eaten relating to 47% of potential earnings from their total production.
- 96% of farmers returned on average 40.83kg of their produce and 4% sold all their produce. The cost of logistic for produce increased. The farmers had poor market information.
- Financial assistance by MFI was given to 60% of the 15 cooperative farmers and 3 individual farmers. Financial support was not given to 40% of the 12 individual farmers, they had supported themselves.
- Food provision in the community given by the farmers: 4 farmers said non; 13 farmers indicated very little; 10 said there was enough for their family and 3 replied that there was a surplus. Just over half indicated there was very little food in the community. 90% indicate a short surplus of food for their community.

4.3 Upgrading in technology and management

Figure 40: Bar chart Grade and Sort after harvest

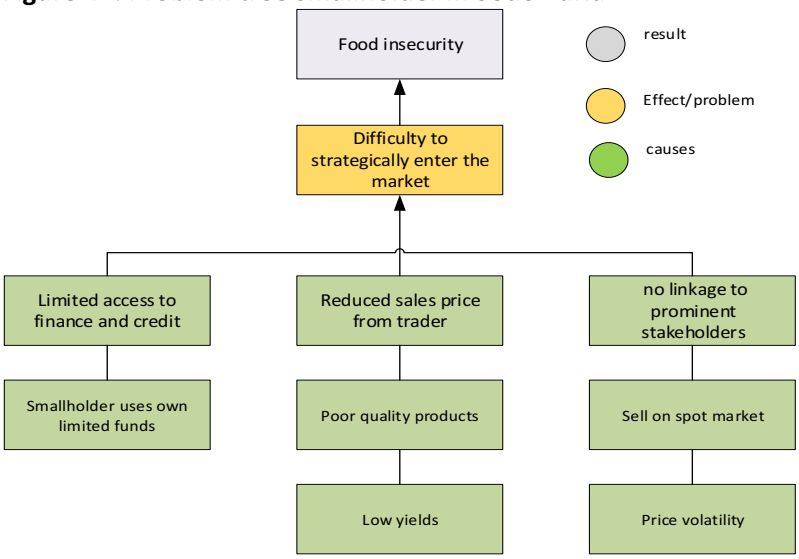
Taken from Survey



Source: Author (2017)

- Grade and sorting: The individual farmers only 3 bag immediately and 12 grade then bag; cooperative farmers 15 bag immediately.
- Both individual and cooperative farmers do not add value to farm products.
- All farmers use indirect market channels and received technical advice on agricultural procedures.
- All farmers experience a price reduction due to product quality.
  (See Annex B no 4)

Figure 41: Problem tree smallholder in Sodo Zuria



Source: Author (2017)

Nufoli wanted to link with the smallholder in a sustainable way to meet the demand for Barley and potatoes but discovered the smallholders' challenge was to strategically enter the market due to the

main hindering factors being limited access to finance and credit; reduced sales prices from traders and no linkage to prominent stakeholders resulting in them receiving low income from the market.

Table 18: Business canvas model

Taken from focus group discussion (See Annex F no. 16)

Business Canvas Model – taken during focus group discussion		
	Nufoli	**Smallholders**
Key activities 	Mechanization – land preparation, sowing to post-harvesting. Storage shed according to quality regulations. Processing according to buyers' order. Aggregation and distribution to client Maintain communication	Plough, sowing, post-harvest. All done in traditional manner which is by hand. Bagging. Storage in house room Selling on spot market
Key resources 	Employee's, Shareholders professionals for water resource. Irrigation Tractor and equipment Truck Quality control standards from Habesha & Sensalet companies Certified potato seed Certified barley seed Warehouse Product branding Bank Technology – sensor unit device on equipment. Data collection records.	Household head finance provider Storage room in house. Wife and older children MFI – input capital to cooperative but not individual farmers. Improved seed from Agricultural department. Oxen and manual plough. Donkey and cart transport to market. Some use foot to market.

Source: Author (2017)

4.4 The new business model(NBM) Principles – Key tools

taken from focus group discussion

The new business model (NBM) principle constructed solutions for smallholders. The principles operate as a lens and assisted in examining: critical success features of the business model; prioritized and select areas for innovation and upgrading (Lundy, et al., 2012). The NBM helped to uncover relevant issues and design a working relationship between the smallholder and commercial farmer, Nufoli, whilst supporting the requirements of the contracted buyers, Habesha, Heineken and Sensalet companies.

CHAIN – WIDE COLLABORATION - Principle 1

Collaboration is key to upgrading a commodity chain relating to quality, sustainability and smallholder inclusion.

- Shared objectives of Nufoli and smallholders where discussed.

  The objectives identified in the group:

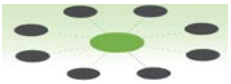
  - Profit for all actors in the chain.
  - product quality through training and proper agricultural practices;
  - market development both local and external.
  - Increase product volume to meet end user demand.
  - employment opportunities for family members.
  - contractual agreement and to work in partnership.

  Value chain finance was needed in the following way:

- A purchase structure using the input voucher system for input supply through the kiosk system.
- Indirect financial service provided by bank/MFI based on contractual relationship between smallholder, Nufoli and buyer in the chain.
- The business services paid through a voucher system that is linked to a bank or MFI.

- Chain supporters for both commercial and smallholder were identified as: MFI, Banks, NGOs; Agronomist in giving training and agricultural technical advice, professionals in technology of equipment, and spraying application; IT services for tracking and billing to ensure quality assurance; extension agent; Agriculture Department; seed houses; chemical suppliers of quality chemical products – Syngenta, Bayer and BSAF.
- Collaboration – the shared problem solving which involves the stakeholders was identified by the group: Ethiopian institution of agriculture research (EIAR) provides pamphlets on product information and research; EIAR does seed production and dissemination of improved seed; Kebele jointly works with Nufoli in solving problems with the smallholders; Woreda is referred to if problems are difficult to solve at Kebele level; The farmers linked with Nufoli get credit facility with MFI & banks and the Kebele gives farmers who are linked with Nufoli credit for fertilizer as well as training.

EFFECTIVE MARKET LINKAGES – PRINCIPLE 2



smallholders and their organisation need to be linked to a stable, profitable market.

- The market linkage formation with the buyer was clarified.
  Nufoli's has direct link with Habesha, Heineken and Sensalet who are well established companies and have a demand for quality barley and potatoes.
  Nufoli has a direct contract with Habesha, Heineken and Sensalet incorporating the smallholders linking them to the market. They established to jointly agree on availability of volumes so the buyer does not source elsewhere and to keep transaction cost low.
- Customer reach techniques were elaborated.
  Collection centres are situated in the contracted farmer's area for the ease of product delivery, stimulate collective action from the smallholders for their products and to reduce product damage through long distance to the buyer. It was explained that customers can be easily reached through forming a shorter marketing chain with the ability to respond to the buyers' needs. Nufoli wanted to ensure quality production with the smallholders therefore outlined various available activities, such being:
  - provision of a convenient kiosk to assist the farmer in getting input supply on time.
  - Nufoli works with business service providers who have been approved on their delivery service.
  - the services offered are land preparation, a spray programme and harvesting.

  These services are fully paid through a voucher system which is supported by a microfinance institute through a bank loan facility for the smallholders.
- Operating efficiently to produce quality products was explained.
  The transportation of products to the end market is easily consolidated, since the products are readily available in storage preventing the buyer to purchase elsewhere. The Technology sensor unit system for tracking and tracing products are installed on the tractors, spraying and harvesting equipment to give data feedback on agricultural practice leading to quality assurance.
- Service quality to deliver the desired quantity and quality for customer satisfaction.
  The agronomist together with extension agents train and assess farming practice such as the use of improved seed and seed dressing preparation, fertiliser and chemical application, harvesting

technic, grading and storage. Market information will be transferred to prepare the smallholders and Nufoli will give clinic support in the community.

FAIR AND TRANSPARENT GOVERNANCE PRINCIPLE 3

Formal and informal rules that are set, monitored and enforced along the chain.

- Buyer commitment was revealed.
  The buyer has a fixed contract which have clear parameters such as: smallholders know what to produce before planting; purchase commitment from the farmers are clear; forecasting and planning is done jointly with Nufoli and smallholder and the management control systems for the pre-and post-harvest of the products.
- Revenue sharing in the supply chain was described.
  Nufoli will share the negotiated purchase price of the buyer on a yearly base which is discussed with Nufoli and buyer then Nufoli and smallholders have a group discussion. The discussion is to establish an understanding of the market prices and how they relate to the product pricing to reach an acceptable crop price. At present the price for barley is the wheat price plus 20% which is set by a group body with Assela malt being one of them.
  The other costs are such:
  - the agronomist cost and extension agent's cost are determined with the smallholder; Loading and unloading cost are at present 3ETB/QTL becomes farmer cost.
  - Nufoli sources the polystyrene bags off the market to get the best purchasing price for the smallholders.
  - the bags are used once and every year the smallholder purchase new ones but the old bags are not returned.
  - the farmer pays the transport to bring their crops to the collection center and Nufoli pays to deliver the crop to the market and input supply of fertilizer and chemicals is at market price.
- Standardize quality of barley and potatoe was discussed.
  The buyers have set the standards for Potatoe and Barley which are the following: Potatoe Variety is Gudene is judged on**:** size; Dry matter content; frying colour- IBVL Colour; non-payable defects like spots, mechanical damage and sprouting; not allowed are stones, rotten tubers, soil and presence of extraneous products.
  Barley Is judge on: germination; cleanness; protein levels; moisture content.
  All products are delivered in polystyrene bag/1QTL(100kg). Nufoli produces seed for the farmer therefore complies to the phyto sanitary standards which are to show origin of seed and be pest and disease clear. Nufoli does spot test on all product received to see the maximum residue levels and the agronomist checks crop dryness at harvesting and storage as well as test for the presence of Aflatoxin, explained as a critical control point to maintain food safety measures for the end market.
- Contract mechanism briefly mentioned.
  Nufoli and the smallholders briefly discussed the contract parameters covering category aspects:
  - payment terms for the product.
  - price setting which is wheat price plus20% on quality.
  - grades and standard quality for potatoes and barley.
  - technical assistance from agronomist.
  - access to finance with conditions from the financial institutions.
  - quality control on the product.
  - with side selling the smallholder loses the opportunity to farm for Nufoli in the following and successive years.

- logistic arrangement should the smallholder request as well as quality inputs to use and the idea to increase employment.

EQUITABLE ACCESS TO SERVICES PRINCIPLE 4

Access to service assists smallholders to participate continuously in the market place.

- Access to knowledge and technology.
  Input from specialist such as Nufoli's Agronomist and extension agents help the smallholder:
  - to identify the right planting material;
  - the proper use of inputs and improved farm mechanisation technics;
  - knowledge on how to achieve product quality and the standards required as well as information on the tests for MRLs and Aflatoxins on the product.
  - The MFI assists their farmer customers on how to maintain good record keeping for traceability purpose on their crops.
- Financial services.
  Credit facilities is available from development bank and Microfinance institute for smallholders since they have a partnership arrangement with Nufoli. The microfinance institute give loans to individual farmers who perform agriculturally well. The agricultural input voucher sales system operating in Ethiopia is used for smallholders through the kiosk supported by Nufoli.
- Market information support services.
  The market price information on potatoes is shared as it fluctuates during the season enabling bulking to sell excess product when price is high and have more bargain power. The market information is used by both Nufoli and smallholders to project their product output for the following year.
- Business support systems.
  Nufoli has transport available from farm gate to collection center for smallholder and transports the product to market, and through the kiosk system provides certified seed, improved seed, fertilizer, pesticides and herbicides. The smallholders are required to join the weather index crop insurance and the microfinance institutions provide accountancy services to the smallholders. The smallholders can bulk their products in the collection centre storage facilities. The 2-wheel tractor from Rumpstad is complete with ploughing, cereal seeder and ridge maker can be hired as well as the MagGrow sprayer. Combine harvesting for cereals are out-source by local service providers. The sensor unit device on plough, sprayers, and tractors reveal data that is used to improve performance promoting quality assurance.

INCLUSIVE INNOVATION PRINCIPLE 5

Innovation in products or services, links directly to differentiation in the market place being the chief driver in maintaining a competitive position.

- Value chain partnership
  Nufoli is linked to NGOs, MFI, banks, IT plus other services providers and professionals with the intention to develop the best practices with smallholders in the supply chain as well as operate more efficiently to the contracted clients.
- Sensor base application device is used to monitor cultivation method on individual mechanised process from seeding (depending on the implement unit), ploughing and spraying.
  The device is connected to the mechanical implements, sprayer and tractor to collect information and monitor the operations. This monitoring and feedback data is shared with smallholders and

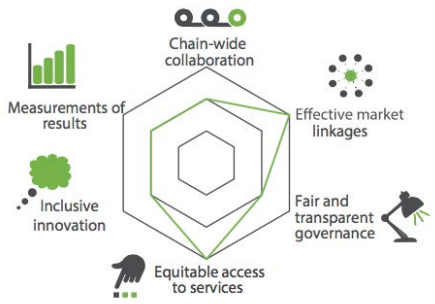
Nufoli and end buyer (Heineken, Habesha and Sensalet). The sensor device can record the application of fertiliser, chemicals and pesticides for the purpose to control and regulate the applications of inputs, indicate strengths and weakness in the system and identify poor performance among the farmers who are obligated to attend training courses to improve.

MEASUREMENTS OF OUTCOMES PRINCIPLE 6

Measurements of outcomes are done continuously to centre in on identifying and reacting early to issues and problems before they jeopardize the trading relationship.

- The agronomist and extension agents continually measure the smallholder following a tailored indicator and monitoring plans, so that the producer produces according to the end user agreement. The aspects monitored to identify improvement is:
  - improved agricultural practices.
  - the use of certified seed.
  - improved grading and uniformity of crops delivered.
  - better farm management.
  - timely delivery of produce to achieve the best price and clean products that are disease free.
- The contract information between contractors such as Nufoli with Heineken, Habesha and Sensalet companies are stored on the platform and the actual fulfillment of the contract of each party is compared against their contract. This takes on the form of a subjective peer review with a comment box through a web application for both contracted parties to peer review each other based on achieved Key performance indicators (KPI). Through the feedback report system, the report is sent to each party's profile to review on how well they performed.

Figure 42: Scorecard evaluate the principles



source: Lundy et al (2014)

4.5 Actors and supporter's roles in new business model

Table 19: Actors and supporters' roles in NBM

information taken from semi structured interviews and focus discussion group; (See Annex C)

Actors role and supporters in the new business model		
THE SMALLHOLDERS		**COMMERCIAL FARMER/ Nufoli plc**
Increase yield with improved quality of production. Participates in developing the contract with Nufoli. Comply to signed contract with Nufoli plc. Join the weather index crop insurance. Participate and plan with Nufoli on their projected crops for the coming season. Increased employment. Participate in agricultural training. Participate in the formed credit facility through Nufoli. The use of business service providers from Nufoli.		Develop markets both direct, local and external. Create employment opportunities. Aggregation, sorting, processing, packaging and transport as contracted. Support performance of smallholders to enable them to access the use of the credit facility to pay. Co- develop the contracts with smallholder and buyer. Participate in providing required inputs such as fertilizer, chemicals and certified seeds. Establish collection centres within the area of contracted smallholders. Manage any contracted equipment for smallholder. Partakes in ensuring a fair price is given for the farmers' products – wheat price plus. The plus based on what is agreed in the market. Nufoli choses third party service provider with agreed costs and payment so agronomist and overheads can be covered. Quality control and testing for aflatoxin and mrls on smallholders produce ensuring the quality standards for the buyer. Transport is made available for smallholders to request for the service. Nufoli to do a peer review on the buyers through an internet platform set up by Techmon and posts it to the buyers' profile. Develop training programme for farmer.

Actors role in the new business model		
THE MICROFINANCE		**GVT DEP KABELE & WOREDA IN SODO, EIAR/ATA**
Work in collaboration with the banks for their customers and use the voucher sales system. MFI assist and train smallholders on maintaining good record keeping and accounts. MFI will give loans to individual farmers who fit the criteria. Peace(MFI), have loan facility for smallholder who have a savings with them and work in a group of 3 to 8 people for the loan. Peace(MFI) help the cooperative group of farmers to formulate their by-laws to operate internally.		Kebele assist in community problem solving and agricultural issues. Woreda they provide labour for the commercial farmer from the Kebele area. Woreda participates in limited loans to smallholders to purchase fertilizers. Woreda assesses if the commercial farmer is following their proposed business plan. Woreda land administration Checks that the smallholder is farming to the schedule given to them. Kebele's agricultural extension see if cooperative is on the right track of the government policy. EIAR provides pamphlets on product information and research and disseminates improved seed to the smallholders. ATA develop policy and set up project such as the tef international market Access(TIMA). ATA develop a plan for smallholder who are linked to a cooperative. ATA, policy makers may not allow export of tef for the next 5 to 7 years resulting in ATA's hold on promoting tef export. ATA expressed the major challenge for tef is internally since the export price of tef is high this influences the price of staple food crops, maize, wheat and barley

Actors role in the new business model		
FINANCIAL INSTITUTION, BANKS, CFC, ICCO		**AGRONOMIST & EXTENSION AGENT**
Ensure that finance is timely available for the smallholders. Credit facilities are made available for smallholders. CFC support implementation of intervention. CFC develop viable solutions. CFC finance commodity development. Cooperative bank does the following: has a loan facility for the cooperative members; gives technical advice to the cooperative; maintain strong relationship and profit sharing based on the cooperative share value. ICCO give support to the microfinance organisations. ICCO help producer organisations to develop outgrower contract scheme. ICCO empower the producer organisation (PO) through technical support, training and linking them to input supplies. And business development services/ service providers. ICCO support the nucleus farming model since they are entrepreneurial.		Assess the smallholders on their agricultural farming practices. Training is given to the smallholders to recap on agricultural practices and for those struggling. Transfer of knowledge on agricultural practices. Explain to smallholders on how the sensor unit operates on the equipment.

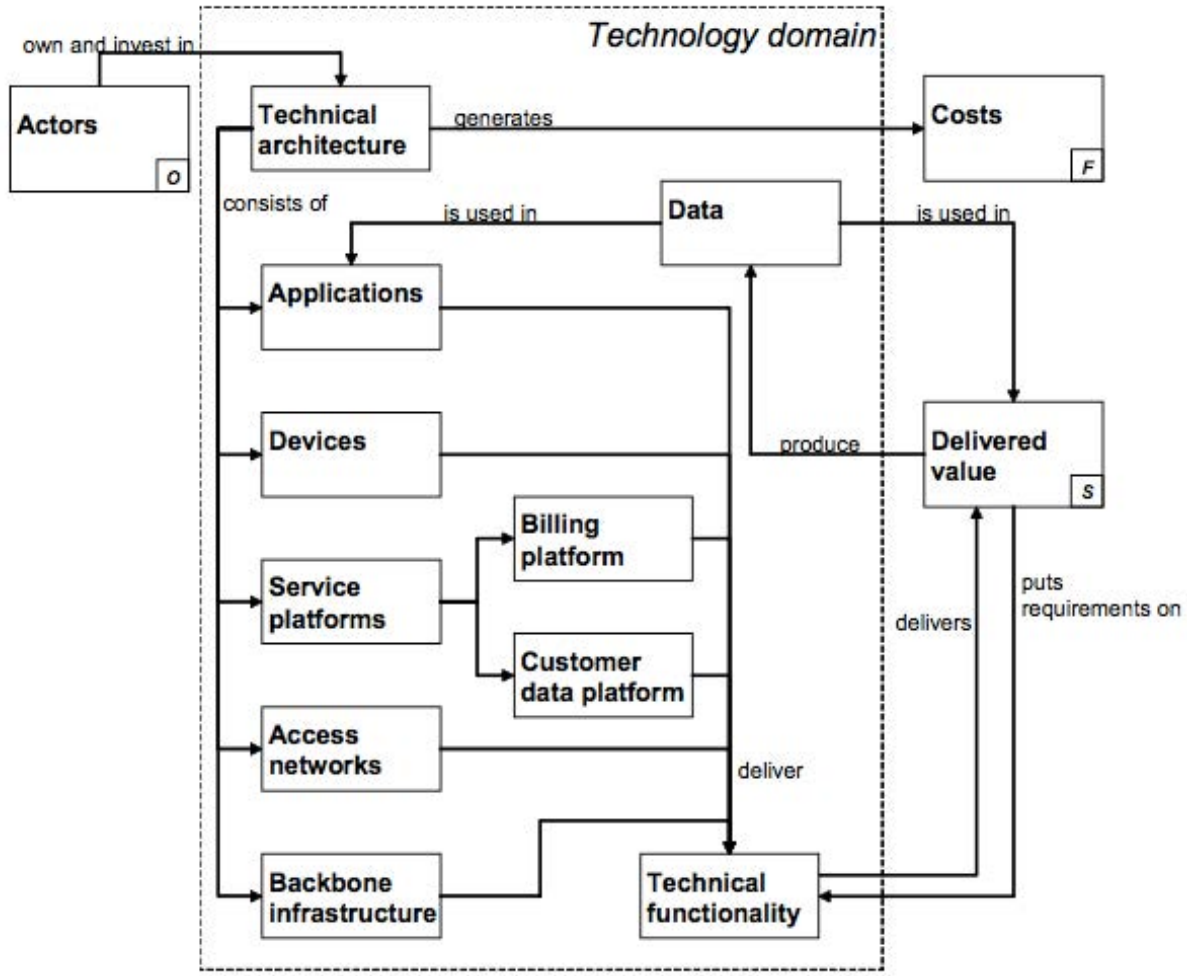
Actors role in the new business model		
Buyers: Habesha, Heineken & Sensalet		**BUSINESS SERVICES, TECHMON,**
The buyer contract is developed together with Nufoli with an understanding of the smallholders likes. The buyer does a peer review on Nufoli's contract compliance through an internet platform and posts it to Nufoli's profile. Heineken works jointly with Ethiopian institute of agricultural research(EIAR). Heineken gives a graduated financial loaning system to the smallholders and uses 4 microfinance institute. Heineken form contracts with smallholders. Heineken have 8 agronomists in the field and the production yields had risen from 1.8tons/hectare to 5tons/hectare with a potential of reaching 8.2tons/hectare. Heineken's agronomist assist farmers in: crop rotation; land selection; link to seed suppliers using the fully paid service (MFI). Heineken experience 2 to 3% defaults on loans yearly.		Provide technical assistance and sharing on know-how. Business Services Provide services on land preparation, spray programme and harvesting. Techmon services the sensor units and replaces damaged ones.

Source: key informants semi structured interviews (2017)

4.6 Technology domain Stof business model

Technology is a driver for new innovative services and business model yet the customer sees it as an enabler (Bouwman et al, 2008). The Sensor application unit is designed by Techmon and used by Nufoli plc which enables the provision of services to the smallholder and the contracted buyer

Figure 43: Stof Technology domain
Descriptive model for the Technology domain explaining the Sensor unit in Nufoli



Source: Bouwman, et al (2008, p.17)

Table 20: Stof descriptive technology domain

STOF MODEL	
Technology	**Descriptive model explaining the sensor unit in Nufoli plc**
Actors	The shareholders of Techmon with financial supporter and advisors being GIZ in collaboration with NGOs.
Technical architecture	The important traits of the technical architecture are: data is centralized; the information is closed and only available to parties of interest and it is interoperable meaning that the software can exchange and make use of information.
Application	signifies the user applications working on a technological system. It is a data knowledge platform which is transferred to user therefore content base. Throughout the agricultural season the user can see data being added to the service centre. Information made available is live and always on. Data is formed depending on the group segment for example, Nufoli who is the service center will want the seeding rate and agricultural data maps but Habesha will want data on Contract compliance. The data communication will be encrypted. Nufoli benefit from the sensor unit: • It gives a better image in the farming community through feedback information on the service providers. • This feedback leads to training on poor performing service providers. • Through information Nufoli builds a better relationship with the smallholders.
Devices	refers to access of services provided by end user devices. The ability of Nufoli or a food production to monitor the data collection of cultivation practices by the smallholders. It empowers the service centre who is Nufoli to improve practices and monitor the cultivation progress. Provides the purchaser to track the progress of their contract.

STOF MODEL	
Technology	**Descriptive model explaining the sensor unit in Nufoli plc**

Service platform	enables different functions to occur on the service platform incorporating billing and customer data management. The billing is integrated with mobile payment. Customer data management is controlled and released by Techmon on the platform, who makes it available to those that have paid the subscription fee. Nufoli will transfer the necessary information to agronomist who informs the smallholder based on the information received. business service providers, Habesha, Heineken and Sensalet receive the information from the service platform. The platform will generate statistical data creating a weighting scale which is a scoring system of the services.
	The data information is useful to the smallholders as it reveals:
	• The agronomical practices.
	• The costs of the service given.
	• Receive knowledge on how the service provider delivered the services,
	  ○ Cost per hectare.
	  ○ Planting and spraying and seeding.
	• Smallholder can choose the contractor based on the feedback report.
	• Provides analysis of past data.
	The location is offered to the client. Peer reviews between Nufoli and the contracted buyer are done with each giving feedback on each other's performance.

Access Network	Data is transferred through a cellular network operating through the mobile network system.
Backbone infrastructure	refers to the chief support of the network infrastructure which is medium and long range. The system is limited to the user's data work. The data relates back to the web server which is in a data centre (physical location) working with the mobile network so coverage is good on the agricultural practices of each smallholder.
Technical functionality	The functionality accessible by the technological system. The system is always on to use the sensor unit which records agricultural data and is secured and is non-personalized.

STOF MODEL	
Technology	**Descriptive model explaining sensor unit in Nufoli plc**
Data	The sensor unit is attached to the tractor and equipment and the application will log on and record the geolocation and operation data will be relayed to a web server. The data streams transferred over networks and uploaded at the time of operation of the equipment therefore real-time data. The data in the web application is made available to the service center and the data is used to approve the practices of the contractor.
Delivered value	The sensor unit delivers information on cultivation methods, whilst the platform is used to build trust in the partnership through peer reviews. The value to the following partnerships: • Habesha can assess contract compliance and establish how chemical has been applied to the product. • smallholders through Nufoli receive information on how the service provider has performed as well as gaining reduced operation costs compared to the oxen since the service is spread over several smallholders. • Service Provider can access their own data to verify if they have fulfilled the contract and how efficient they have operated.

Source: Author semi structured interview (2017)

Figure 44: Information flow tractor to database and Agronomist

Source: Zee (2017)

Table 21: information flow GDS, agronomist database

Stakeholder	Description on information flow
Business service/ Tractor/equipment	Business service operation is sent to the central data base via sensor unit that is fitted to the equipment
Agronomist	Field information gathered and logged via mobile application and sent through Ethiopian telecommunication mobile network which covers 92% of the country
Agronomist/BSP	Information derived from same GPS coordinates given by Agronomist and BSP is paired.

Source: Zee (2017)

Figure 45: information flow from between stakeholders and database

Source: Zee (2017)

Table 22: information flow amongst stakeholders

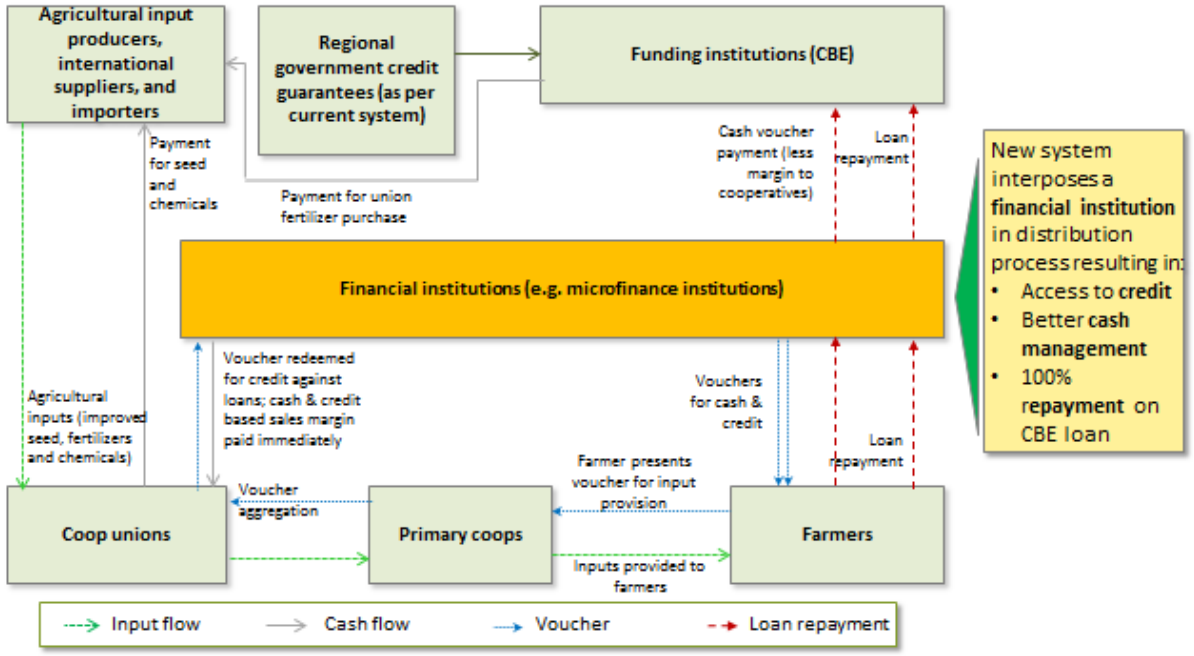
Stakeholder	Communication
Smallholder	Participates in contract development with Nufoli. Receive information from service centre database via agronomist but do not participate in contributing information. Choose the best performing business service provider according to information received from the service center.
Agronomist	The agronomist: uploads agricultural information from the field to the database such as plant germination, diseases and pest; receives info on which farmer to check from database. Communicates with Nufoli on: quality; monitoring and control measure reports and who to give training; transfers the necessary information received from Nufoli on BDS to the farmer for crop improvement.
Nufoli	A peer review is done on the contracted buyer via platform (database). Nufoli will receive the peer review feedback from contracted buyer on their performance. Nufoli receives information on BDP performance and translate that to agronomist. Nufoli relates to BDS via contract and accepts them based on a rating profile.
Contracted Buyer	The buyer receives via the database: the performance of BSP application of seed, chemical sprayed, area ploughed, harvested and any transaction cost related; Nufoli's performance on the contract and Agronomist information on agricultural information; uploads the kind of contract that they want and does a peer review on Nufoli. The contracted buyer relates to Nufoli concerning the contract and feedback on delivered products. The contracted buyer through the screen can see location, contract steps taken by using the web application via the database.
Bank	The bank via database receives all transacted functions relating to the smallholder and is confirmed by the uploaded contract in the database.

Source: Author (2017)

4.7 Input voucher system

Figure 46: Agricultural input voucher system Ethiopia

Information taken from the semi structured interview with ATA (See Annex no ?).



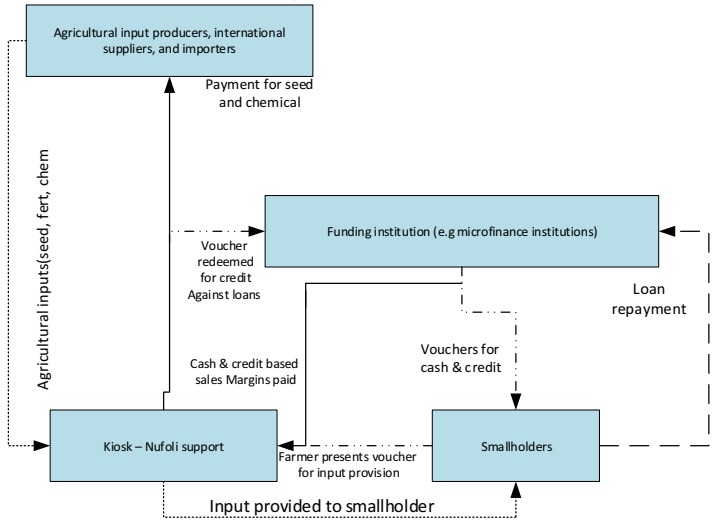
Source: ATA, 2017

Agricultural input voucher system in Ethiopia

Under the new voucher sales system, farmers who want to purchase agricultural inputs on credit will apply for loan at a financial institution (e.g. MFI), and if the loan is approved they will receive a voucher. The voucher can then be redeemed for specified goods at a primary cooperative, as opposed to taking the input on credit directly from a primary cooperative. For farmers who want to purchase the inputs with cash the MFI acts as a cashier during input distribution periods, removing cash-handling responsibilities from cooperatives

Figure 47: Diagram Kiosk, Input voucher system

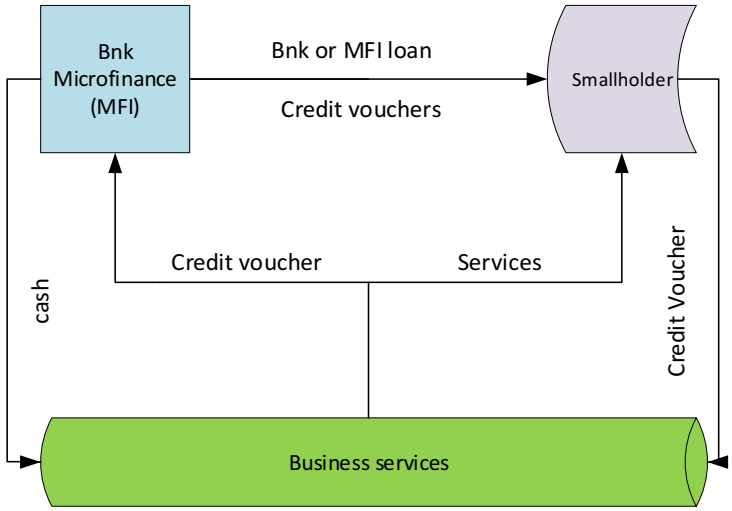
Taken from the case study with Nufoli



Source: Author key informant case study Nufoli (2017)

The kiosk system works similarly to the new voucher sales system, farmers who want to purchase agricultural inputs on credit will apply for a loan at a financial institution (e.g. MFI), and if the loan is approved they will receive a voucher. The voucher can then be redeemed for specified goods at the kiosk, which operates independent, as opposed to taking the input on credit directly from Nufoli. For farmers who want to purchase the inputs with cash the MFI acts as a cashier during input distribution periods, removing cash-handling responsibilities from the kiosk.
The kiosk takes the voucher which is redeemed for credit against loans with the funding institution, MFI who will then pay the margins to the kiosk. The system has some benefits: it reduces the financial cash outlay of Nufoli and reduces financial mismanagement.

Figure 48: Diagram Business service payment system
used in the newly formed business model



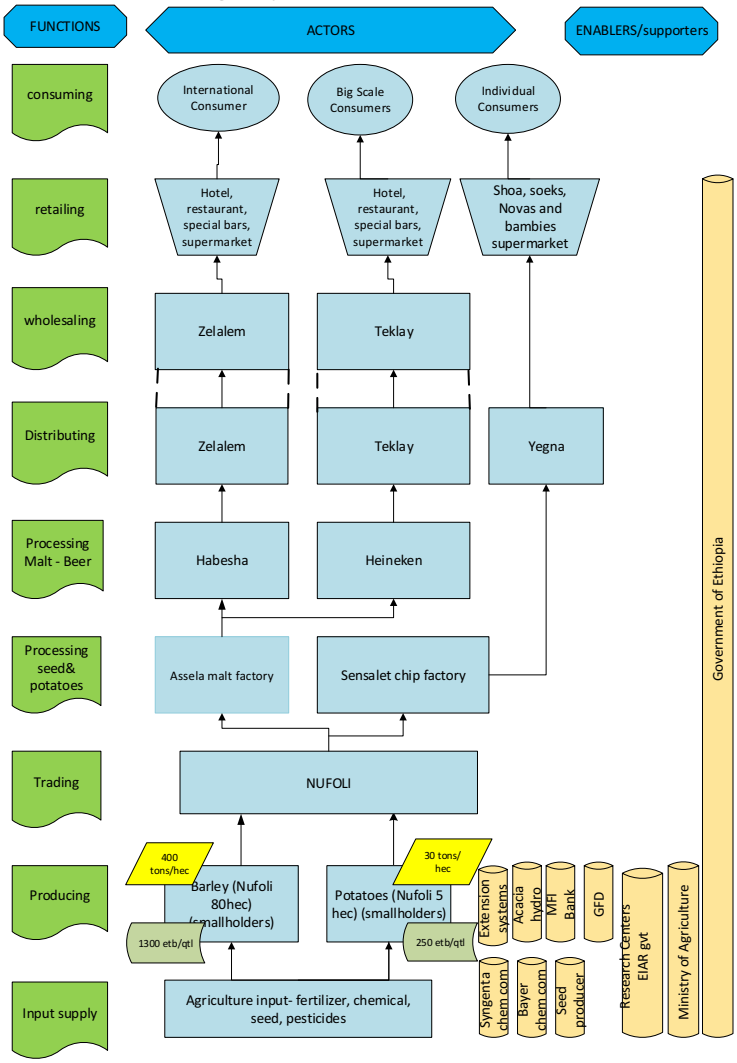
Source: Author Key informant case study Nufoli (2017)

Farmers who want the business service need to first have a credit facility with the bank/MFI who then gives them a credit voucher. The credit voucher is redeemed for services rendered to the farmers. The business service provider takes the credit voucher to the bank which is redeemed for cash.

4.8 The new business model Value chain map

the proposed newly formed business model between Nufoli and smallholders during focus group discussion in Sodo Zuria

Figure 49: Diagram New business model chain map proposed
Taken from focus group discussion with Nufoli and smallholders



Source: Author (2017)

Table 23: Nufoli value chain stakeholders' roles

Function	Player	Role
Supporter	Government of Ethiopia (GoE)	Policy on Company investment – company adherence to their responsibility as stated in the company articles. Tax compliance. Financial Audit procedure of company.
Supporter	Woreda	Land administration Assesses that the commercial farmer is following the proposed business plan programme. The assist in labour resource for the commercial farmer from the Kebele area.
Supporter	Research center	Breeding, basic seed production
Enabler	Seed producers	Seed is produced on behalf of Heineken, Habesha and Sensalet
Supporter	Growth for development	Nufoli's shareholders group – decision making body
Input supply	Bayer	Supplies of quality chemicals
	Syngenta	Supplies of quality chemicals
Enabler	Acacia Hydro	Water specialist-drill boreholes
Processing	Assela malt factory	`processors the malt barley on behalf of Heineken and Habesha
Processing	Habesha	Purchase malt barley seed from Nufoli
	Heineken	Purchase malt barley seed from Nufoli
	Sensalet	Purchase potatoes and processes into chips

Source: Author Focus group discussion Nufoli (2017)

CHAPTER 5: DISCUSSION OF RESULTS

The discussion section examines the activity system of the business model with focus on the content, structure and governance. Those focus areas are: economic services; product; process; technology; finance in the chain; partnership; contract; inclusiveness and sustainability which are elements used to develop a sustainable business model that links smallholder to a commercial farmer. The results and findings from the survey, semi structured interview, case study and focus group will be discussed in relation to the focus areas.

5.1 Present economic services smallholder compared to Nufoli's services -business model

The support services of the smallholders mainly come from government in different departments. The Ethiopian government implements programme to help farmers alleviate poverty and food shortage, whilst the EIAR provide production and research information pamphlets as well as disseminating improved seed. The Ministry of agriculture certifies improved seed. With these services, there is no feedback on the production and success of the improved seed, having a distance relationship with the smallholder. On the other hand, Nufoli brings new economic services to the smallholders, initially on production, through business service providers who offer land preparation, application of plant nutrients and chemicals from the kiosk input supply system, using modern agricultural technics with mechanization as mentioned in Lingo et al. (2016), that improve productivity rest on planting material, input supply, improved agricultural technics and mechanization. The cooperative farmers receive small loans which is not enough from the microfinance institutes but the individual farmers use their own capital for any further development although they can receive a small 5month loan for fertilizer from the Kebele with these financial constrains Nufoli is able to include the smallholders into their financial voucher system used by the business service provider as explained in Wongtschowski et al (2013) that the farmer receives vouchers from bank or microfinance to hire services who are paid with the vouchers and can redeem the vouchers for cash from the bank. In KIT and IRR (2010) further explains the financial triangle between Trader, processor and bank identifying smallholders' benefit as finance to produce and deliver the product, information exchange and the way to manage risk. From the survey, presently only 60% get little finance from microfinance with all receiving price reduction due to crop quality. In my observation, the extension agent's visit is few since the distance to cover each farmer is vast on foot and the advice delivered is not on time. In Nufoli's case the farmers are in proximity to the commercial farm and the agronomist and extension agents have motorbikes in delivering agricultural knowledge with feedback reports on their production ensuring quality for market entrance which develops trust and a strong relationship. KIT and IIRR (2008) it substantiates that a trust relationship will benefit both smallholders a commercial farmer while in Longo et al (2006) it reveals that market support services for smallholders secures better sales prices and reduces that price volatility.

5.2 Production in the business models

The comparison results between Nufoli and the smallholder on barley and potatoes reveals a stark difference in all the areas of production, yield, price, cost and profit. Taking the yield difference of barley, Nufoli with 87% and smallholder with 13% indicates there could be minimal access to knowledge and technology to the smallholders.

Heineken Introduced new seed varieties that yielded 40 to 70 QTL/hectare; local variety yielded 12qtl/hectare. Through technical assistance in trials on seed variety with new fungicide an additional yield ranging from 3 to 12qtl/hectare was indicated (Holtland, 2017). This was further confirmed by (longo, et al, 2016) in explaining that a business model is strengthened where by the smallholders are positioned to benefit from market opportunities if focus is on the areas of financial resources, economic support services and partnerships with other stakeholders in the value chain. Economic

support services which in this case is production support service in the form of planting material, input access, farm mechanization and improved agricultural technique helping smallholders to improve productivity**.** During the semi structured interview, the new business model's sensor unit technology gives good information flow on: input accessed and through the kiosk system and used on the farm; business service provider agricultural techniques which is fed to the smallholders for the purpose to increase in knowledge and improve on yield. The introduction of technology by Heineken in new seed variety and fungicide proved to increase the yield of barley as well. The survey findings on barley yields points to there being no difference between individual farmer and cooperative but on the tef yields there is a difference between individual and cooperative farmers, and during the focus group session farmers yielded 300kg/0.5hectare(3qtl/0.5hec) for barley. However, in the interview with Heineken the local farmers were producing 50qtl/hectare on their new varieties compared to 18qtl/hectare the previous years which is in line with Holtland (2017) findings. Comparing the farmers' yields in Sodo Zuria to Heineken they are way below, therefore the access to Nufoli's agronomist service in the new business model to obtain correct planting material such as new variety; proper use of input and knowledge will improve their production levels and quality. In the survey results on smallholders' yield revealed that the difference was on the kind of crop grown pointing to applied agricultural practices which needs further attention and research from Nufoli.

5.3 Process upgrading in the business model

The collection centers built by Nufoli are in the same location as the contracted smallholders for ease of product delivery, stimulate collective marketing for the smallholders' products and reduces product damage through long distance to the buyer. The collection center improves bulk storage, stimulating collective marketing which Schermer, Renting and Oostindie (2010) found that the outcome of collective farming market in the research revealed: to strengthen the position of farmers; to increase rural incomes and employment; to create cost advantage by having economies of scale and to develop collectively viable strategies towards the future.

This system caters for the delivery of smallholder's regular small amounts which is managed until the quantity is reached for the market. In Kaplinsky and Readman (2001) expressed that process upgrading is when the internal process efficiency increases significantly that they are better than their competitors for example in some cases frequent on-time delivery of small amounts more often is better. The survey results on the smallholders revealed: 60% of smallholders' bag but do not grade the product after harvest; no value addition occurs on crops; they use indirect market channel but receive agricultural advice from government extension agent and receive reduce price from traders due to crop quality. According to Kaplinsky and Readman (2001) the smallholders need to improve on their internal process to be competitive. The agronomist and extension agent services in the new business model can assist and assess the smallholder farming practices such as: use of improved or certified seed in other cases; seed dressing preparation and fertiliser and chemical application as well as assessing the business service provider on how they apply the chemical and fertiliser. With the help from agronomist and business services the farmer is stimulated to apply proper agricultural management practices. The views of KIT, et al (2006) are that, processing upgrading is where products are produced efficiently through new technology or management techniques which can be achieved by: exchange varieties to increase product volume and applying fertilizer; reduce pests and diseases; use integrated pest management to save cost on chemicals; use a machine for post-harvest instead by hand and build sheds to improve storage.

5.4 Technology used in the business model

The Sensor Unit technology which is an innovation in the agricultural project has various benefits and plays a role in the contract design where data confirms the contract performance of the farmer, service provider, Nufoli, and buyer, Habesha, Heineken and Sensalet. The data also confirms whether proper agricultural practices have been Implemented by the service provider. With these feedback mechanisms, it is hoped that the smallholder and agronomist can change and adopt to correct

methods and keep in line with the market trends and remain innovative. Amit and Zott (2010) provokes the thinking that to innovate the business model there are important design elements that portray an activity system such being its content, structure, and governance. These design elements can be used as an influence, separately or together to produce the business model innovation and transaction structure refers to how the exchanges are linked.
In line with this information the sensor unit technology is more structured since the data from the service center concerning the service provider's activities is exchanged to the agronomist to transfer knowledge and technology to the smallholder which would not have been possible within the smallholder's business model. During the focus group discussion, the smallholders' key activities with resources were: ploughing their field with oxen; sowing and post-harvest by hand; House hold head, wife and older children all work in the field and transport is by donkey and cart or foot. Compared to Nufoli who is the lead firm in the chain, indicated their key activities on farm operations was mechanized using machinery technology, having proper management system in their farming practice and delivered the crops directly to the end buyer whilst maintaining continued communication.
As Zott and Amit (2009) explains that the construction of the lead firm's activity system is formed by the activities(content), the links that is the sequence between them(structure), and who does them(governance) embedding itself in the system of the network of suppliers, partners and customers. The Sensor unit technology structure which can be identified as part of the business model activity system sequencing its activities that links data and information from the sensor unit to the farmer, business service provider, lead firm Nufoli and the customer who is Habesha, Heineken and Sensalet for the core purpose of producing quality products for the buyer. This process is confirmed in Zott and Amit (2009) as explained that the activity system structure defines the way activities are linked that is the sequencing between them capturing the importance of the business model in relation to its core and supporting activities.

5.5 Finance voucher system in the business model

The agricultural input voucher system was introduced through a study with the agricultural transformation agency (ATA) with the primary cooperatives in mind which consist of smallholders and financial institutions. Nufoli formed a kiosk system based on ATA's voucher system to link with the financial institutions support for the smallholders who have a contract relationship with Nufoli. In KIT and IRR (2010) this system is used when the commercial bank works with microfinance system to indirectly give finance by linking into the value chain based on contracted relations in the chain. The capacity of the cooperative to operate the voucher system is questioned and could pose as a challenge as noted by Francesconi (2009) that Ethiopian's village leaders or elites generally manage agricultural cooperatives and lack the skills and resources to maintain the business over time. Alternatively, the kiosk operates as a business ensuring that stock turnover is high with commercial links and support from professionals in Nufoli whereas, cooperatives are usually linked with government policies and their wishes, as expressed in Francesconi (2009) that cooperatives in Ethiopia seem to be used as tools to implement government policy design without cooperative agreement. The Kebele manager mentioned during the interview that the agricultural extension see if cooperative is on the right track of the government policy in the interview. The kiosk must adhere to standards and be compliant to the regulations on fertilizer and chemicals which is driven by the commercial crop buyers guaranteeing crop quality and business sustainability, adding to this KIT and IIR (2008) states that standardize quality, weight and measures help trade to be more efficient, reduce handling costs, improve business returns, client satisfaction and higher prices due to quality of product. If focus is shifted from the agricultural purpose as is in the case with cooperatives when government interest is fulfilled it jeopardizes the financial opportunity of the business as explained in Francesconi (2009), that the Ethiopian government's support and intervention to cooperative management interferes on members' decision creating internal corruption, conflicts and rural dependency than entrepreneurship, such as providing output services for government in sales and distribution of fertilizer contrary to their business interest. In Sodo Zuria the Woreda land administration checks that

the cooperative and individual farmer is farming according to the government schedule. However, the kiosk focus is to supply quality products to the smallholders to remain profitable and sustainable in the long run whereas, the cooperative try to focus on being profitable but are obligated to realize government's programmes which are not always in line with the interest of the business.

5.6 Partnership and collaboration with stakeholders in the business model

Collaboration or partnership is key to upgrading a commodity chain relating to quality, sustainability and smallholder inclusion. The smallholders collaborate mainly with government officials and rely on them for: fertilizer, improved seed and certified seed depending on price; agricultural training; small loan facility for 5 months from the Woreda; loan facility with microfinance institute, and for trading they participate in the spot market. From this we realise that the smallholders have no market relationship and bargaining power for their products and are governed through the government system in their area rather than a partnership arrangement. In a study done by Francesconi (2009) it was noted that in Ethiopia the smallholder does not participate in collective marketing but would rather protect the semi-subsistence farming systems from market competition.

On the other hand, Nufoli collaborates with key partners such as the financial institutions, breweries, Habesha, Heineken, and the chip processor, Sensalet, chemical companies, service providers and Techmon, resulting in direct market links with professional agricultural advice and financial opportunities to implement technology innovation. Under the observations of the smallholder upgrading in their chain is difficult and the question is how will Nufoli know when they partner with smallholder that upgrading will take place. Kaplinksy and Readman (2001) explains that the upgrading of the firm's activities, which influences to the smallholder, comes when the firm distinguishes their capabilities which: provide customer value; is comparatively unique and difficult to copy, likewise through the growth of dynamic capabilities which comes because of the firm's: internal processes of learning to be innovative; position due to specialized competences and the path taken. Both concepts help to understand the occurrence of upgrading which enables improvement in products and process stemming from the activities in the firm. These activities in the firm influence and smallholder to perform and reach upgrading. Judging from these concepts it would be judicious for Nufoli to do an internal company scan and external scan on the environment, market and their competitors to match both scans for bench marking themselves and concluding with whom best to partnership. In an interview with ICCO there interest is to provide credit facility with training to the smallholders and SNV through Hort–LIFE programme train chemical companies to teach smallholders to give the correct application (See Annex C. no 10). Until now, Horti-LIFE trials in Ethiopia revealed that yields went up and net income increased by over 150% (See Annex C. no 10). This effective partnership is demonstrated in Van Wijk and Kwakkenbos (2011) when the brewery focused on areas of knowledge, technology, affordable credit and market opportunity to create change. The farmers shifted and started using improved seed.

5.7 Contract that support the smallholder in the business model

In the new business model the contract formed amongst Nufoli, smallholder and buyer, stipulates roles and responsibilities of the partners. This contract formation creates a working bond between the parties where KIT and IIRR (2010) expressed that Develop contract enforcement mechanisms eases the trade transaction making it more efficient. Nufoli takes the center stage in the formation of the contract which is the same as describe in Van der Rhee, et al (2010), the lead firm or the pinch point in the chain takes the lead to form the contract in the spanning revenue-sharing contract which requires the variable costs shared or determined throughout the supply chain.

From this point of view, Nufoli has allocated most of the cost to the smallholder with exception of transport cost from collection center to market. The bags are paid by the farmer but not returned to them. Under these observation, a perceived fairness would not be felt by the smallholders. An open and transparent contract revealing cost and prices will create trust in the relationship, as implied by Van der Rhee, et al (2010), that the requirement is to create a win-win situation and perceived fairness

amongst the players. Nufoli's pricing structure uses the price set by an Ethiopian board for the market. This could lead the smallholders to side sell since they already sell on the spot market looking for the best price. An example given by Van Wijk and Kwakkenbos (2011), Heineken set prices slightly higher in Sierra Leone for Sorghum to prevent side selling, they were successful. In Holtland (2017), Heineken would pay on base price plus 10% premium but cooperative had to charge smallholders directly the handling cost plus commission. In the interview with Heineken they experience 2 to 3% defaults on loans yearly but have a default system in place which works well (See Annex C. no 7). With consideration to supplying quality products Nufoli's agronomist test for aflatoxin which is a critical control point during harvesting to maintain food safety measures and if found then the whole crop at farm level is rejected followed through with training, such governance is confirmed in Kaplinsky and Morris (2003) who describes the judicial as monitoring producer performance to meet the set standard and executive as training smallholder in agricultural practices.

5.8 Inclusiveness of smallholder in the business model

The smallholders linked with Nufoli are included: to participate in developing the contract; share and plan with Nufoli their projected crops; join in agricultural trainings; tap into the credit facility and use the business service providers. Although the smallholders are included in the new business model some areas lack their inclusion such, the platform system. The platform system has a good feedback on agricultural application, production quality and contract compliance but a feedback report from the smallholder has not been developed to include them on the platform which could contribute towards lessons learnt leading to changes and success in the business model.

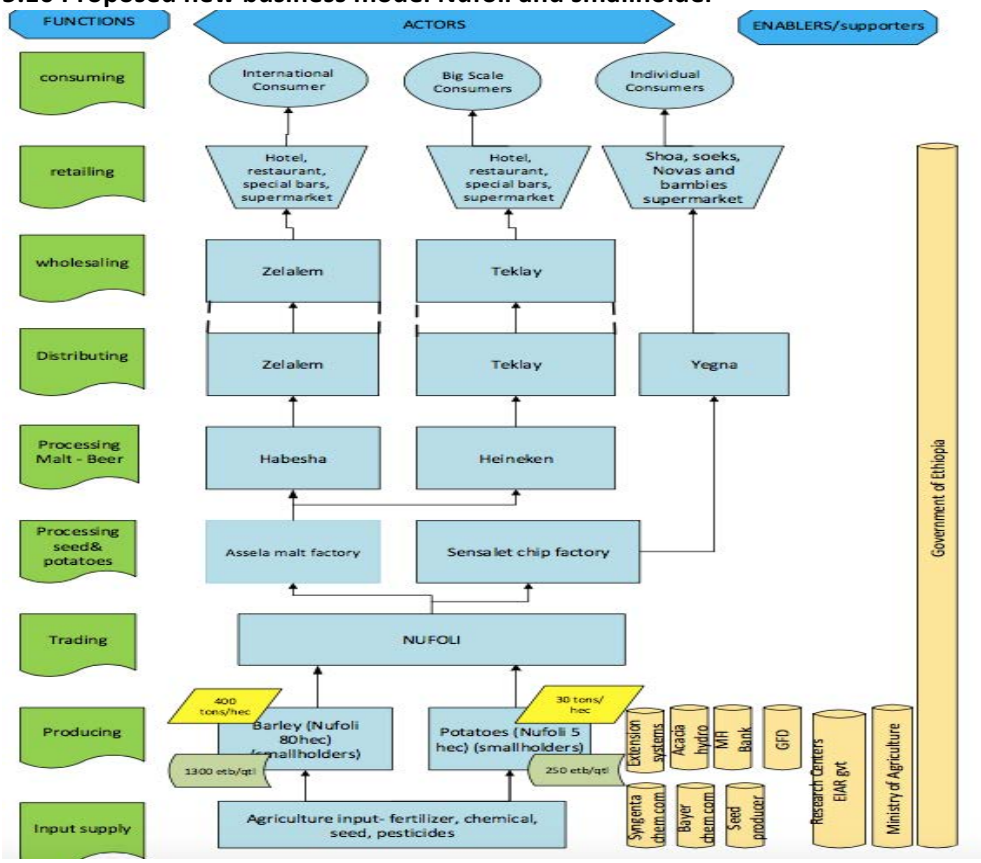
According to world bank group (2014) the measurement of inclusiveness has greater importance in contract farming investment. Inclusive agribusiness success can be judged through evidence of decreased vulnerability and insecurity among beneficiaries. In the new business model Nufoli's agronomist and extension agent measure the farmers in areas of: improved agricultural practice; use of certified seed, improved grading; timely delivery and improved management. These measurements give an indication of the smallholder's income and ability to upgrade in the chain. According to world bank group (2014) with inclusivity, generating increased income in smallholders can be measured by increased job opportunities and permanent jobs as well as Increase farm-gate incomes resulting from: increased yields; improved quality; technology transfer; training; complying to specified standards; a shorter market chain and bulk purchasing to reduce input cost. All these activities are expressed in the new business model between the smallholder and Nufoli.

5.9 Sustainability in economic, social and environmental in the business model

In the findings, various challengers of the farmers were exposed in the Haba Gerera Kebele where about half of the farmers received financial assistance from MFI whilst the rest had to support themselves, this reduces the opportunity to obtain resources needed for growth, improvement and expansion in their operation. Most farmers in the Sodo Zuria livelihood rest on subsistence agriculture as confirmed by Balta, Tessema and H/Wold (2015). According to Van Dijk and Trienekens (2012) Access to credit is lacking with the smallholder which inhibits their improvement on their process and product quality. Through Nufoli's relationship with banks, MFI and buyers, the smallholders can access the financial services as well as the agronomist agricultural technics to improve on quality which the agronomist will check whether the standards are met, in accordance to the buyer for continuity of sales. In relation to environmental sustainability Galli and Brunori (2013) express environmental sustainability considers the production methods, processing, packaging, distribution, transport and waste. The methods are ensured through stipulated standardized quality requirements for barley and potatoes which the agronomist will check that they are being applied by the smallholder followed by training if necessarily. Such checking system is divided in Kaplinsky and Morris (2003) firstly, Judicial governance is monitoring the producers' performance in meeting the set standards, secondly, executive governance is delivering agricultural training to smallholder so they meet the set standards.

For economic sustainability, matters are tackled relating to competitiveness and related actors, well organized use of resources and input with job creation (Galli and Brunori, 2013). 96.7% of the farmers sold on the spot market experiencing price volatility, receiving low prices due to poor quality with low yield. Under these condition the smallholder is not competitive enough to reach an ideal price to be profitable, through Nufoli's agronomist system they can be guided in using the correct fertilizer and chemicals to maximize yield and produce quality thus be more competitive to enter the direct market which Nufoli has set up with buyers through contracts. Dijk and Trienekens (2012) confirms that market predictability creates a more stable business climate for smallholders since they are exposed to highly volatile markets hindering investments in the agricultural sector. In addition to this, Dijk and Trienekens (2012) pointed out that farmers have a poor support system but with linkage to partnership market opportunities result in price guarantees. The smallholders' average produce sold was 53% while 47% was eaten representing their potential earnings and in the survey 90% revealed that there was no food surplus in the community. As in Galli and Brunori (2013) social sustainability considers food security and can be enhanced when producer and consumer become active and equal owners. In this instance, Nufoli's role in linking to the smallholders will stimulate production and build collection center in the area to increase the food surplus and reduce transaction cost for the smallholder which in Galli and Brunori (2013) they specify environmental sustainability considers distribution and transport in relation to cost reduction. The collection center will assist those 96% smallholders who returned home on average with 40.83kg of produce after sales at the trading market.

5.10 Proposed new business model Nufoli and smallholder



Source: Author (2017)

The smallholder's adoption into the proposed value chain will enhance their opportunity to have good market linkage with corporate buyers and agricultural support with training in the new business model. This will increase their livelihood and economic capacity. In the new business model Nufoli's partnership with the smallholder enables them to secure the product supply from the local smallholders in the farming community in a sustainable way.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATION

The objective of this thesis is to develop a designed business model with good support systems, that can secure the product supply for Nufoli plc from the local smallholders in the farming community in a sustainable way and gain market entrance both local and export, whereby it improves their livelihood. The designed features identified for the business model were: provision of a kiosk system; business service providers; logistical system; technology sensor unit system; financial assistance using the voucher system; agronomist and extension agent services; contract design; collection centers and partnership with other stakeholders which is key to upgrading a commodity chain, sustainability, inclusion and market linkage.

6.1 Conclusions

In the findings, various challengers of the farmers were exposed in the Haba Gerera Kebele where about half of the farmers received financial assistance from MFI whilst the rest had to support themselves, this reduces the opportunity to obtain resources needed for growth, improvement and expansion in their operation. Most farmers in the Sodo Zuria livelihood rest on subsistence agriculture. 96.7% of the farmers sold on the spot market and 3,3% directly to consumers. In this case, the smallholder would experience the price volatility due to no relationship with actors in the chain. From the farmers' average product, 53% was sold and 47% was eaten per family reducing income and food security within the community of which 90% of the respondence indicated a short surplus of food in their area. 96% of farmers returned home on average with 40.83kg of their produce as they had not read the market properly. Nufoli's role in linking to the smallholders will stimulate production and build collection center in the area to increase the food surplus.

The support services in the value chain of the smallholders mainly came from different levels in government. The government of Ethiopia implemented programmes to help farmers alleviate poverty and shortage of food whilst the EIAR provide production and research information pamphlets as well as disseminate improved seed and the Ministry of agriculture certifies improved seed. With these services, there is no feedback on the production and success of the improved seed, they do not engage with the smallholder. The Microfinance institution provides credit facilities for smallholders and the Woreda gives 5months small loan for fertilizer purchase. Since, the farmers are individual and some in groups but all do not have a relationship in the chain which will influence the MFI's loan facility. The extension agent teachers the smallholders agricultural practice, fertilizer application with education. These extension agents do not manage to visit each farmer frequently as required due to the vast area that must be covered on foot. The key stakeholders identified in this study for the smallholders are as follows: the rural traders, Woreda, regional seed enterprise, Kebele, Ethiopian institute of agricultural research (EIAR), government of Ethiopia (GoE), ministry of agriculture (MoA), Extension agency and the microfinance institution.

Various factors where identified that would lead to cost efficiency to develop a sustainable new business model. The market linkage formation with the buyers where Nufoli has direct link with Habesha, Heineken and Sensalet who are well established companies and have a demand for quality barley and potatoes. Nufoli has a direct contract with Habesha, Heineken and Sensalet incorporating the smallholders linking them to the market. They established to jointly agree on availability of volumes so the buyer does not source elsewhere and to keep transaction cost low. The customer reach techniques where collection centres are situated in the contracted farmer's area for the ease of product delivery, stimulate collective action from the smallholders for their products and reduces product damage through long distance to the buyer. The customers were easily reached through

forming a shorter marketing chain with the ability to respond to the buyers' needs. Nufoli ensured quality production with the smallholders by outlining various available activities: provision of a convenient kiosk to assist the farmer in getting input supply on time; Nufoli works with business service providers who have been approved on their delivery service, and the services offered are land preparation, a spray programme and harvesting with the idea to reduce operating cost in the long run for the smallholder. Logistical systems were planned for the products to be consolidated to the buyer reducing transaction costs and transport cost. The Technology sensor unit system for tracking and tracing products are installed on the tractors, spraying and harvesting equipment to give data feedback on agricultural practice creating transparency, improved communication and building a trust relationship which all leads to quality assurance.

The design mechanisms and governance that were used to identified and capture the new business model's value were addressed in the study. Credit facilities are available from development bank and microfinance institute for smallholders since they have a partnership arrangement with Nufoli. These Financial institutions financially supports smallholders with loans to purchase input supply and provided business services. The agronomist and extension agents are positioned to train and monitor the agricultural progress and practices of the smallholder as well as use the data information on the business service provider. The Sensor Unit technology which is an innovation in the agricultural project has various benefits and plays a role in the contract design where data confirms the contract performance of the farmer, service provider, Nufoli, and buyer, Habesha, Heineken and Sensalet. The data also confirms whether proper agricultural practices have been Implemented by the service provider. The voucher purchase and payment system helped to reduce financial risk on Nufoli and the business model. The contract design mechanism assisted both parties, Nufoli and smallholder to work together effectively and provide quality products for the buyers. The kiosk system provided quality fertilizer, chemicals and certified seed in compliance to the standards and regulations of agricultural product supply. The logistics system, was there to support the farmers with transport and reduce product damage. Collection centers were designed to bulk products for availability to market at the best price, enhance efficiency and reduce transaction cost to the smallholder, also stimulates collective marketing which strengthens the farmers position, plus increases their income and employment. Market linkage formed with the buyers and the smallholder enabled a direct market channel and Nufoli's channel performance were focused in three areas: customer reach; operating efficiently and service quality to achieve the desired sales and profits. Business service providers worked within the business model financing system and provided services to the smallholder using a voucher payment system through the banks and MFI institution system to avoid the handling of direct cash and have customers who have been accredited with the banks and Nufoli. The business services are geared towards improved agricultural technics leading to quality products. It was clear that upgrading activities resulted from the firm's internal capabilities and processes, which influences the smallholder to adopt the same practices such as changing over and using improve barley seed. Nufoli collaborated with key partners such as the breweries, Habesha, Heineken, and the chip processor, Sensalet as well as chemical companies and the government in the zone which is key to upgrading a commodity chain relating to quality, sustainability and smallholder inclusion.
The key supporters and enablers to partner with in the new business model linking smallholders to the commercial farmer were identified as: The input supplier who were Syngenta, Bayer and seed producers as well as EIAR, ministry of agriculture. At the producer level the extension agency, Acacia hydro, MFI and banks, Growth for development B.V. The actors were: Assela malt factory, Sensalet chip factory, Habesha and Heineken.

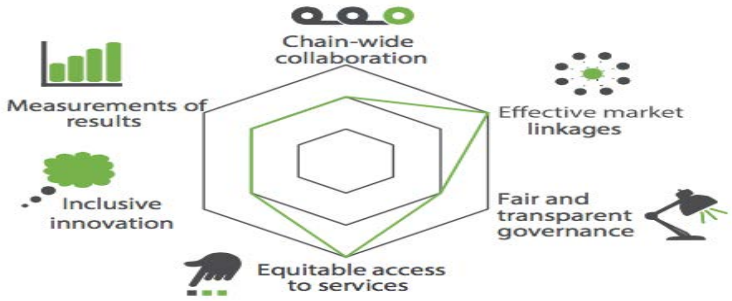
6.2 Recommendations

To develop a sustainable business model on the designed mechanism gaps in the activities were noted and attention is needed on the following areas: to increase the farmers' financial capacity and execution in training; contract mechanism that are favourable for the farmer and the commercial

farmer; evaluation of both party's relationship; inclusion of smallholder's feedback and the agricultural practice of smallholders.

- Since the business model design has not been implemented, further evaluation using the score card on the six principle areas taken from the link methodology, needs to be rated with smallholders and Nufoli plc after the first crop season to find the gaps, what works and does not work. The score card principles operate as a lens and assists in examining: critical success features of the business model; prioritized and select areas for innovation and upgrading. Covering the principle areas are: wide collaboration; effective market linkages; fair and transparent governance; equitable access to services; inclusive innovation and measurements of outcomes.

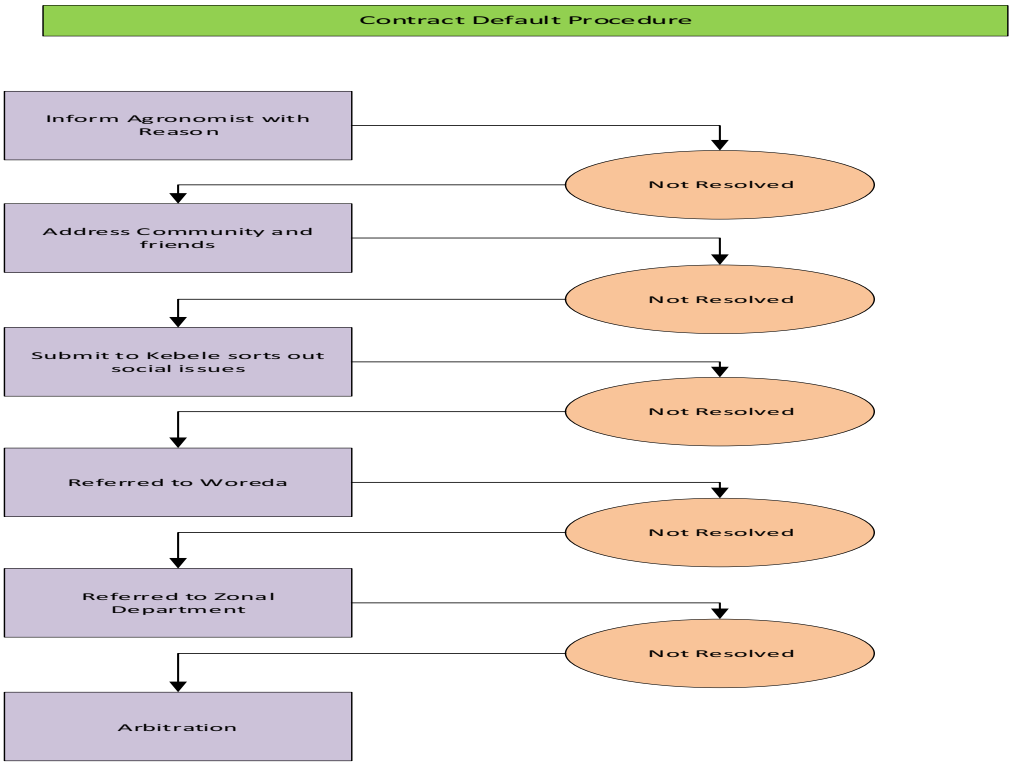
Scorecard evaluate the principles



source: Lundy et al (2014)

- Various challengers of the farmers were exposed in the Haba Gerera Kebele with one being that half of the farmers received financial assistance from MFI whilst the rest had to support themselves, this reduced the opportunity to obtain resources needed for growth, improvement and expansion in their operation. Those supported by MFI complained that it was not sufficient in addition to this Nufoli needed the initial capital to start the training program for the smallholders until their first season. An application for funds to the Netherland government who support initiatives that promote the upscale of smallholders in developing countries. These funds can be sourced on internet under "international organisation financial institutions which leads to the African development bank". Alternatively, the buyers support in donating 50% funds together with the NGO working in Sodo Zuria to boost the initial capital for training to the smallholders in the first two years. There after an agreed arrangement between Nufoli, the buyer and farmer to create a levy system on the sales depending on the volumes for the next two years with the buyer withdrawing at the end of the period and Nufoli carries the total cost to train the smallholder. The microfinance voucher system that supports the smallholders should be implemented and used in the proposed kiosk system for input supply and to purchase the services from business service providers since this mechanism will increase yield and quality for the market and contracted buyers.
- The sensor unit technology is used to link the different activities through data information on business service performance, production quality and contract compliance as well as the agronomist report on what is happening on the ground. There is no platform for farmers to give their input, which could contribute towards lesson learnt leading to changes and success in the business model. Nufoli should implement the sensor unit technology and develop feedback forms for the smallholders' input covering areas of: service satisfaction; market feedback; where improvement is needed on the training they receive; to rate the business service provider, agronomist and extension agent and what benefit have they received through their contractual relationship. These forms are entered during the farming activity for accuracy rather than at the end of the crop season.

- A statistical analysis was done on the barley and tef yield with a comparison between the individual and cooperative farmers. the findings on the barley yields revealed that there was no difference between individual and cooperative farmer but there was a difference in yield on tef between individual and cooperative farmer. Further research is needed to investigate the agricultural practice between the individual and cooperative farmers in the area.
- Within the business model system, side selling has not been considered, this creates default on contracted volumes. Nufoli introduces a contract default procedure that is disclosed with measurements taken in the following way: to inform the agronomist if side selling has occurred and reason; if not resolved then Nufoli will address this problem to their community and friends; if not resolved then the problem is submitted to the Kebele who sorts out social issues; if not resolved then referred to the Woreda who will refer it to the zonal department ending in arbitration. Nufoli also needs to keep track on those who default by identifying them in the system through colour coding: green farmers get training, seed and crop purchase preference, and crop preference purchase; Yellow goes through checks and balance for improvement and those in red are rejected. The cooperatives who have 150-200 farmers to be rejected if they have 10 defaulters without giving any reason. A decision on how many defaults are accepted depends on the circumstance.



- The cost and pricing structure is not completely clear to the smallholder since they need to know what they are receiving and paying for in the chain. Nufoli takes the wheat price plus which is the standard price set for barley by an internal group this can lead to side selling since the farmers are used to spot selling for the highest price. The price can be set slightly higher to prevent side selling since the smallholders already sells on the spot market looking for the highest price. Heineken did this in Sierra Leone giving farmers slightly higher price than the market for Sorghum with the smallholders and were successful (Van Wijk and Kwakkenbos, 2011). Bags are purchased every year by the farmer but the empty bags are not returned opening areas for dispute. The suggested contract for the smallholders

Contract agreement

1. Selected seed terms: the farmer agrees to use the specific variety that is suggested by Nufoli.
2. The payments are done through the kiosk with credit facilities from microfinance institutes or banks.
3. The window period for delivering to Nufoli is from harvesting to day month year, is given at time of harvest.
4. Insurance is based on the weather index for crop loss: Insurance package where the farmer pays 50% and buyer pays 50%.
5. The quality parameters are identified: Germination; Moisture content; Foreign materials; kernel size and protein.
6. Payment system: on delivery of crop after quality check. The farmer receives a payment notice which can be verified with the bank that his account has been credited.

Price mechanisms

7 Since the brewery takes the malt barley to the malting factory, Assela gate price is included

Farm gate price will be calculated as follows:

7.1 Assela gate price (base price) plus 13% premium of buyer (anonymous) minus the handling cost and transport to deliver the product to the buyer = farm gate price

7.2 Since the Assela base price will fluctuate depending on the market the influence will be felt at farm gate therefore Assela sets its base price and pricing strategy based on the prevailing price for substituting crops as food barley, wheat and others.

7.3 Price structure

Company	Price at Factory Gate	Assela gate price-base price/G1	Premium	Inputs	transport	Nufoli margins to handle product	Sacks(bags) Loading/ Unloading	Losses & storage	Farm gate
Buyer									

Formula= Assela gate price + 13% minus total cost ETB = farm gate price.

The benefits of contract farming for the farmer are: They have a market; guarantee sales with a reliable income; exposure to price volatility is replace with a set contracted price and can upscale through training and improved agricultural practices. The benefits for Nufoli is that: the market is certain with reduced transaction costs; able to secure a reliable forecasted volume of supply; easier to deliver quality at a consistent supply level to the buyer with guarantee price.

CHAPTER 7: REFLEXIVITY

Methodology

Semi structured interview

To achieve the research objective various methods of approach were used the first being a semi structured interview with 9 participants with one in Holland and the rest in Ethiopia, who were questioned to find out what their influence would be on the business model design. Interviewing people was not new for me but what I leant was how different cultures respond to questions and the approach had to change according to the person's aptitude and culture to get the most benefit out of the interview. Although the interviews were done one after the other during the week a lot of planning and internet research was done about the kind of organisation under which the interviewee was employed. This was a big plus on how to drive the questions and it built confidence in me during the interview. Learning about the organisation first, helped to list the topics in order correctly and that it is possible to get valuable information under a short period of time which I learnt as I went from one interview to another. I slowly began to realise how important supporters are to smallholders which I had not known before, and that in this research project they would play an important role in making the business model a success.

Survey

I composed the survey questions whilst in Ethiopia since I had to leave early for my ID card. Constructing the questionnaire in Ethiopia made it easy to formulate the wording since I was among the people but still there were a few questions which the interpreter misunderstood but most times the interpreter got the information correct. I leant that choosing the interpreter is key to the success of a survey as I found later that the results from the survey matched the focus group discussion's information. I had to change the research location due to unrest in the original location. I learnt how to adapt fast in a very short period. The language and culture was very different and had to learn about the people and landscape whilst I was doing the survey. I learnt the value of speed and how important it is when you know nothing about the area to thinking of new strategies and plans to conduct the survey. I managed to adjust and apply myself to a new environment learning that flexibility was the key in this case since not everything was in my control. The roads where washed away from a heavy storm so participants where not interviewed individually but in groups of five. This limited my observation of the respondents farming practice but we asked the group to demonstrate on a plot piece near the Kebele's facility on how their field looked like. This was important to capture the dynamics of how the respondence lived and helped to build a kind of picture in my mind of their situation. Under these conditions time management was key since the farmers had to walk back home. I leant with an interpreter it is not easy to manage time so due to the length of period we lost the attention of a few which influenced their answers but with a few phone calls the next day we were able to rectify the answers. This is not an ideal situation but I leant how to manage in unknown conditions and still achieve the outcome. I found this very rewarding since it was my first experience of the unexpected.

Focus group discussion

In the focus group discussion, the value chain was mapped, Canvas business model was formed and then using the principle of the linked methodology in examining: critical success features of the business model; prioritized and select areas for innovation and upgrading. The double face canvas model was mapped since Nufoli buys products from the smallholder and sells to the buyer. A stark difference between the smallholders and Nufoli was noticeable which created an impact on the farmers. I saw the dynamics in using tools to demonstrate and illustrate points which speak louder than words. I will use this approach especially when there is a difference in language to bring difficult concepts across. I explained how the principle tools would work but I notice since we had done the value chain map and business canvas model the smallholders were able to participate with the

principle model. It is not always easy to detect what will work nor the sequence on how to present when cultures are different therefore before I started I discussed first with the group what they would like to start after a brief discussion about the tools. This step is very important to get full participation and the right information for your research. I learnt the importance of involving the participants in part of the decision-making process. I was able with, Nufoli and the smallholders to get to the depth of their problems and unravel solutions. This process took long but the farmers wanted to complete everything in one day. I would have preferred to have done the linked methodology principles the following day since it needed time to process. Through this tool, I discovered the dynamics of reaching constructive solutions which I found to be powerful.

Case study

An in-depth interview was done with the general manager, farm manager and the legal advisor. There answers corresponded with each other. To fully capture the picture, I had to go backwards and forwards in asking questions with the various participants to clarify the information given. This was a learning curve for me. For example, I concluded that I had exhausted all questions only to realize that there were more to ask. In this case study, I improved on knowing when the questions had been exhausted.

Role as a researcher

As a researcher, my time was limited to 6weeks. I had to plan and set goals to gather data from semi structured interviews, survey, case study and focus group discussion. The challenge was organising dates and times for the semi-structured interview with 9 people and fitting into their schedule plus completing it in the given set plan time since the following week I was to move from Addis to Sodo Zuria. I leant how to work in a tight schedule and still achieve the goals. The lesson learnt is that information does not come in sequence but comes in random form and needs to be sequenced to make sense. This analytical process took time since it was a new experience in which I need further improvement and experience to do it quicker. As a researcher, I directed the process of gathering data and checking that it was entered correctly, constantly evaluating the field situation to ensure that all things had been covered. I coordinated the events even though people working with me would plan the meeting I established in what order I would do things but at the same time remain flexible. This experience of taking the leadership role under a different cultural setting enhanced my leadership skills and people management. The key to learning under a cultural setting is having a positive attitude since everything is not known and to follow the guidance of those who know the cultural setting better to be able to draw accurate information from the respondents.

Reliability of the research findings

During the research information was cross checked by more than one respondent. Information in the case study was cross checked during the focus group discussion. This process was done throughout the research to validate the information. The findings were cross checked with literature and during the interviews. Survey findings through the SPSS was cross checked with interviews and the results were similar. For example, in the survey food appeared to be short in the community which was cross checked with Yield and price and found that yields were very low resulting in poor production of food. I learnt to be vigilant and observant that triangulation was taking place continually to make the research valid and reliable. This task was a challenge in which I improved over time but hope to improve further to deliver good results.

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9. ANNEXES

A. Checklist for interviews

1. Annex 1: General issues addressed

Issues addressed in general are:

- How they see their role in the development of a business model, linking smallholders to a commercial farmer.
- what the advantages and disadvantages they see in developing a business model, linking smallholders to a commercial farmer.
- How they would support the business model initiative.
- What Business models have they experience and what are their successes and pitfalls.
- The roles and responsibility of different parties.
- The experienced gained from private companies who have a working relationship with smallholders

B. Descriptive statistic tests

2. Annex 2: Barley yields individual and cooperative farmers

RQ: Is there a difference in the barley yield between individual and cooperative farmers?

Ho: There is no difference in the barley yield between individual and cooperative farmers.

H1: There is a difference in the barley yield between individual and cooperative farmers.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-square	10.343[a]	5	.066
Likelihood Ratio	13.837	5	.017
Linear-by – linear Association	3.017	1	.082
	30		

smallholder * Barley Yield/quintal(100kg) Cross tabulation

	Barley Yield/quintal(100kg)						Total
	.25	.50	1.00	2.00	3.00	4.00	
Smallholder individual	0	0	5	6	3	1	15
Cooperative	2	1	9	0	2	1	15
Total	2	1	14	6	5	2	30

(Since p=.082 H1 is rejected, there is no difference in Barley yield between individual and cooperative farmers)

3. Annex 3: Barley yields individual and cooperative farmers

RQ: Is there a difference in the tef yield between individual and cooperative farmers?

Ho: There is no difference in the tef yield between individual and cooperative farmers.

H1: There is a difference in the tef yield between individual and cooperative farmers.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	18.800a	8	.016
Likelihood Ratio	25.128	8	.001
Linear-by-Linear Association	11.890	1	.001
N of Valid Cases	30		

a 18 cells (100.0%) have expected count less than 5. The minimum expected count is .50.

smallholder * Barley Yield/quintal(100kg) Crosstabulation

		Barley Yield/quintal(100kg)						Total
		.25	.50	1.00	2.00	3.00	4.00	
smallholder	Individual	0	0	5	6	3	1	15
	Cooperative	2	1	9	0	2	1	15
Total		2	1	14	6	5	2	30

(Since p=.001 Ho is rejected, there is a difference in tef yield between individual and cooperative farmers)

4. Annex Upgrading technology and management

Add value to farm products

Crosstab count		Do you add value to farm products? no	
smallholder	Individual	15	15
	Cooperative	15	15
Total		30	30

Grade and sort products after harvest

		Bag immediately	Grade then bag	total
smallholder	Individual	3	12	15
	Cooperative	15	0	15
Total		18	12	30

Market channel used

Crosstab count		Market channel used indirect	
smallholder	Individual	15	15
	Cooperative	15	15
Total		30	30

Technical advice

Crosstab		Technical advice given: agricultural procedures	
smallholder	Individual	15	15
	Cooperative	15	15
Total		30	30

Price reduce for product quality

Crosstab		Price reduced for product quality yes	
smallholder	Individual	15	15
	Cooperative	15	15
Total		30	30

Record keeping on farm activities

Crosstab		Records kept on farm activities always	total
smallholder	Individual	15	15
	Cooperative	15	15
Total		30	30

C. Semi structured interview/transcripts

5. Annex : Interview with CFC

Interview: Checklist for interviewing Common fund for commodities (CFC) in the Netherlands.
Interviewee: Mr Nicolaus Cromme, Project manager & TA facility manager for impact investment funds (AATIF and Moringa fund).

CFC important criteria of a business model linking smallholders to commercial farmer:

- The intervention must create employment for the household. There needs to be social impact in the farmers lives. Job creation for the farmer. The subsistence farmer's crop is being purchased. Increase household income with a stable income. Reduce poverty. Enhance food security. Building an effective and cost efficient collaboration with producers. Social development.

What do you expect from commercial company in terms of their relationship with smallholders.

- The central nucleus farm offers farmers input supplies like: Seed; Fertilizer and credits. These input supplies create a commitment and assists the smallholders to start farming. We see that if the farmer gets base price and plus he will send his produce to the commercial company. Side selling occurs when the commodity is liked by more buyers then the farmer has more options where to sell. They like the commodity to be specific for the buyers. The intervention should show financial sustainability. Environmental and social sustainability. There should be scalability and potential for growth. Price must be captured in the contract. Don't disappoint the small -scale farmer. The Crop is sampled proof and the commercial farmer must manage expectations. Once the intervention is developed then they should employ a social manager. Sustainability regarding the 3P's

CFC experience in such business models

- It takes 4 to 5 years to build trust. Solar grow is an example but of late they have come under macroeconomic pressure. They liked Solar grows contract because the farmer was left to choose how to sell their crop: Solar grow introduced rotational crops to the smallholders; Helped the farmers with rotational methods; He helped the farmers to apply their spray program through the technical support given in conjunction with the NGO; Farmers had choices; Jan was a nucleus farmer who did the reproduction of potatoe seed.
- The examples where the business model was a success was in Ghana – Genus/Diajo (also in Ethiopia, Sabata). Serra Leone – Heineken. Internal breweries Sorghum and value chain – contract farming. The lead firm only sourced from the local and did not look externally. This approach caused many to supply to Heineken because they were totally committed to purchase from the local farmer: The lead farmer gets market information and market price and passes this down to the farmer.

CFC Support & Role

- Support implementation of intervention following our set of criteria. CFC interventions use value chain approach to identify chain participants to identify opportunities and obstacles in specific commodity value chains. Develop viable solutions. Will formulate and implement programs in the commodity sector. Finance commodity development: fund practical measures that are commercially viable, financially sustainable, scalable and have a broad developmental impact on stakeholders in the commodity value chains. Operate as a paid service provider for the private sector, NGO etc.

CFC do not have financial grant but did have in the past although it depends on the situation.
CFC is a loan base and the interest ranges from 5% to 15% depends on each case.
They also have a risk recovery system to help their client if there is a problem since they have a network to draw from.

6. Annex : interview with bank of Oromia

Interview: Checklist for interviewing cooperative bank of Oromia(CBO) in Ethiopia
Interviewee: ATO Gutema Dibaba; Director, cooperative banking process
Cooperative bank of Oromia's important criteria in giving loans to smallholders:

- Each person is classified as individual household
- The individual household must belong to an institution like a cooperative that is run by a board.
- This cooperative is governed by the bureau called the Regional cooperative agency.
- The Union must fulfill all the criteria for formation of cooperative.
- The criteria's they look for is management capacity, governance capacity in bookkeeping, planning of finance and the ability to prepare a business plan.
- The social values that they look for when considering giving a loan:
    - Culture
    - Property of farmers such has house, land for collateral
    - See the value of the people
    - Look at the committee and see who has been nominated to be on the board
    - Look at the respected people from the community – respected elders and base it on trust.
    - The cooperative must be a shareholder of the bank
    - Collateral is secondary for the bank
    - The member must be supplying their product to the institution, that is the union or cooperative.

The Bank's part in working with the Union or cooperative

- Technical advice will be given to the cooperative
- Maintain a strong relationship
- Profit sharing based on the cooperative share value.

How the bank sees the commercial farmers linking with the smallholders

- The commercial farmer as a sustainable marketing linkage for the smallholders.
- A mechanism of controlling the collection paying for the loan
- Ensuring payment terms are met
- Knowledge sharing
- Upscaling to middle income level

7. Annex : interview with Heineken

Interview: checklist for interviewing Heineken in Ethiopia
Interviewee: Tarekegn Garomsa; Local sourcing manager (barley, sugar)
The relationship that Heineken has with the smallholders?

- The reason to work with the smallholders is: the forex problem of importing barley; The Clinton initiative programme that encourages companies to work with smallholders which Heineken is part of that programme; Heineken wants to source 60% of the barley by 2025; They developed public private partnership where 50% comes from the Dutch government and 50% funds from Heineken. This project run from 2013 to 2017 with Agricultural transformation Agency (ATA), co-signed the project; ATA involvement is at policy level relating to government. Heineken keeps in touch through the agronomist who gives feedback on any problems in the field with the farmer. Heineken holds holiday events on the farm and have award ceremonies. Farmer field days are promoted and attendance is expected by those farmers. There is continuous training.

How Heineken works with the smallholders?

- Heineken works jointly with Ethiopian agriculture research (EIAR) on seed variety, registration, testing of seed and adaptation. The registered seeds are then given to the farmer yielding 5tons/hectare compared to 1.8tons/hectare and maximum production can even reach 8.2tons/hectare. Each family size land is 3 hectares but Heineken gives seed for 1hectare and the family can do what they want with the other 2 hectares. Woman participate together with the men in producing barley. Women and men are given best producer of the year. Inclusiveness of woman is ensured by: giving them priority training; financial and credit; the female in each family unit is tasked and responsible for purchases. They have 8 agronomists in the field who give full extension services and the input supply reached 20,894 people in 2016 growing barley on 19,103 hectares. The Agronomist assist the farmer in crop rotation, land selection for barley, link farmer to supplier and supply seed using the fully paid service system. Heineken gave a graduated financial loaning system to the smallholders where by: the 1st year is 100% loan; 2nd year the loan is 70%; 3rd year the loan is 50% and 4th year the loan is 0%. But this has stopped. The microfinance Institutes deal with the loan. Training is given for free to the farmers. Heineken has moved away from financing the farmers and uses 4 micro-financing institutions that support farmers with financial loans. Every year Heineken experience 2 to 3% defaults on the loans

What are your criteria in choosing the farmer?

- In terms of production and technical application Heineken reaches the individual farmer. The marketing and production contract is signed with the institutional bodies of the smallholders which are: The 10 Unions; 16 Primary cooperatives; 36 Model farmers that are designed around a nucleus farmer. The main contract has an article stimulating the signature of each household head. Heineken works with 4 microfinance groups who offer a loan facility to the smallholders. The cooperative agency which is at Woreda level does a check on the Union's whether they have a business plan, management procedure, financial system that is sound and the human resource department. Once this is cleared then the Union will be appointed to work with Heineken. Heineken will assess whether the farmer's land is suitable for barley. The farmer must be willing to grow as per recommended and apply all agricultural practices needed for the new seed variety. Farmer must be able to produce surplus that is above what he consumes. The farmer must be able to rotate the barley with potatoe and canola. The potatoe is supplied to a Dutch processing plant who produces chips called Sensalet plc. The canola seed is for Unilever in the Netherlands, the end market.

Conditions required from the contracted farmer?

- The smallholders must sign the contract with their institutional body. They must work with the extension service programme. The farmer must follow the credit repayment programme. The contracted products must be sold back to Heineken. The farmer must produce their land certificate. The land that is contracted must be available for that year and cannot be contracted to another person. The farmer must use the recommended inputs and participate in all training programmes. The product can be sold at farm gate or can be delivered to Heineken warehouse.

The way Heineken deal with defaults?

- If there is side selling they request the farmer to let them know and give their reasons. Defaults that Heineken are not able to solve they resort to using the farmer's informal relationship friends and the elders in the community. If this does not resolve the problem then Heineken makes a list of the default and submits this to the government departments, the kebela, Wareda, and Zone. Heineken colour codes the farmers on their defaults and performances using green, yellow and red. The Green farmers gets credit, training, seed and crop purchase preference. The yellow must go through checks and balances for improvement. Those in Red are usually rejected. A cooperative who has 150 to 200 farmers will be rejected if they have 10 defaulters without reason. If there are reasons then Heineken will negotiate which will lead to acceptance.

8. Annex : interview with Microfinance institution

Interview: Checklist for interviewing Microfinance institution

Interviewee: Tezera Kebede CEO (MBA in financial management; BA degree in economics) of Poverty eradication & community empowerment (PEACE) Microfinance services.

How are farmers accredited for a loan since they do not have enough collateral?

- The microfinance institution gives credit to farmers and traders
- 90% of their credit facility is in the agricultural sector and 85% of that credit facility is given to females. Where there is no collateral the farmers are given three options which is: The farmer must collaborate with 3 to 8 people in a group; Collaborate with 9 to 15 people in a group; Collaborate with a bigger group from 15 up to 40 people in a group.
- There is no need for them to have a business license due to the farmer group being small.
- The microfinance institution gives them orientation and training.
- They help the farmer to develop their by-laws to operate internally. The farmer needs to get a letter from the Kebele stating that they know the farmer and that he is from that area so the microfinance institutes gets to know their customers.
- The farmer should present their Identification card if they have one, but over time they will get one. The farmer must indicate that they have a savings with PEACE first and must deposit money in the bank twice before we will give the loan.
- The client should have 10% of their loan amount deposited in their savings.
- The client's books must be open for PEACE to evaluate their financial status.
- The group meet to assess each person's loan request before they submit the loan application since PEACE works in groups and consider group responsibility as their slogan is "one for all and all for one". PEACE follow the Bangladesh Gramian model bank on microfinance credit
- They abide by the proclamation 626/2009 on microfinance in Ethiopia.

How do you monitor your clients?

- The microfinance has two sections, monitoring and operational department.
- The monitoring department at head office has an internal control service which checks the finance procedures.
- The operational department checks the sales, expenditure and payment returns
- The client's repayment capacity is based on Client centrically approach.
- The client can pay at the end of the loan period which is 12 months or pay twice during the year
- Interest is paid monthly which is 21% per year on agriculture projects and 18% per year on nonagricultural projects.
- The microfinance gives their clients between 6.25 to 8.25%/year on the savings account.
- In the next year, we will be digitalizing the payments through mobile banking via the telephone by forming another company which will be embedded in Ethio telecom which is a secure system.

How do you view the link of smallholders with a commercial farmer?

- Microfinance institutes favour this link as they see it beneficial to the farmer's agricultural business. The commercial farm brings diversification of business activities
- The shift to link with the commercial farmer is by far better as it cultivates an entrepreneurial mind set in the smallholders. The innovation skills start on a gradual course.
- The productivity will increase and agricultural practices improve as well as quality whereby the farmer starts to fetch a higher price for their products.

9. Annex : interview with ICCO

Interview: Checklist for interviewing Inter church organisation for development cooperation(ICCO) that run a corporation Programme in microfinance (Dutch NGO)

Interviewee: Fransien Wolters – Microfinance Advisor Ethiopia

Getachew Mekonin – microfinance advisor for Strengthening African rural smallholders (STARS) programme.

How do you support small scale farmers?

- ICCO programme called strengthening African rural smallholders (STARS). One of the pillars of STARS is the value chain development to integrate farmers into the market system. The way they achieve this is linking various service providers and agronomic providers to the farmer. ICCO empower the producer organisation institutions who work with the farmers through: Technical support; Training; Linking them to input supplies that provide seed, fertilizers and to Business development services. ICCO help the producer organisation to develop outgrower contract scheme to purchase the product from the farmer. The producer organisations must be linked to farmers' cooperative who are members of the union and follow the cooperative act by law. ICCO give support to the microfinance organisation who give financial support to the smallholders who purchase fertilizer from their Union or the farmers' cooperative. ICCO through their microfinance programme select cooperative whose members are smallholders by: Doing an inside scoping and assessment in the areas of management, marketing, governance internal system and financial system to identify the gaps. ICCO support the nucleus farming model since they are entrepreneurial and apply good agricultural practices. The nucleus farming model consists of 250 smallholdings having a lead farmer. The following characteristics apply to a nucleus farming model: The group usually has a short value chain and supply directly to the buyer through a contract; The loan is production cost base lending. The package is developed by ICCO together with a consultant and is based on 1hectare cultivation to the value of 8000birr which includes seed, chemical and fertilizer; The farmer is expected to support their own operational costs; The nucleus model can incorporate those who have ¼ hectare since their yield and quality of is good.

Intervention that ICCO do to ensure that the smallholders benefits are:

- Training cooperative in leadership, governance, marketing and capacity building in their business. ICCO access financial strength of the microfinance institution that financially support the smallholders. Assist the Microfinance institution(MFI), to access the guarantee scheme business model that enables them to get finance. The Guarantee scheme, uses Rabo bank and ICCO guarantee OIKI credit facility from the Netherlands to guarantee the commercial bank of Ethiopia who gives the loans to the MFI. ICCO train the MFI to assess the viability and bankability of cooperatives and Union. ICCO assist and trains the MFI to develop different support systems for the different stakeholders in the value chain such as: Product development to finance smallholder and cooperative; How to assist traders who are small to medium enterprises that enter the marketing sector for a short term usually 3months loans and are members of the commercial bank; The product development targets subsistence farmers are those who produce for consumptions in the hope they start producing surplus. These farmers on average have ¼ hectare; The MFI use the group loan system which is the traditional system considered as the group dynamics for collateral collection.

How does ICCO support the individual farmer?

- ICCO supports 5 MFI who work with the semi-commercial farmer. The MFI are: Buusaa Gonofaa; Wasasa; Metemame; Halbu and SFPI. The semi-commercial farmer is given a loan facility from 2000 birr to 10000 birr which is higher than the smallholders. The semi-commercial farmer usually uses the spot market channel or sells directly to the traders. The MFI assess the technical skills of the farmers to produce their product an Agribusiness assessment having the following criteria: Farmers must have more than ½ hectare preferable 1 hectare as minimum; Their products are

- market based; The farmers are residence of the area and must produce an Identification card; The MFI vary the period of experience from the farmer some say 2yrs others say 5 to 8yrs; The semi – commercial farmer should also be able to bring a personal guarantee; ICCO have develop a tool which the MFI use to be able to assess the cost, yield, revenue, cash flow and management system of the farmer; The farmer should present a budget to explain the loan need; The farmer follows the repayment terms and the MFI monitor the fund disbursement to fit the farmers cash flow.

10. Annex

Interview: checklist for interviewing Techmon.

Interviewee Corjan Zee: Designer for Techmon

All the transcripts are written in the results.

11. Annex: interview with NGO – SNV

Interview: Checklist for interviewing NGO – SNV

Interviewee: Gerrit Holtland – Team leader Horti-LIFE program with SNV.

How does the smallholder benefit from the Horti-life programme?

Just to give you the context. In 2016 Horti-LIFE started as a collaborative effort of SNV and MoANR, sponsored by EKN. In its first season it supported 55 DA's to set up 110 Farmers' Field Schools (FFS) in their village (so 2 FFS per village). The 55 villages are in in 11 districts in the four main regions (Tigray, Amhara, Oromia and SNNPR).

Each FFS has 30 members and four of them (lead farmers) have a 200 m^2 demo plot with one of the four selected crops (onion, cabbage, tomato and pepper). We provide a three-day ToT for the woreda experts and the DA's on the production technology. The DA's give a one day training to the lead farmers. The project provides the inputs for the demo-plots, but no other incentives. Each FFS must select two of the four crops where the project works with: onion, cabbage, tomato and pepper.

DA's facilitate the FFS in 8 meetings. The first is the kick-off meeting to decide on the crops and technologies. The next six are about learning from observations on the demo-plots, using the **4-P** approach: What can be seen and learned about the **Plot** (erosion, water availability, soil fertility etc.), the **Plant** (colour, vigour, flowering), the **Pests** (pest pressure, infection patterns etc.) and the **Practices** (spraying, staking etc.). After harvest the members sit together for an internal in which they, among others make an economic comparison between the demo-plots and the regular famers' plot.

In May we completed an internal review of the pilot season (Sept. 2016-April 2017). Although in Oromia and SNNPR the crop cycle is not yet completed, the outcomes are interesting.

The demonstrated technologies are improved varieties, quality seedlings (from improved famer managed nurseries or from commercial ones), proper spacing, starter solution, adequate fertilisation (incl. KCl) and a balance pest control program. The GAP are a translation of the best practice found on commercial horticultural farms.

The internal reviews of 60 of the FFS yielded detailed data on the performance of the crops. The next table gives the data for cabbage, onions and tomato:

	Cabbage			Onion			Tomato		
Item	Farmer	Demo	% change	Farmer	Demo	% change	Regular	Demo	% change
Seed cost	330	2,745	731%	1,576	2,823	79%	1,771	3,877	119%
Bed preparation	88	88		367	393		133	144	
seed sowing	49	53					76	1,995	
Land preparation	1,014	1,014		1,155	1,134		1,296	1,296	
Transplanting	476	486		1,134	1,165		445	433	
Irrigation labour	1,459	1,433		1,592	1,614		1,612	1,620	
Cultivation(Weeding +	1,512	1,492		2,923	3,033		1,981	2,048	
Staking							-	6,082	
Chemicals	998	840	-16%	3,432	2,081	-39%	3,519	3,109	-12%
Fertiliser	1,111	2,474	123%	1,605	4,229	163%	1,315	4,937	275%
Fuel and oil cost	670	619		482	482		611	611	
Harvesting labour	1,547	2,282		1,967	2,896		1,325	1,702	
Total expense	9,253	13,525	46%	16,233	19,849	22%	14,084	27,853	98%
Yield (kg/ha)	7,592	15,903	109%	5,033	10,106	101%	6,905	19,305	180%
Cost price (Birr/kg)	1.38	0.86	-38%	3.43	2.06	-40%	2.16	1.48	-31%
Chemicals (Birr/kg)	0.13	0.05	-59%	0.70	0.23	-68%	0.43	0.14	-68%
Revenue	25,521	50,055	96%	31,456	61,521	96%	71,300	170,500	139%
Net income	13,005	34,572	166%	11,350	39,289	246%	57,895	146,021	152%

The investment per ha increases substantially, yet yields increase much more. As a result, the costs price per kg goes down with 30-40%. The reduction in pesticide use per ha is 12-39%, while it is even more pronounced when expressed in ETB/kg of produce: 60-70%. The net income for farmers increased with over 150%.

The main lesson learned is that knowledge and skills can make a huge difference:

- Yields can increase substantially by training smallholders in best practices that are based on a translating of best practices from commercial farms
- With an intensive follow up, the use of pesticide can be reduced substantially under smallholder conditions
- These two elements lead to an increase of over 100% of the income of the farmers while it reduces the costs price per kg of product

12. Annex : interview with ATA

Interview: Checklist for interviewing Agricultural transformation Agency (ATA)

Interviewee: Zegeye Teklu – Agribusiness market linkage manager.

General information on the export of tef:

The tef export was an initiative from ATA and they are not pushing tef export under TIMA. The said commercial farmers do not fit the profile of a commercial farmer therefor the program is not progressing that well. Highland and middle land areas have a high population density and not much land is available to be commercialized which is where the tef grows.

The farmer producing 15% surplus is still considered household consumption so they still must produce above that.

What does Commercial mean?

50% above the total production that a farmer producers. The farmer should sell 50% of his production for example if he producers 20quintals/hectare and sell 8 quintals then they are not commercial.

In the case of TIMA programme, it is not a problem how much they sell into the market?

TIMA is under investigation on its programme but it has not stopped.

What are the Governing factor in the export of tef?

- Major challenge is internally since the export price for tef is high and will influence the price of other crops, maize, wheat, barley and sorghum which are the staple crops.
- Due to the export price being high the internal production of tef price will increase and the people will not be able to purchase tef, which will create chaos because people are not in the position to eat. The government does not want this to happen.
- The price of staple crops and others will increase as farmers shift to tef because they create a shortage of the staple food crops reducing the availability of foods on the local market.
- Fear is that farmer convert to tef and they have still not reached production levels of other commodities for surplus into the market. - land is fixed
- Tef is exported to high income countries compared to most of the people who come from the low-income group in Ethiopia.
- In exporting tef we create competition between high income (anywhere in the world) and low income in Ethiopia.
- The objective of TIMA programme is to produce more and add value on tef.
- We get given the programme from government to work on and the TIMA is still there but we are working on other programmes until government knows how they will approach tef.
- Some traders filled out the forms but there is still concern from people who have the questions:
    - Why is tef only export by the commercial farmers?
    - Why not include the smallholder farmers?
    - Smallholder are asking why can they not export tef themselves but Government hesitates to include them in the export programme for tef?
- The only problem is that the country has not yet satisfied the consumption level of its people.
- Policy makers may not allow export of tef for the next 5 to 7 yrs
- Government lacks money to feed its own people so it does not want the shift for smallholders to only produce tef.
- The comparison of wheat and maize price is not that much but with tef it is too much and then farmers will shift.

How does informal trade of tef influence the food situation? ATA CONTINUED

Informal trade does not influence the people due to the availability of the information but if you make it formal then it will affect the people who produce tef. Then the economy is affected.

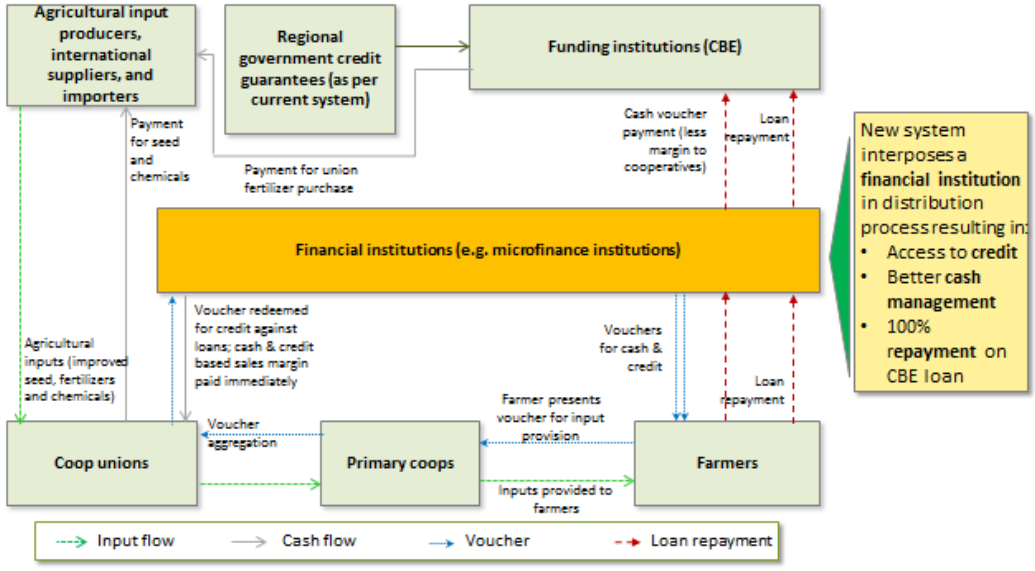
The investors aspect:

- The possibility of the investor working with the smallholders – contract farming type- introducing technology, money, employment and exporting opportunity. Improving the staple food quantity. - productions level increase. Investor to go riskier – moving to irrigation scheme – improving technology. There are some areas that are not under tef plantation but by using a researched seed variety it would be possible to grow tef in those areas. If there are any technologies to plant tef in those lands. It is possible to bring tef seed from outside. Show the possibility in the domestic resources – seed, mechanisation, local first used. Show what is over and above that is bring in a different variety.

How is ATA assisting in the financial support for the smallholders?

Agricultural input voucher system in Ethiopia

Under the new voucher sales system, farmers who want to purchase agricultural inputs on credit will apply for loan at a financial institution (e.g. MFI), and if the loan is approved they will receive a voucher. The voucher can then be redeemed for specified goods at a primary cooperative, as opposed to taking the input on credit directly from a primary cooperative. For farmers who want to purchase the inputs with cash the MFI acts as a cashier during input distribution periods, removing cash-handling responsibilities from cooperatives.



New agricultural input distribution flow introduces a financial institution into the system

This new system brings three major benefits compared to the old system:

(1) **Likelihood of financial mismanagement is reduced** because the cooperative system does not handle large cash flows; this also reduces the administrative burden on primary cooperatives. **Strain on regional government budgets is alleviated** as the reduction in financial mismanagement means governments avoid having to pay the Commercial Bank of Ethiopia large sums to cover the input loan which they are required to guarantee; this has the potential to save regional governments ETB billions in unpaid loan guarantees per year; and. **Creditworthy farmers are able to access credit**, increasing use of fertilizer and improved seed.

13. Annex : interview with Woreda
Interview: checklist for interviewing Woreda
Interviewee: Samuel Bekele, area coordinator of Kebele's in Soda Zuria.

What is your relationship with smallholders? and how do you work with them?

- Focus to help them overcome poverty through improving their crop
- Show them how to use technology, give advice, instruct how to sow and agricultural extension agent gives advice.
- We give them credit for 5 months to buy fertilizer which we supply – NPS
- land administration Checks that the smallholder is farming to the schedule given to them.

How do you work with the smallholders?

- Work with 36 kebela in Sodo Zurea area using 3 extension agriculture experts.
- The government plan is large so we will work with the commercial farmer who fills the gap on: Technology; quality seed; agricultural practice.
- Kebele sorts out social issues. We attend to problems that the Kebele cannot sort out and if we cannot solve it then we refer it to the zonal department.

How do you relate to the commercial farmer?

- The Kebele and commercial farmer must integrate, in this way they are securing the commercial farmer and position
- Woreda provides labour from the Haba Gerera Kebele.
- They check to see if the investor is following and implementing the project proposal.

Interview with Kebele
Interview checklist for interviewing Kebele
Interviewee: Mastiko Maja, manager of Haba Gerera Kebele
Interviewee: Jomole Warka, administrator of Haba Gerera Kebele

What is the Kebele's role with commercial farmer linked to smallholder?

- We support the relationship and encourage the smallholders to co-operate with the commercial farmer. We can select the model farmers and check they are following the commercial farmers program. Commercial farmer must inform Kebele who receives improved seed since farmer can deny this. Kebele participates in witnessing the signing of the contract and if farmer breaks contract then Kebele is responsible to make sure the small-scale farmer complies. Kebele checks to see that the commercial farmer is follow their agreed signed proposal and can withdraw the license if not complying. If there is a change to the proposal because the product does not do well then, the commercial farmer must present the alternative plan to Woreda for it to be okayed. Any problematic person harassing the farmer then the Kebele can present them to the law

What is the Kebel's role with smallholders?

- We support the relationship and encourage the smallholders to co-operate with the commercial farmer. We can select the model farmers and check they are following the commercial farmers program. Commercial farmer must inform Kebele who receives improved seed since farmer can deny this. Kebele participates in witnessing the signing of the contract and if farmer breaks contract then Kebele is responsible to make sure the small-scale farmer complies. Kebele checks to see that the commercial farmer is follow their agreed signed proposal and can withdraw the license if not complying.

D. Case study

14. Annex interview with Nufoli

Interview – checklist for interviewing Nufoli

Interviewee: CorJan Zee, general manager for Nufoli Plc

Interviewee: Frans Hyso, Junior farm manager for Nufoli Plc

How does the BSP work in your system for the smallholder?

- The service provider for the two-wheel tractor is cheaper than the farmer owning a plough and oxen in a research done by GIZ. Nufoli will support the local business service provider(BSP) such as TGT enterprise who is a local company. Nufoli wants to introduce the MagGrow sprayer which is under trial. The combine harvesting of cereals will be out-sourced by local service providers and coordinated through Nufoli contracts. All service providers will be contracted through Nufoli for the smallholders who are linked with the company.

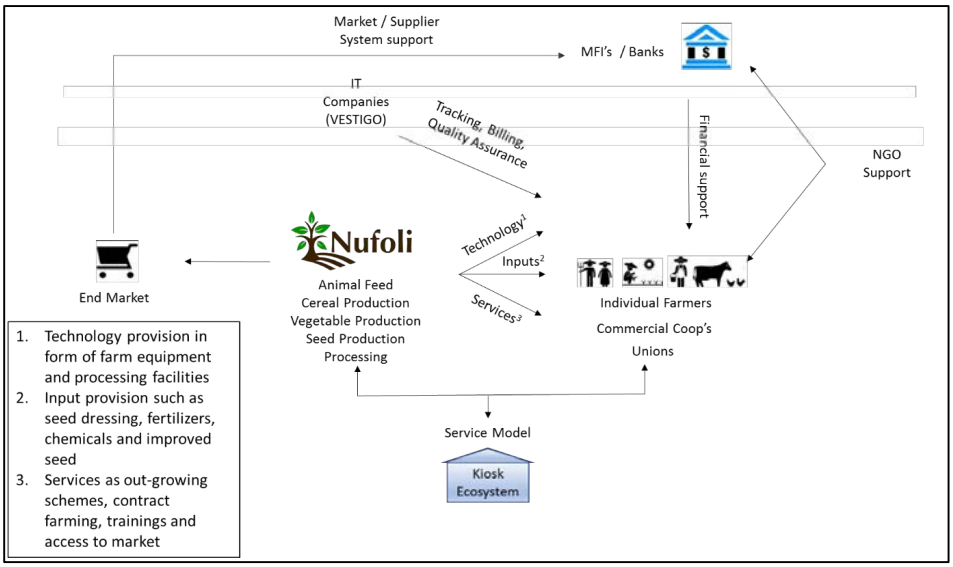
How do you handle payment flow in the business model?

- Use the existing systems of microfinance. All farmers have a bank account with the same bank as Nufoli, these institutions are MFI and Cooperative bank of Oromia. Payment notice can be verified with the bank that his account has been credited. The list of approved suppliers will be complimentary to Nufoli's services that is third party service provider that will be part of the service model with agreed cost payments between service providers so agronomist and overheads can be covered. The cost for services will be covered since the cash flow will be there on user basis.

How do you see your concept model with smallholders?

The combination of commercial and small-holder farming is employed in conjunction with MFI's or banks and linkages to the end market (Habesha Breweries). The end market provides the funds/collateral to the MFI / bank to sponsor the small-holder farmer to purchase the inputs and pay for services rendered. The service provider is trained to offer services of ploughing, sowing, crop protection and harvesting to the small holder farmers.

The farm (Nufoli) provides the facilities for maintenance of the machinery owned/leased by the service provider. The farm (Nufoli) contracts the end market, Habesha Breweries, for its product[1] through supply from its own farm and that of the small-holder farmers, which completes the forward lending from the end market. The individual rendering the services operates from a kiosk. Techmon with its payment platform through mobile money, will consolidate all the transactions. Figure 1 captures the model:



Source: Nufoli (2016)

What is Nufoli implementation strategy?

Nufoli crop production aims to produce suitable seed for the farmers which will be provided to the out-growers. Nufoli is contracted by Habesha to implement the concept model. For the out-grower model the following equipment is required:

- 2-wheel tractor from Rumpstad[2]. The local company supporting this is TGT Enterprises and is complete with ploughing, cereal seeder and ridge maker. MagGrow sprayer[3] - MagGrow have their own company established in Ethiopia. Combine harvesting of cereals be out-sourced by local service providers coordinated through Nufoli contracts.

Suitable service provider is trained in service provision with support from equipment suppliers and Nufoli

Out grower strategy

- **Year one:** Test one hectare plot on-farm under small holder agricultural practices as planned for out-grower model. Test will determine value proposition and feasibility for small holder farmers. Primary equipment will include Ramstad tractor and MagGrow sprayer and appropriate service delivery model.
- **Year One:** Invite small holder farmers who are willing to engage with Nufoli/Habesha on service delivery model with woreda/Kabele involvement. There are several options worth exploiting namely: Individual farmer; youth empowerment and local cooperative.
- **Year two onwards:** Based on best models and practices develop the out-grower models.

Rumpstad tractors technology introduced to Ethiopia: http://english.rvo.nl/news/business-cases/two-wheeled-tractors-ethiopia

[1] MagGrow spray technology introduced to Ethiopia: https://www.dfa.ie/irish-embassy/ethiopia/news-and-events/2015/irish-company-agricultural-techniques-ethiopia/

Interviewee: Dawit Nigatu: Legal representative of Nufoli in Sodo Zuria area in Wolayta Zone

What have you established with the community?

- The community leaders were gathered which are 80 number to discuss and explain who Nufoli is. They question if Nufoli will do the following: how they will collaborate with the outgrowers; will the smallholders be empowered; is there technology transfer and will they increase employment.

What was the community's reaction?

- The community was very happy.

Since they compare the using of the land for grazing compared to an investment, they saw their chance of improving themselves. They want Nufoli to start soon. They asked if they would be employed.

Kebele reception

- They want to see investment in the area. The company must start at the Zonal level in Wolaita. The Zone give the letter to facilitate Nufoli to the Woreda. The Kebele is there to support Nufoli

Nufoli's plans on supporting smallholder?

- To capacitate the smallholders through: technology transfer; delivering improved seed; giving technical training; instructions on how to use mechanisation practices; assist with the

microfinance institution process.

- Nufoli will provide an agronomist to ensure that the environment conservation is being practice by the farmer: In using natural fertilizer; Crop rotation; Ensuring proper agricultural practice. The smallholder will buy improved seed, fertilizer and chemicals from Nufoli on credit and be reimbursed by the microfinance Institution but not clear how the arrangement will occur. Nufoli and smallholders will sign in front of a legal representative for the loan from the microfinance institute.

Nufoli's relationship with smallholders?

- Nufoli invited the smallholders and discussed their agricultural intentions in the Haba Gerera Kebele community. Nufoli informs transfers the community on their progress in the area. Nufoli gathered information on the smallholders helps in the select process. Nufoli is looking for a good business model that will link them to the farmer who will deliver quality barley for the end market, Habesha. Nufoli has developed a good relationship with the Kebele (government department in the community) to secure the position of Nufoli. The company's legal representative calls the Kebele once a week to find out if there are any reported problems that need to be sorted. The Kebele is visited once a month to find out if any legal programmes have changed with smallholders and commercial farm.

Pricing for the smallholders?

- Nufoli will give market price. Nufoli will develop a contract with the farmer for their products and have a cost structure and pricing agreement in the contract. The surrounding famers will deliver at Nufoli's gate which is cheaper than going to the market and in this way, they will deliver to us. Nufoli will also collect the produce from the farmer but this cost will be offset against the price. Nufoli will test the quality and then aggregate the product for the end market.

E. Questionnaire

15. Annex : Survey – Individual and Cooperative smallholders in the Sodo Zuria Zone of SNNPR Region.

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SECTION 1: PRODUCT/ LAND USE

1. Do you farm individually or in a cooperative?
2. How many hectares (heptad 1/4hectares) do you have?
3. Do you do crop rotation on the land? Yes No
4. What are your major cash crops?
5. How many hectares (heptads 1/4 hectare) of tef and barley crop?
   Tef Barley
6. What is your average production in quintal(100kg) of tef and barley?
   Tef Barley
7. How much does it cost/birr to grow?
   Tef Barley
8. What method do you use for farming?
   Mechanisation (modern agriculture) traditional both
9. Do you follow the government extension programme advice? yes no
10. Is field irrigated? Yes no
11. If irrigated or not, source of water?
    River Lake pond harvested water rain fed
12. Is field prevented from erosion? Yes no
13. If yes what method is used to prevent erosion?
    Terracing water catchment afforestation plough along contour
14. What seed do you use?
    Improved seed indigenous seed both kinds
15. Is fertilizer used? Yes no
16. Type of fertilize used if any?
    Natural chemical both Fert
17. Reason not to use chemical fertilizer? **(Not Answered)**
    high price lack of money not available skeptical other
18. What kind of chemical is used if any?
    Non pesticide herbicide fungicide 2&3 2&4 all
19. If you have your own or no ox, what do you do to plough?
    By renting ox pairing own oxen with someone using horse/donkey hand digging borrow ox own oxen
20. How many oxen do you have?
21. How do you harvest?
    Hand cutting threshing machine
22. How do you do threshing?
    Animal threshing use harvester hand threshing
23. How much on average does it cost/ Hectares (Heptad 1/4 hectare) to plough?
24. How much on average does it cost/hectares (heptad 1/4 hectare) to sow?
25. How much on average does it cost/hectare (heptad 1/4 hectare) to reap?
26. Do you rent machinery?
    Never sometimes always

SECTION 2: STAKEHOLDER/PARTNERSHIP

1. To who do you sell your products
   trader wholesaler retailer consumer
2. Who gives you financial help?
   Cooperative trader MFI bank friends myself

3. Who gives you farm training?
   Cooperative NGOs extension agent non
4. How is extension agent's services?
   average sometimes good good very good
5. State government department giving services?
   Kabele extension agency Agriculture Dept Kabele agency & agricultural dept
6. State government services given?
   Advice & improved seed
7. Is there NGO help if any?
   Never occasionally six monthly once a month regularly
8. If so which NGO? **(Not Answered)**
9. Who certifies improved seed?
10. Who supplies your chemical fertilizer?
    Cooperative Government NGO local market
11. Who supplies your pesticides?
    Cooperative government NGO local market
12. Do you get any business services?
    Transport accountancy management training non
13. If yes, who gives the advice? (**Not Answered**)

SECTION 3: SUSTAINABILITY/SOCIAL STRUCTURE

1. Number of household member?
2. Age of family head father?
3. Who works on the farm?
   Whole family wife and all the children Father, wife, older and small children only wife farther, wife and older children
4. Do you employ Extra labourers (not DEBO system)? Yes no
5. How much tef share is sold in the market/quintal(100kg) All 1/3 ½ 2/3 other
6. How much tef produced is eaten/quintal(100kg)
7. What market crop do you purchase to eat?
8. Is water available for personal use? Yes no
9. Is there a health clinic around? Yes no

Is there enough food in the community? Non very little enough for family surplus

SECTION 4: TECHNOLOGICAL

1. Do you need skills for modern agriculture farming? Yes no
2. Do you need improved seed? Yes no
3. If no then why no improved seed?
   No advantage costly not accessible limited finance **(not Answered**)
4. Do you use weed control? Yes no
5. If no then why no weed control?
   No advantage costly not accessible limited finance by hand (**Not Answered**)
6. Do you use pesticide? Yes no
7. If no why no pesticide?
   No advantage costly not accessible limited finance No need (**Not Answered**)
8. Do you use fungicide? Yes no
9. If no why no fungicide?
   No advantage costly not accessible limited finance no need
10. Do you need market information? Yes no
11. If no then why no need for market info?
    Not accurate information old not needed other **(Not Answered**)
12. which mechanised operation of farming do you understand

Ploughing part sowing part harvesting part No

13. Is certified seed freely available?
    Never sometimes always
14. Do you see mechanised machinery available?
    Never sometimes always
15. What area do you get technical advice?
    Farm equipment processing facility Agricultural procedures post-harvest

SCTION 5: ECONOMIC SERVICES/MARKETING

1. How do you price the product?
   Cost base price marketing base price
2. how do traders assess your quality?
   bias (their advantage) sometime good Honestly
3. What is the price per quantal (100kg)?
   Tef Barley
4. Are you happy with the product price?
   Poor fair good very good excellent
5. When do you sell your product?
   Beginning of season middle of season end of season
6. Do you know the product market demand?
   Never, sometimes always
7. Who sets the selling price?
   Trader yourself processor international market
8. Where is the point of sale for your product?
   Farm gate trading market AddisAbaba market
9. How much is the transport cost to the market?
10. What marketing channels do you use?
    Direct, indirect, informal
11. Is the product readily available on time to purchase?
    Never sometimes always
12. Is the price reduced on product quality? Yes no
13. Do you benefit from the cooperative system?
    Never sometimes always
14. Are the products taken to market all sold in one day? Yes no
15. How much product is returned after market sale, unsold?
16. How do you sell your crops in the market?
    Collectively small group individually

17. Is there any equipment to rent in town for farming?
    Never sometimes always
18. Do you have contracts to grow your products? Yes no

SECTION 6: PROCESS/UPGRADING

1. How do you grade and sort your produce after harvest?
   bag immediately grade then bag
2. Do you keep records on farm activities? Yes no
3. Do you add value on your farm products? Yes no
4. On what areas do you get technical advice?

Farm equipment processing facility Agricultural procedures post-harvest

F. Present Business model

16 Annex Focus Group-Business Canvas model of Nufoli & smallholders

Focus Group-Business Canvas model of Nufoli & smallholders		
Business M	**Nufoli plc**	**Smallholder**
Key partners 	Sensalet Habesha Breweries.Heineken Breweries Seed supplies. Banks. Share holders Professional accountant	Personal. MFI. Government agricultural department. Extension Agent. Kebele
Key activities 	Ploughing – by mechanization. Planting & sowing schedule. Spraying – pest fungicide Herbicide.Transport to market. Potatoe grading. Harvest & storage. Sales projection. Aggregation. Distribution to client. Regular communication with clients and customers	Ploughing. Sowing. Cultivation. Harvesting. Stacking & drying Hand threshing. Bagging. Storing. Selling on spot market All done traditionally
Key resources 	Employee's, Shareholders professionals for water resource. Irrigation. Tractor and equipment. Truck Quality control standards from Habesha & Sensalet companies. Certified potato seed. Certified barley seed. Warehouse. Product branding. Bank Technology – sensor unit device on equipment. Data collection records.	Household head finance provider. Storage room. Wife and older children. MFI – input capital. Improved seed from Agricultural department. Oxen and manual plough. Donkey and cart
Cost structure 	Cost Barley farming cost 25,300/hectare. Potatoe farming cost 41,400/hectare Investment. Farm machinery & equipment (tractors, trailer equip, harvesters. Infrastructure – roads, fencing, land development & drainage. Warehouse, water, storage, processing, work shop Operational cost Fuel and repairs of equipment. Input costs (seed, chemicals & fertilizers). Irrigation. Electricity. Overheads. Packaging and storage. Transport Intangible cost. Clinics & school's participation. Government support. Tree planting and recreation areas (gardens) Risks relating to investment. Sudden excess of water from rain. Infestation of uncontrolled pest & disease. Petty theft. Lack of government support	All input cost, total 2000 birr- based on 0.5hectare Barley farming cost 500birr. Pulse farming cost 400birr. Maize farming cost 600birr. Tef farming cost 1800 birr. Potatoe farming cost 1600birr. Transport cost 100birr/crop

Focus Group-Business Canvas model of Nufoli & smallholders		
Business M	**Nufoli plc**	**Smallholder**
Sustainability On the 3Ps.	**Profit** Reinvest into farm**.** shareholder's dividend**.** invest into the community - schools and clinics and road infrastructure. **People** Training farm staff**;** Skills development with; employers**;** Social welfare**;** Education long term development. **Planet** Crop rotation with nitrogen fixing legume. Water ways prevent erosion**.** Safe application of chemicals, fertiliser – protective clothing**;** Waste handling management	**Profit** Medium to average yield. The profits are invested back into the farm. Price for tef & barley are good that they make a profit. Market price is volatile Pre-harvest loss on tef through lodging. Post-harvest loss on tef when cleaning tef **People** Youth support the family in farming activity**.** Interfamily inheritance on land**.** Produce staple food for family: tef, maize, potatoes and pulses**.** Food is connected to culture and traditional methods of farming **Planet** Practice crop rotation. Natural and chemical fertilizer . The crop and grass is completely removed from land, high value food for animals.– erosion is controlled and practiced. Farming is integrated with crops and livestock.
Value proposition 	Barley. Potatoes. Vision statement Inspired agricultural company who delivers sort after quality, consistent products in a sustainable community environment ensuring long term returns on investment. Mission statement Barley quality standards All products are delivered in polystyrene bag/1QTL(100kg). Potatoe quality standards Variety is Gudene; size –	Tef. Barley. Pulse. Potatoes. sweet potatoes The standards are not specific since farmer grow at best and delivers to spot market

Focus Group-Business Canvas model of Nufoli & smallholders		
Business M	**Nufoli plc**	**Smallholder**
Customer relations 	strong relationship communicates with customer monthly through email or telephonic conversation The communication channels are through web page, advertising and storage facilities to have continuity of supply with quality for the customer. Sales are direct to end user through contract. The customer being, habesha & Heneken brewery and Senselet are informed on product stage, quality and environmental disasters.	No relationship – use spot market and choose the trader with best price.
Channels 	Lorry. Delivery terms are stipulated in contract. Potatoes stored in crates and packed in 100kg poly bags at time of delivery. Barley is quality checked and then stored in 100kg poly bags. The potatoes are graded and then aggregated ready to be bagged.	Hired lorry. Donkey. Donkey & cart. Products in 1quintal bags(100kg)
Customer segments 	Habesha breweries based in Debre Birhan in Amhara Region +- 110Km from Addis Ababa. Heineken breweries in Kelento Area, outer suburb of Addis Ababa Region. Sensalet company based in Debre Birhan in Amhara Region +-90km from Addis Ababa. Send barley to Habesha and Heineken breweries. Send Potatoes to Senselet company. A commercial agreement with all three companies through a signed contract.	Send products to Soddo markato – trader based in Soddo in the Woliyta Zone in SNNP Region. The traders have a high demand for tef and barley.
Income/ revenue streams 	Potato (250etb/QTL(30tons/hect). Barley profit(1200etb/QTL(4tons/hectare).Nufoli has a competitive advantage since they are recognised by the companies and have in house professionals. Cash in bank based on contract. High-end market – agronomist support system. Financial guarantee	Tef / 2000etb/QTL(3qtl/0.5hect). Barley/1000etb/QTL(2qtl/0.5hect) Pulse/900etb/QTL(3qtl/0.5hect) Potatoe /250etb/qtl(20qtl/0.5hect) Maize/800etb/QTL(6qtl/0.5hect) No specific quality since the market takes what is delivered
Society plus environment	Soil tillage. Crop rotation. Water ways to prevent erosion.	The straw is used to feed the cattle which brings in extra income to the family. The cow manure is reused on the land. Practice crop rotation. Plough along the contour. Dig holes to catch water which will reduce erosion

G. New Business model

Annex 17: Joint Business model with Nufoli & smallholders/New Business model

Joint Business model with Nufoli & smallholders/New Business model	
Business model canvas tool	**Nufoli & smallholder business model**
Key partners – Roles & Partners 	Habesha breweries, Heineken Breweries, Senselet plc, farmers, financial institutions that is Banks, Terrafina, MFI, NGO (ICCO, SNV), Woreda & Kabele administration dept, Agronomist, Extension agents, Agricultural department, IT services(Vestigo/Nufoli) MFI give loans to smallholders. Certified seed from Nufoli – suggested by the breweries; Transport. Extension agents and agronomist. Public partners – Kebele and Woreda assist financially and sorts out community problems. Banks will give credit to farmers linked in a group or with commercial farmer. Government agriculture department provide improved seed.
Key activities – Activities & Process 	Smallholders deliver products to collection Centre. Delivery terms and agreement of products. Agronomist and extension agents checks availability of volumes and report back to Nufoli. Nufoli will collect product from smallholder on request. Deliver and train smallholder on new products requested by client. Check and correct smallholders to maintain high value products for client. Smallholders are given technical assistance and training: Time when to plough with two-wheel tractor; correct planting procedure; proper application of chemical with knapsack: how to asses when crop is ready to be harvested; the method of stacking, and bagging for the client. • Payment periods, which is on delivery and after sampling and testing. Logistical management. Develop market information systems. Standardized quality weights and measures. Provide business support systems to smallholders. Potatoe grading for size – Barley assessment and testing for standards. Customer training in proper agricultural practice and orientation on contract.
Key Resources-Technologies & skills 	• Warehouse – quality control. Access to finance. Tractor, implements, spraying and harvesting equipment – technical team. IT technology collect data – Sensor technology to collect agricultural data, billing and maintain quality assurance. Land availability to scale-up of products.

Joint Business model with Nufoli & smallholders/New Business model	
Business model canvas tool	**Nufoli & smallholder business model**
Value proposition – service or product description. 	Product is washed, graded, standardized quality. Reliability of supply. Transparency of process. Nufoli to smallholder: • Stable market with guarantees and transparent purchase of barley and potatoes. Competitive price for smallholder product – skill to produce quality. Credit access, and input access due to linkage with Nufoli. Improve the livelihood for smallholders Nufoli to the Brewery: • Quality, quantity & consistency of supply. Competitive price – quality. Capacity to develop new products for client demand Product quality and standards **Barley**: maturity; min germination; 2.5mm sieve & 2% below 2.2mm sieve; protein; moisture content 14.5% max. **Potatoe:** Variety is Gudene; size of size; Dry matter content; reduce sugars of the fresh weight; frying colour- IBVL Colour minimum 6.5; non-payable defects like spots, mechanical damage and sprouting; not allowed are stones, rotten tubers, soil and presence of extraneous products.
Cost structure– Investment; operational costs; intangible costs and Risks 	• Extension and agronomist service. Transport. Interests. Service providers. Spraying, ploughing harvesting. Grading and quality check on product. Weather index crop insurance. Value chain finance Payment structure to MFI & banks. Purchase structure from Kiosk
Social & environment, 3P	**Profit** • Reinvest into farm. shareholder's dividend. invest into the community through participation with schools and clinics and road infrastructure. Increase on yield for smallholders – through technology support. **People** • Training farm staff. Skills development with employers. Social welfare. Education which is long term development. Youth support the family in farming activity. Interfamily inheritance on land. Product a staple food for family: tef, maize, potatoes and pulses **Planet** • Crop rotation with nitrogen fixing legume to conserve the soil. Water ways to prevent erosion. Safe application of chemicals and fertiliser – protective clothing to those employees. Waste handling management

Joint Business model with Nufoli & smallholders/New Business model	
Business model canvas tool	**Nufoli & smallholder business model**
Customer relations – marketing & sales; customer care 	Nufoli to customer: Formed contracts. Agronomist and extension agents continued inspection to inform on improved methods and technical assistance. Update on product development on client demands. Market information. In visitation to smallholder, help is given to resolve any doubts and questions that are relevant to the business agreement. Explain the pricing structure and contract. Involvement with clinic and schools in the community Nufoli to client: Sales projection on the products for the season. Webpage development with regular updating. Feedback on field crop problems concerning the contracted volumes and quality. General feedback on smallholder group performance during meetings. Dialogue on new opportunities.
Channels – Aggregation and distribution; end user contact 	➢ Collection Centers in production areas. Delivery terms and agreement. Aggregation and distribution. Warehouse storage. Potatoes in 1QTL bags(100kg). Barley in 1QTL bags(100kgs). Farm visits. Training field days Truck delivery to end market – Hebesha, Heineken and Senselet
Customers (segments) - customers & end users. 	Nufoli with customer: Contract/smallholders crops. Will assist on how to strategically enter local markets for tef and other crops. Assist on smallholder needs: to access new markets; increase sales volume and income; Improve their agricultural practices. Improve their livelihood and upgrade in the value chain. ➢ Location: Sodo town of Woliyta Zone in the SNNP Region. Nufoli with clients: Contracts with Heineken, Habesha and Senselet companies who want High quality, quantity and consistency of supply at an agreed price.
Revenue streams – tangible & intangible revenue 	➢ Fixed period prices. Profit margins built into contract. Product sales of Barley & potato. Local sales of tef, maize, pulses. Cash in the bank based on contract – interest. High end market from agronomist support system Nufoli - competitive advantage -recognised by the companies - inhouse professionals.
Society plus environment	➢ Soil tillage. Crop rotation. Water ways are developed to prevent erosion. ➢ The straw is used to feed the cattle which brings in extra income to the family. The cow manure is reused on the land. Practice crop rotation ➢ Plough along the contour. Dig holes to catch water which will reduce erosion. Participate with schools and clinics in the community.