



The Effect of Eritrean Development and Investment Bank's credit on small scale dairy business farms in Maekel Region, Eritrea.

A Research Project submitted to Van Hall Larenstein University of Applied Sciences in partial fulfillment of the requirements for the award of Professional Master Degree in Management of Development with specialization: International Agriculture

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DEDICATION

I dedicate this work to my family whose love, words of encouragement, patience and understanding they showed during my time of absence gave me the inspiration to give my best to this project. I love you so much!

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Stay Blessed & Keep healthy!

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ABBREVIATIONS AND ACRONYMS

ACORD	Agency for co-operation and research development
ADP	African Development Bank
AIDB	Agricultural and Industrial Development Bank
ALA	Agriculturists Loan Act
ARDZM	Animal Resource Department Zone Maekel
CBE	Commercial Bank of Eritrea
EDIB	Eritrean Development and Investment Bank
ERN	Eritrean Nakfa
FAO	Food and Agriculture Organization
HCBE	Housing and commerce Bank of Eritrea
MOA	Ministry of Agriculture
NGOs	Non Governmental Organizations
NUEW	National Union of Eritrean Women
NUEYS	National Union Eritrean Youth and Students
REIP	Rural Enterprise Investment Partnership
SMCP	Saving and Micro-Credit Program
SPSS	Statistical Package for Social Sciences
SSA	Sub Saharan Africa

ABSTRACT

This study was carried in Maekel Region, one of the six regions of Eritrea with the aim of assessing the effect of credit supplied by the Eritrean Development and Investment Bank (EDIB) in 2006 for the small scale dairy farmers. The specific objectives of the study were: first to explain how such credit can serve as a tool in poverty alleviation; secondly, to assess the effect of credit on the growth potential of the business. The data for this study were collected through the cross sectional survey which involved both dairy farmers who are in the EDIB credit program and not in the EDIB credit scheme using a semi-structured questionnaire which was distributed to farmers. Data was analyzed using statistical Package for Social Sciences (SPSS 18).

Results from this study indicated that credit contributed substantially to the small scale dairy farmers. Average body size of dairy cows, family milk consumption per day and amount of sales were significantly higher ($p < 0.01$) for those farmers who are in the EDIB credit program than the farmers who are not in the EDIB credit scheme, meaning that the credit is contributing in poverty reduction and hence in the growth potential of the dairy business. Thus, EDIB farmers are better-off than their counterpart. Improvement in house hold diet, income and health status of the family since starting the business is also means of reducing poverty.

Due to the observed good outcomes of the small scale dairy farming that were supplied by EDIB in Maekel region of Eritrea, more promotion of this undertaking in the regions has been recommended.

Key words: Agricultural Credit, Poverty Reduction, Growth Potential, Small Scale Dairy Farmers

CHAPTER 1: INTRODUCTION

1.1 Back ground to the research

Eritrea is one of the underdeveloped countries in which agriculture is the dominant sector. About 80% of the population is living in rural areas with traditional and subsistent farming system as main livelihood of the people (MOA, 2002). The dairy production constitutes an important source of income through the sale of animal products and sales of live animals (MOA, 2000). Moreover it gives employment opportunity and is a source of food. In Eritrea the vast majority of milk used for commercial production and consumption is from dairy cows. Small Scale farming and commercial dairy farming is widely practiced in Maekel Region as most farmers adopt dairying since Italian colonization in 1930's and they manage their cattle at a family level (MOA, 2000). Given its importance to the national economy the government of Eritrea gave high priority to raise agricultural productivity and to improve the standard living of the farmers. To improve the living standard of the people certain activities have been done like promoting small scale income generating activities besides introducing modern agricultural farming system. In promoting such development activities financial institutions are crucial for credit provision and for other financial services. Credit is the back bone for any business and more so for agriculture (Yusuf, 1984). Agricultural credit is an integral part of the process of modernization of agriculture and commercialization of the rural economy. Agriculture as a sector depends more on credit than any other sector of the economy because of the seasonal variations in the farmers returns and a changing trend from subsistence to commercial farming. Credit may contribute for the farmers to earn more money and to improve their standard of living as well. Under Agriculturists Loan Act of 1958 (ALA), credit is provided for relief of distress and for purchasing seed, fertilizer, cattle and implements (Yusuf, 1984).

Now Eritrea has both formal and informal financial institutions. These institutions provide loans to their clients (ACORD, 2002). The current strategy for the Government of Eritrea emphasizes the strengthening of the small scale farmers in the development process and by providing loan so as to improve their standard of living. The EDIB which is the government institute is providing credit for development activities. In 2006 the EDIB gave loans as a pilot phase for starting the small scale dairy business in the central highlands zone of Eritrea particularly in Maekel Region. The main topic of the research is "Effect of EDIB's credit on the small scale dairy business in Maekel region, Eritrea". The reason why the researcher focused on the credit supplied to Maekel region is, this is the first project given by EDIB as a pilot phase in 2006. The bank is intended to know the effect of credit on the small scale dairy business and the objective of this research is to assess the effect of credit during the past 5 years (2006-2010) based on poverty reduction, potential growth of the business. This assessment helps for the EDIB to know the outcome of the loans or whether the business is going successfully or not. Besides, it may contribute in policy making by government of Eritrea. The report consists of seven chapters in which chapter one is the introduction and research outlines, chapter two discusses how the EDIB credit program and Micro financial institutions in Eritrea looks like, chapter three is focused on the profiles of the study area and chapter four discusses about the conceptual framework. In the conceptual frame work how the term effect of credit will be conceptualized in

the small scale dairy business. How the research questions are developed and derived, how these questions are also developed to the questionnaire are discussed in this part. Chapter five focused on methodology part, what methods and strategies are used in this research. Chapter six is about the results and discussion of the findings along with agreements of other similar studies and finally conclusion and recommendation from the study is discussed.

1.2 Problem Statement

The EDIB had been providing credits (cash) for starting the dairy venture in the central highlands of Eritrea particularly in Maekel Region. The beneficiaries who invest the loans in dairy business are 55 farmers. Each farmer received 50,000 ERN (2500 Euro) as a loan which is going to be repaid within 5 years. Even if the institution gave loans to the small scale farmers who are engaged in the dairy business, however, there is no information about their advances on standard of living of the farmers and thus knowledge about their achievements in economic growth remains unknown (EDIB, 2009).

Therefore there is hardly any information studied by the EDIB on the effect of the credit in the dairy business and this research is designed to investigate the effect of the EDIB's credits on dairy business in Maekel region particularly on poverty reduction and growth potential.

1.3 Research Objectives

Based on the problem stated above, the aim of the study is to assess the effect of EDIB's credit supplied to small scale dairy business.

The specific objectives are:-

- To explain how such credit can serve as a tool in poverty alleviation.
- To assess the effect of credit on the growth potential of the business.

1.4 Research questions

Main research question:

- What are the effects of credit in dairy business within the region?

Sub questions:

- To what extent does the credit contribute in alleviating poverty?
- What are the effects of credit on the growth potential of the business?

CHAPTER 2: EDIB AND MICROFINANCE INSTITUTIONS IN ERITREA

Eritrea by now has developed a number of financial institutions that are active in agriculture and a variety of approaches have been implemented. Most of the agricultural finance is provided by micro finance institutions and the Ministry of Agriculture (MOA) lending project. The major institutional sources of loan or funds include Eritrean development and Investment Bank (EDIB), Rural Enterprise Investment Partnership (REIP), saving and Micro-credit program (SMCP), Agency for co-operation and research development (ACORD), National Union of Eritrean Women (NUEW), National Union of Eritrean Youth and Students (NUEYS). These organizations have similarities and differences in terms of funding sources, degree of specialization, eligibility criteria, and organizational structures. All institutions except EDIB are MFIs and provides micro credit loan to their clients but EDIB serves as micro and macro credit.

2.1 EDIB Credit program

The EDIB was called Agricultural and Industrial Development bank (AIDB) before the independence (1993) and the AIDB was established 1970's by the Ethiopian colonizers. It was providing loans to the agricultural and industrial sector of Ethiopia. In 1990's the AIDB was paralyzed due to liquidity problems.

Eritrean Development and Investment Bank (EDIB), a financial institution was established in 1996 by the Government of Eritrea but started operations in 1998 in order to stimulate the country's economic development through mobilization and financing of development-oriented projects in the agricultural, industrial mining, tourism and construction sectors, among others and gets funds from the European NGOs and African Development Bank (ADP). EDIB is also now working to promote the private sector in Eritrea by encouraging the development and expansion of micro and macro enterprises, assist individuals and groups to increase their income generating ability, and improve their earnings and food security. Besides it provides credit to marginalized groups including women, who lacked access to formal financial institutions. Its target clients also include demobilized soldiers, returned refugees and deportees from Ethiopia. It provide loan for a number of enterprising individuals of both sexes working in the area of agriculture, service, trade, and manufacturing. In the agricultural sector no superior enterprise is getting access to credit. However, loans might have used to develop a single enterprise based on the preference of the borrowers. In 2006 the EDIB gave loans as a pilot phase for starting the small scale dairy business in the central highlands zone of Eritrea particularly in Maekel Region. The micro-loan which is provided by the EDIB is given to individuals to run their dairy business. The amount of loan that each farmer receives from the institution is 50,000 ERN (2500 euro) to run the small scale dairy business. The farmers or the business owners are beneficiaries of this scheme and it's clear that the business that receives loans from the EDIB seeking to become financially sustainable. The aim of the institution regarding the dairy industry is to reduce poverty or to improve standard of living and to expand the business (EDIB, 2006). As the bank is owned by the government, it also works in with collaboration ministries especially with the ministry of Agriculture. The ministry of Agriculture

provides technical support for those farmers who involved in the credit scheme. The EDIB provides loan for the commercial farmers and small farmers. Those commercial farmers are farmers who start business in Irrigation, horticultural farming and other agricultural activities, the amount of loan ranges from 100,000-1,000,000 ERN (EDIB reports).

The farmers for starting the small scale dairy business in Maekel Region should fulfill the following requirements in order to get a loan (EDIB, 2006):

1. They have to have enough land and water for green feed.
2. Currently those who don't have any other dairy business.
3. Interested in dairy development
4. Enough housing for the dairy cows, and if the size of the Animals increase the farmers should have at least 100m² of land for possible expansion.
5. And is able to repay his loan on due time.

Types of credit, terms, and interest

Cash was given in one cycles of same amount for a given borrower in 2006. According to the criteria mentioned above all in all 78 farmers (12 women) got a loan from the investment bank from Maekel region. From these 78 farmers 55 of them were activated or started in dairy business which is 70.5% and 23 farmers (29.5%) not started any business. Reasons for not starting the business are: - 22 of them said that "due to lack of feed we couldn't able purchase dairy cows" and the other one said "the price (market) of the dairy cows is too expensive to offer" as a result 23 of them return back the loan (EDIB, 2006). EDIB charges interest of 12%/year on a declining basis (interest is charged on the remaining balance). Loan is returned back within 5 years, for all loan cycles, on the basis of fixed installments. The amount of cash that a farmer has to pay back each year is stated in the loan repayment schedule which is in the annex part. From the 55 farmers, 2 of them were not able to continue their business. Only 53 of them are on the way of running their small scale dairy venture (EDIB reports).

2.2 Micro finances in Eritrea

Micro finance is a general term referring to the provision of basic financial services such as credit, saving, leasing, equity financing, insurance and remittance mechanisms by banks, nongovernmental organizations and credit and saving cooperatives in both formal and informal financial sectors (FAO, 2006).

After independence, the Land Resource and Crop Production department of the Ministry of Agriculture was given the responsibility for credit activities, with its mandate until credible financial institutions catering to the needs of agriculture become established. The Department administers many credit schemes. These schemes extend credit to farmers for the purchase of mother driven pumps, tractors, small hand tools, oxen, camels, fertilizer, vegetable seeds, pesticides and the like. Moreover, credit is also provided for digging wells, purchasing chickens, and dairy cows, and fattening animals, often on multi year terms (ACORD, 2002).

Most of agricultural finance is provided by micro finance institutions and the ministry of agriculture lending project. However, the formal banks like Commercial Bank and Housing and

Commerce Bank of Eritrea are not strongly involved in financing agriculture due to reasons associated with agricultural production and producers (MOA, 2002).

In the micro fiancé area, ACORD, a quasi financial institution established in 1993 by a European NGO, started operating a group saving and credit scheme in Dehub (southern) region in the central highlands zone. The basis of ACORD's operations there and elsewhere has been the establishment of village or community savings group (ACORD, 2002).

Under the word micro credit program, the Ministry of Local government established a micro credit institution, the savings and micro credit program (SMCP) in 1996. This institution has concentrated on building up village banks and administering credit programs in all Regions. It is the largest microfinance program in the country. Clients under this program ranging are divided in two Tiers; these are Tier-I and Tier –II. The Tier-I loan ranges from 100 USD to 1000 USD. While those in Tier –II clients receive a loan amounts US\$1,000 to US\$10,000 and to investment in business development. The tier- II clients doesn't have the business plan or collateral however, the loan is given after the SMCP has checked the economic performance of the business (SMCP report 2005).

The central bank of Eritrea is responsible for designing and implementing policies that will enhance savings mobilization and assure the provision of finance to stimulate growth in the productive sectors of the economy. In this regard, it has established a system of preferences and priorities with respect to access and conditions for credit preferential interest rates have been established for credit to agriculture sector (MOA, 2005).

The National Union of Eritrea Women, the War Disabled Eritrean Association, the National Union of Eritrean Youth and Students, and other micro credit institutions have also made major contributions to stimulate growth in the agriculture sector through the provision of small-scale loans (MOA, 2005).

CHAPTER 3: PROFILE OF THE STUDY AREA

In this section Geography of the study area, demography, Economy and livelihood of Maekel region and small scale dairy business development in Maekel region will be presented.

3.1 Geography

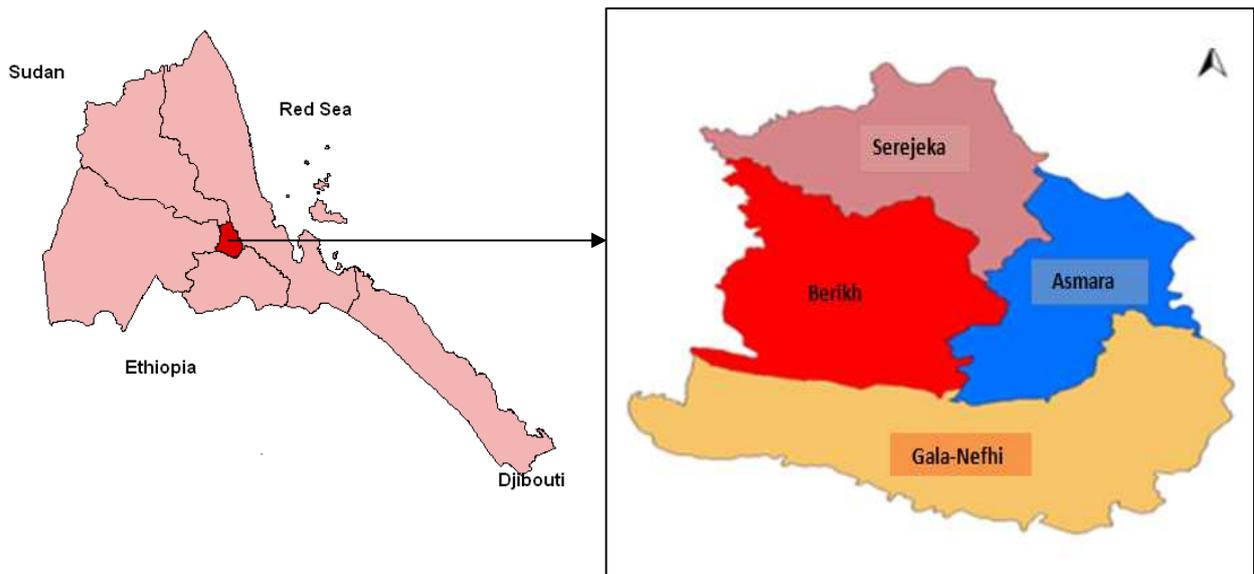


Figure 3.1 Maekel Region

Eritrea is located in the Horn of Africa shares borders with Sudan, Ethiopia, Djibouti, and the Red Sea. It has an estimated population of 5.6 million and a total land area of 12.2 million hectares (CIA, 2010). Its annual population growth is estimated at 2.9 percent. There are nine ethnic groups and six administrative provinces or regions. The economy of Eritrea is largely based on subsistence agriculture, with 80% of the population involved in farming and herding. In 2003 agriculture accounted for an estimated 12.4% of the country's Gross Domestic Product (GDP) (CIA, 2005), with livestock accounting for about 15% of agriculture's contribution to GDP (MOA, 2002).

The study area is Maekel region, in the central highlands of Eritrea. It has good infrastructural links with other regions and the capital city of Eritrea, Asmara is within the region. Therefore, farmers in that area have relatively good infrastructure as compared to other regions of the country.

The topography of the area ranges from 2251 to 2376 meters above sea level. The slope of the topography ranges from zero to greater than thirty percent. On average, the temperature of the study area is 16.9°C where the minimum occurs in December and January and the maximum in the months of May and June. From data obtained from 1992 up to 2009, 500-700mm of rain was

recorded. The area has temperate climate and it has two patterns of rainfall, the short rainy season (March to May) and the rainy season (June to September) in which the highest rainfall is recorded (Nastasi, 1993).

3.2 Demography

Maekel or the Central region is one of the six regions of Eritrea. It is the smallest region in area, and its total population is 538,749 (Wikipedia 2010). The region also contains 6 sub regions. The average family size of the household is four and most of the inhabitants of the area are Tigrinya speaking and with a few of Tigre, Bilen, and Saho speaking groups (Wikipedia 2010).

3.3 Economy and Livelihood of Maekel Region

About 80% of the Eritrean population lives on subsistence agriculture, mainly on crop and livestock production, the majority of which are in low socio-economic status and are vulnerable to food insecurity. Agricultural production system in the country is composed of predominantly agro-pastoral (in which crop cultivation is mixed with livestock raising), agricultural (crop cultivators without livestock) and pastoral (livestock only) communities. A small proportion of the population depends on fisheries and the rest is composed of urban dwellers involved in daily labor, trade and employment in government or other institutions. Average annual inflation rate is 20% (CIA fact book 2010).

Most of the residents of the area of Maekel region lead their lives through farming, some are traders and others are government workers. Farmers in the area, especially vegetable growers, produce agricultural commodities in a commercial manner. Majority of the farmers in Maekel region they plough their land by draft animals but some farmers use tractors and apply different chemicals such as fertilizers and pesticides, and supplement their farms with irrigation water. Besides, after independence (1991) Maekel region has good access of educational and health centers as compared with the other regions of the country (CIA fact book 2010).

3.4 Small scale dairy business in Maekel region

According to FAO 2004, Small dairy farmers: - is someone who has 1 to 4 cows (Holstein, indigenous and cross breed) and usually occupies less than 0.5 ha of land and represents the less commercially managed dairy system in the area. More over FAO 2004 explains Small scale dairy business as small business in which it has small number of employees and small number of dairy cow with relatively low volume of sales.

The dairy industry plays important roles in the development of Eritrean economy. It is a source of milk which has a high nutritional value particularly in the supply of fat. Milk is also important in the preparation of confectionary and vaccines. The dairy industry also provides employment opportunities for the populace, thereby serving as a source of income to the people. However, the dairy industry in Eritrea, as well as other developing countries of Africa, is continually characterized by low production levels (MOA, 2000). This is largely associated with lack or limited finance (credit facilities) for the procurement of basic dairy equipment and materials.

Feed ingredients are also expensive. This makes it difficult for the farmers to produce and supply sufficient and good quality feeds to the dairy cows (MoA, 2002).

In Eritrea livestock are the most valuable assets for the farmer. Animal husbandry is not only one of the main sources of livelihoods for small scale farmers but is also a form of insurance for food. Moreover, the livestock has a crucial role in income and food generation. The people living in the rural areas of the central highlands of Eritrea depend on farming and herding for a livelihood.

Commercial dairy farming and non commercial dairy farming is widely practiced in Maekel (central) region, since most farmers adopt dairying starting Italian colonization in 1940's. They manage their cattle at family level.

Broad breed types can be identified based on their phenotypic characteristics; divided into those adapted to the highlands or to the lowlands. The two major cattle breeds are the Barka in the western lowlands, and Arado, predominantly in the highlands and eastern lowlands. The Barka is known for its high milk production and quality beef production. It yields an average of 6 litres of milk per day and gives 9 to 10 litres of milk a day at the highest stage of lactation (Sherman, 1980). The Arado is a small animal well suited to the rugged highlands. It is an excellent drought animal with low milk production and poor quality of beef. Some European dairy cattle have been introduced since the nineteenth century by Italian settlers; some 6,000 to 8,000 cows, basically composed of pure exotic Friesian and some cross breeds, owned by 800 to 1,000 commercial farmers are concentrated in urban and peri-urban zones of Asmara. (Chedly, K and Tewolde, A., 2006).

Maekel region has the largest dairy cattle (exotic and cross bred) population from other regions, comprising 4536 milking cows, 2057 pregnant cows, 2557 heifers, 2190 calves, and 794 bulls in a total of 12,134 cattle which are owned by 1294 dairy producers (ARDZM, 2007). Most dairy producers joined in Association, 'Asmara and surrounding dairy farmers' cooperative'. The cooperative is actively involved in distributing concentrate feeds which is allocated by Ministry of Agriculture. In Eritrea, the small scale dairy industry is characterized by low productivity of milk this is due to improper feeding system, inadequate feed, in combination with poor health and poor housing system and other management problems such as strengthening the dairy farmer's cooperatives. According to MOA 2002, the main constraints for dairy business is poor animal health and management, this problems results from poorly feed animals develop low disease resistance, fertility problem, inadequate supply of quality feed, low productivity and genetics, quality problem, health problem and others. i.e. dairy cattle are producing under their genetic potentials in which the average milk production for indigenous, Holstein Frisian, and Cross breed is 6 litters/cow/day, 10litters/cow/day, 8 litters/cow/day respectively. There are a few feed processing plants in the country, while, the possibility of growing self-managed feed is constrained with lack of water for irrigation, poor soil quality as well as the resources to invest in it.

In sub regions of Galla-nefhi, Berik, Serejeka 500, 400 and 281 farmers are engaged in dairy cattle, and accounts an estimated 5000, 2000 and 1507 dairy cattle, respectively as reported from sub zobas, May, 2008. The selected Sub Zobas economy is mixed farming based and

using milk as direct consumption or selling milk as regular cash income is the way of life. Few farmers adopt irrigation and irrigated their lands from wells, dams and Maibela Sewerage. Farmers grow and feed limited amount of green feeds, such as maize, alfalfa, vetch, elephant grass and others.

The population of small scale dairy farms in the central highlands of Eritrea is mainly concentrated in Central (Maakel) Zone. Dairy farmers in these areas are encouraged to deliver and sell their daily milk output to the milk collecting, cooling and processing centres, where milk is processed and sold to retailers and consumers. Producers benefit from this arrangement by having access to the milk market and to concentrate feed (concentrates). In Maekel region fresh milk is distributed through informal and formal marketing system. The informal marketing system implies direct sale of fresh milk by producer to consumer which sales nearby neighborhood, traders, cafeterias and individuals to get a higher price than when sold to Asmara Milk Factory, to cover transport cost. Milk is transported to Asmara milk factory and to the informal markets by donkey, on foot, bicycle and mainly by horse.

CHAPTER 4: CONCEPTUAL FRAMEWORK

4. 1 Effect of Credit in small Dairy business

This study wants to assess the effect of credit on the small scale dairy business in Maekel region of Eritrea. To investigate these effects the researcher split up the possible effects in to two categories. These are poverty reduction and growth potential of the business because these are the primary objective of the institution regarding the dairy business.

The Wikipedia Free Encyclopedia explains the term credit as the provision of resources (such as granting a loan) by one party to another party where that second party does not reimburse the first party immediately, thereby generating a debt, and instead arranges either to repay or return those resources (or material(s) of equal value) at a later date. It is any form of deferred payment.

The word credit has become an important component of development, poverty reduction and economic regeneration strategy around the world especially for the small scale business. According to the free dictionary online effect is the power to produce an outcome or achieve a result; influence. The effect of credit in the in the business could be positive and/or negative effects or the credit appears to have both positive and negative effects on the business, households and individuals. The positive effects could be to reduce poverty, expansion of the business, social transformation, protect against risks, empower women, to overcome the constraints in running the business and others while the negatives could results in too much risks (home or other property as collateral) or extremely high interest rates 9 (over 100%) if the business collapses or at risk. (Dunn and Arbuckle, 2001). The studies have shown the positive impacts of microfinance initiatives on socio-economic variables such as household nutrition status and women's empowerment (Hossain, 1988).

For these reasons the researcher operationalized the concepts of poverty reduction and growth potential. According to the World Bank (2006) poverty is a multidimensional social phenomenon, its definitions and its causes vary by gender, age, culture and other social and economic contexts. Poverty encompasses the inability to satisfy basic needs, lack of control over recourses, lack of education and skills, poor health, malnutrition, lack of shelter, poor access to water and sanitation, vulnerability to shocks, violence and crime, and the lack of political freedom and voice. The task of poverty reduction is seen as ensuring that a household meets its minimum material or physiological needs (Hulme, 2009)

4.1.1 Poverty Reduction Concept

Though poverty reduction is defined by many authors including its indicators but the researcher in here presented some of its indicators.

According to FAO 2004, General indicators of poverty reduction are:

- improved income levels of poor and non poor
- changes in house hold food security
- improved basic needs (shelter, nutrition, health, education)

- Increased yields/numbers of dairy cows
- Changes in consumption and diet
- Improved quality of life
- Employment opportunities to the house hold

For this study the researcher focused on the above poverty reduction indicators which are studied by FAO 2004 and particularly on the growth income, health status, nutritional status, size of the dairy cows, and employment opportunity to the household member as they are one of the primary objectives of the EDIB. I.e. Income (growth income) is usually defined in terms of (imputed) value of food consumed, the value of consumption obtained through cash or non cash. Health status is measured by an observer (e.g., a physician), who performs an examination and rates the individual along any of several dimensions, including presence or absence of life-threatening illness, risk factors for premature death, severity of disease and if an individual is able to cover the costs of the medical expenses or not. The researcher wants to investigate the health status of the household before and after of the business i.e. how the credit contributes in their health improvement and in covering the medical costs.

Nutritional status: could be defined as diet intake improvement or diversify by house hold, i.e. able to buy 3 meals a day, able to eat nutritious food etc. Are the farmers able to diversify their diet after taken the loan? Consumption of small amount of milk can contribute a dramatic effect on improving the nutritional status of poor households particularly for children and expectant mother (Staal J. et al 2008).

Moreover according to Njau F.B. et al 2010, the credit given for starting the small scale dairy venture in Tanzania also played a great role in house hold welfare and average house hold income, value of durable assets and food security status was also significantly higher than the previous years. Besides, those small scale dairy farmers are also engaged in other farming activity like crop farming and chicken rearing.

4.1.2 Growth Potential Concept

In the growth potential of the business, the dimensions are financial, strategic and Structural growth (Wickham, 2001). The ability to repay back a loan and the prospects of sustaining the business in the future are good assessments for the potential growth.

- a) Financial growth: is a measure of the venture's success. I.e. increase in what the business owns. One of the indicators according to wickham 2004 is an asset.

Asset (number of dairy cows): The dairy cows are one of the financial capitals of the farmer's household. If the number of cows and milk yield per cow increased indicating on the business's growth. According to Staal et all 2008 that the use of exotic cattle genes is a rapid and potentially sustainable path to higher productivity and the failures caused by importing high grade animal should be noted and avoided.

- b) Strategic growth: is the way, in which the business develops its capabilities to exploit an opportunity or opportunities, e.g. market access for the dairy products, other income

generating schemes in the business are the indicators for of the strategic growth (Wickham, 2001). Holloway 2002 explains that participatory cooperatives are very helpful in overcoming access barriers to assets, information services and indeed, to the markets within which small holders wish to produce high value items. Moreover he also states the local breeds in Ethiopia produces 400-680 litter/cow per lactation period and the exotic breeds and cross breeds gives 1120-2500littres /279 lactation and the milk marketing is channeled through both formal and an informal outlet which is 85% of the total milk goes to the informal markets and the remaining to the formal which is owned by the government because the government controls the price.

Marketing is of course, closely linked to credit as an associational ingredient in the set of services a farmer needs in order to develop his/her production potential. The major roles of marketing in agricultural out lets are, thus ensuring that the farmer has an incentive for greater production that leads to development, to expand domestic and export sectors, and greater demand of inputs. The main purposes of credit and marketing links are, thus, firstly the lending agency operates in the same local center where most market out lets are located in which farmers produce for sale can be observed. Secondly, independent marketing enterprises accept commitments to recover a loan on behalf of credit agency. Thirdly, technical services like feed, veterinary services and advice are provided by marketing/processing enterprises with a favorable bank credit line to farmers who contract to deliver their product according to an agreed time table. Then, the cost of inputs and services provided are deducted when the farmer is paid for his products (Kohl and Uhl, 1985).

- c) Structural Growth: - is changes in the organization of the venture's internal systems According to Wickham 2001, structural growth divided in two subdimensions, these are
- Managerial role and responsibilities
 - Resource control system

Some indicators for the managerial role and resposibilities are Animal health management practices (visits by the veterinary and affordability of the medicine for treating the animals) and repayment ability of the farmers (amount and frequency of repayment).

The researcher focused on the above dimensions of growth potential, because one of the main goals of the EDIB is to have a stable or expanded dairy business for the farmers. The loan plays a big role in expanding a business if it is allocated in and managed in a good manner.

According to the Kouser et al 2009, they observed in their study in Pakistan is that, credit availability expanded the livestock sector more that double (economies of size), which increased per family per month income from livestock sector by 181%. Moreover, the growth in dairy demand in sub Saharan Africa (SSA) is projected to increase over the next 20 years due to expected population and income growth. The dairy product consumption and milk production are expected to grow from 3.8 to 4% annually between 1993 to 2020 in the SSA regions (Delgado, 1999).

High levels of arrears and under repayment are by no means signs of poor growth potential. Since the repayment capacity depends on prices of the output and the output itself, some

problems arise to lending institutions, especially banks. Consequently the bank will need to have a dense network of agencies and to set up contracts in villages through liaison men, credit committees and cooperative societies. Additional obstacles for the repayment of loan are drought, inflation, and unawareness in the use of the money borrowed. Inflation pushes up the prices of some commodities and hence the income of farmers who market then either directly or through traders and marketing associations increases. But agriculture is damaged, largely, in the long run by the large fluctuation in the general price level depending on the pace at which they succeed each other. This happens even when the monetary authorities do not intervene in the sense of trying to maintain the purchasing power of money severe credit reserves (Dell'Amore, 1975). Afolabi 2010 further explains that one of the problems for not repaying the loan on due time is business failure, family commitment, untimely disbursement of loan and high cost of production. Graeub and kraehenbuehl further explains about REIP credit program is Eritrea in that, the program has long repayment period which is up to 5 years and the clients are satisfied with the repayment period, besides the clients of credit program get the technical support and advises from ex-patriots. More over one client also said that the amount of money per loan and the repayment period is good but the interest rate is high (16%), and some also complain that money should be at hand at the right time. Graeub and kraehenbuehl further added that training and advice are important component of the program.

CHAPTER 5: METHODOLOGY

5.1 Selection of the Study Area

The study was conducted in Maekel (Central) region of Eritrea. The region was selected for the following practical and logical reasons:

- ✓The EDIB program for running the small scale dairy business has started only in this region as pilot project.
- ✓ Studies conducted in region could enable to expand similar business to other regions of the country if the credit contributes a positive effect for the small scale dairy business farmers.

5.2 Study Strategy

The study is qualitatively and quantitatively conducting and the strategies for this research were case study and cross sectional survey. These strategies are relevant because, as an approach to provide reliable information related to the day to day activities and experiences of dairy farmers regarding the assessment of credits. The cross sectional survey is an interactive process used to generate primary data that is supplemented with secondary data in literatures. Also to help in deep understanding the development of the data collection tool and in exploring information regarding the ongoing activities of small scale dairy farmers. The collected data was analyzed using appropriate statistical tool (SPSS).

5.3 Sampling of interviewees (Respondents)

There are two key category of respondent during this study. These two category of respondents consisted of farmers engaging in small scale dairy production. One category is those farmers who are in EDIB credit program and the other category is farmers not engaged in the EDIB credit scheme. A generic list of all EDIB farmers (53 farmers) in the region was got from EDIB office and all the population size was selected and this is census study while those who are not in the EDIB credit scheme are 20 and selected randomly according to their duration of starting the business and the dairy size that they have from the sub regions office of the Maekel Region.

5.4 Methods of Data Collection

Data was collected by using a semi-structured questionnaire which was distributed to farmers. The questionnaires were filled through person to person (face to face) interview. On the Methodological perspective basically a questionnaire was prepared relevant to the prevailing condition of dairy farmers based on the available information and this is the easiest and convenient way of collecting information for the purpose of the study. The questionnaire had distributed and filled by respondents in the selected area. Pre-tested of the questionnaires were done in order to access the reality of the research questions. Moreover, Secondary data sources consulted by researcher were desk research. Annual reports and progress report of EDIB were used. Search of information in the Internet on the relevant subjects, various books, journals, newsletters, articles on participation was studied.

5.5 Data Analysis(Processing of the collected data)

The Data collected was entirely qualitative and quantitative analyzed by summarizing and describing the findings from the farmers using SPSS soft ware. The descriptions anchored along three thematic areas namely,

- Back ground information of the farmers
- Contribution to poverty reduction (how the credit is contributing in alleviating the poverty and what changes are made in their health, growth income, nutritional status i.e. to compare before and after situation, and also effect of credit on increasing the herd size, family milk consumption per day and amount of sales by comparing of treatment group (farmers who got loan from EDIB) and controlling group (farmers not in the credit scheme).
- Growth potential (Those farmers who got a loan from the investment bank and the 20 farmers who are not in the EDIB credit scheme selected randomly were analyzed in order to know the reliability of the credit. i.e. if the credit is effective in the expansion of the business)

CHAPTER 6: RESULTS AND DISCUSSIONS

In this chapter discussions of the results after application of all the methodologies mentioned in earlier chapters will be presented. The results to be discussed are General Information of the respondents, and the effect of credit on both poverty reduction and Growth potential of the business.

6.1 General information of the respondents

Gender of Respondents

Circa 85% (45 farmers) of the farmers are males while the rest constitute women farmers. Dairy business is traditionally considered as men's territory and women get involved only if they don't have grown-up children in the absence of the man. In this case the majority of the women farmers are either widows or their husbands are in the defense forces.

Category of respondents	Frequency	Percent
Treatment(Loan received)	8	15.1
Valid Female	45	84.9
Male	53	100.0
Total		

Respondents Occupation

Although many of the respondents (40%) indicated that they also are engaged in other income generating schemes, they all (100%) identify themselves as farmers.

Main occupation of respondent

Category of respondents	Frequency	Percent
Treatment(Loan received)	53	100.0
Valid Farmer		

Respondent's marital status

All respondents fall in either of two civil status categories; i.e. married or widowed. Only four out of the 53 farmers are widowed.

Category of respondents	Frequency	Percent
Treatment(Loan received)	49	92.5
Valid Married	4	7.5
Widowed	53	100.0
Total		

Average Household size and Age of respondents

The Average age of the respondents is 48 (the national life expectancy is 52), while the household size is 7.2 (compared to 5.3 at the national level).

Statistics

Category of respondents			Age of respondent	Household size
Treatment(Loan received)	N	Valid	53	52
		Missing	0	1
		Mean	48.0566	7.2308
		Median	48.0000	7.0000
		Std. Deviation	7.40690	1.76697
		Minimum	24.00	3.00
		Maximum	65.00	12.00
		Percentiles		
	25	42.0000	6.0000	
	50	48.0000	7.0000	
	75	53.0000	8.0000	

Educational Level

The majority (62.3%) of the respondents are primacy school finishers while only two farmers indicated that they completed secondary school.

		Frequency	Percent
Valid	Junior	18	33.97
	Primary	33	62.3
	Secondary	2	3.73
	Total	53	100
Missing	System	0	0
Total		73	100.0

6.2 Poverty Reduction

Seven factors have been taken to measure the contribution of the EDIB credit program on the dairy business of the surveyed farmers. Poverty reduction is a result of interrelated set of factors that include improvement in asset ownership and its replication effect on the immediate household and the wider communities.

As indicated in the methodology part, data analysis and interpretation has been done by comparing farmers who had taken loan from the EDIB (otherwise named as 'treatment group') against other dairy farmers who didn't take any credit from the EDIB (referred to as the 'control group'). Where comparison of these two groups is not relevant, the trend of change 'before' and 'after' the loan has been observed. Indices that require much broader explanation than

otherwise indicated in this study are measured using 'farmers' own judgment of improvement (claimed).

Within the context of this study the following factors have been considered to see the role of EDIB's credit program on poverty reduction for the dairy farmers:

- 6.2.1 Increase in cattle ownership
- 6.2.2 Family milk consumption (liters/day) and Milk sale (volume in liters/day): comparison of control and treatment group
- 6.2.3 Employment Opportunities to family members and others
- 6.2.4 Claimed household income improvement
- 6.2.5 Claimed household health improvement
- 6.2.6 Household Self-sufficiency: claimed
- 6.2.7 Improvement in household diet (claimed) Vis A Vis ways

6.2.1 Change in numbers of cattle ownership

Table-6.2.1 Change in number of cattle

Category of respondents			Frequency	Percent
Treatment(Loan received)	Valid	-2.00	2	3.8
		-1.00	1	1.9
		.00	12	22.6
		1.00	19	35.8
		2.00	13	24.5
		3.00	3	5.7
		4.00	2	3.8
		Total	52	98.1
		Missing System	1	1.9
	Total	53	100.0	
Control(With no loan)	Valid	.00	9	45.0
		1.00	6	30.0
		2.00	5	25.0
		Total	20	100.0

Changes in number of cattle owned results from a combination of factors. The most serious constraint in dairy production maximization in Eritrea is lack of feed. This is holds true for the survey beneficiaries too. Despite the overriding constraint of lack of feed the number of cattle has increased for the majority EDIB dairy farmers. For circa 71% of the EDIB loan farmers (treatment group) the number of cattle has increased at least by one compared against only 55% of the control group (dairy farmers that didn't take any loan from EDIB). However, change as a function of 'the mean increase' in current number of cattle compared against during startup for the treatment group exhibits no significant difference. There are a number of factors to account for the insignificant difference on 'mean increase' between the two groups some of which could be: 1) poor breed type selection by the control group might have provided them with a less expensive cattle price, hence; increase in numbers. Farmers of the control group have

suggested that they would rather opt for a fast track return on investment rather than the incremental nature of the dairy business waiting on products and byproducts 2) the control group could have other sources of credit other than the EDIB-an area not covered by the study. These findings are in agreement with the studies by Kouser et al 2009 in Pakistan. These observations demonstrate the role of credit in expanding the livestock sector. I.e. more than double (economies of size), which increased per family per month income from livestock sector by 181%.

6.2.2 Family milk consumption and surplus sales (liters/day)

A steady increase in number of cattle for the majority of the EDIB loan farmers has transpired into increased milk production thus implying reduced household poverty levels. The treatment group exhibit higher Daily milk consumption and higher surplus sales (mean) compared to the control group (see Annex 4). But Daily consumption of milk by family has been reported to be statistically significant at 99% for the treatment group (those who have received the loan) higher than the control group.

Notwithstanding a significantly high amount of daily milk consumption for the family, the EDIB loan beneficiaries appear to have under-reported their sales volume. Under-reporting of sales volume is not uncommon for small (micro) credit programmes; where farmers are keen to lower their incomes in order to get the sympathy of the loan providers.

Generally, improved household milk consumption and sales volume are some of the indicators for poverty reduction. Increased milk consumption entails better household nutrition which in turn provides long term livelihood improvement, while higher sales volume warrants steady availability of cash income both of which are attributes of decreased poverty levels. In this case, the EDIB farmers have demonstrated higher consumption and sales levels than the control group. The increase of family milk consumption and surplus sales in the household due to increasing the dairy size has also been reported in other studies; J. Staal et al 2008 explained that the dairy milk consumption and milk production has been growing in sub Saharan region.

6.2.3 Employment Opportunities to family members and others

Table 6.2.3 Responsibility of taking care of animals

Who takes care of the animals			Frequency	Percent
Treatment(Loan received)	Valid	Both	1	1.9
		Family	50	94.3
		Laborer	2	3.8
		Total	53	100.0

A typical Eritrean family exhibits high dependency ratio (the ratio of employed adult to total family size) and agricultural ratio (the ratio of total family labor to total family size). Lack of labor coupled with persistent shocks (especially war and drought) is believed to weaken the coping mechanisms of many rural families in the study areas. Guarantee of employment at household level reduces both these ratios but more specifically the agricultural ratio. Where everyone

(children, mothers and students) is able to contribute to the sustainable stead of the family the threat of poverty and hunger are eliminated. In this context, for circa 94.3 percent of the EDIB loan farmers the source of labor for taking care of their animals is their family members. In a country where rural unemployment is overwhelming the creation of family employment opportunity contributes towards poverty reduction.

In essence, the dairy business provides a sustainable means of income for all the family members, where the social benefit is the skills acquired at the younger age will be transformed into a productive capital at a later age.

6.2.4 Claimed household income improvement

Table 6.2.4(1) Claimed household income increment

Has household income increased after the EDIB loan?			Frequency	Percent	Valid Percent	Cumulative Percent
Control(With no loan)	Missing	System	20	100.0		
Treatment(Loan received)	Valid	Greatly ecreased	2	3.8	4.2	4.2
		Decreased	1	1.9	2.1	6.3
		Stayed the same	1	11.3	12.5	18.8
		Increased	35	62.3	68.8	87.5
		Increased greatly	7	11.3	12.5	100.0
	Total	52	90.6	100.0		
	Missing	System	1	9.4		
	Total		53	100.0		

Table 6.2.4 (2) Income increment and milk sales Correlation for the EDIB farmers

		range of milk sales	income increment
range of milk sales	Pearson Correlation	1	.542**
	Sig. (2-tailed)		.000
	N	73	48
income increment	Pearson Correlation	.542**	1
	Sig. (2-tailed)	.000	
	N	48	48

** . Correlation is significant at the 0.01 level (2-tailed).

Income poverty is widespread in rural Eritrea in general and in the target areas in particular. Food poverty is somehow mitigated through the seasonal yields harvested from their farmlands. However, farmers lack the means and resources to change their agricultural produces into cash

income. Income poverty is compromised by a number of factors that include incommensurate price for produces, inflation, lack of access to markets and low household purchasing power parity for the wider population.

For 87.5% of the EDIB loan farmers their income has increased after they received loan, while it remained unchanged for 12.5% and decreased for only 6%. These changes are generally attributed to several factors but more importantly due to improved productivity of their dairy businesses. A Pearson correlation test between 'claimed income increment' and 'milk sales volume' of the EDIB farmers has demonstrated a high significance level of 99% as shown in table 6.2.4(2). In the previous sections it has been noted that milk sales volume is higher for the EDIB loan farmers than the control group, hence, improved income is a direct consequence of improved sales volume.

6.2.5 Claimed household health improvement

Table 6.2.5 Rating of family health compared to 4 years ago

Category of respondents			Frequency	Percent	Valid Percent	Cumulative Percent
Control(With no loan)	Missing System		20	100.0		
Treatment(Loan received)	Valid	Much better now	11	20.8	22.4	22.4
		Somewhat better now	26	49.1	53.1	75.5
		About the same	11	20.8	22.4	98.0
		Somewhat worse	1	1.9	2.0	100.0
		Total	49	92.5	100.0	
		Missing System	4	7.5		
	Total	53	100.0			

Food security or otherwise poverty reduction is defined as “a condition in which all people at all times have access to food they need for a healthy and active life (Eritrea, Food Security strategy paper, 2003, Government of Eritrea). Over 75% of the EDIB loan farmers have confirmed that they have better health now compared to four years ago at a time before they take the loans. On the flipside circa 22% claimed that they didn't witness any improvement in their health. Improved health and milk consumption exhibit positive correlation in a two tailed Pearson correlation method.

6.2.6 Improvement in household diet and self-sufficiency levels

Table 6.2.6(1) Role of the dairy business in improving standard of living

Category of respondents			Frequency	Percent	Valid Percent	Cumulative Percent
Treatment(Loan received)	Valid	No	6	11.3	11.3	11.3
		Yes	47	88.7	88.7	100.0
	Total	53	100.0	100.0		

Table 6.2.6 (2): Did household diet improved since start of the business

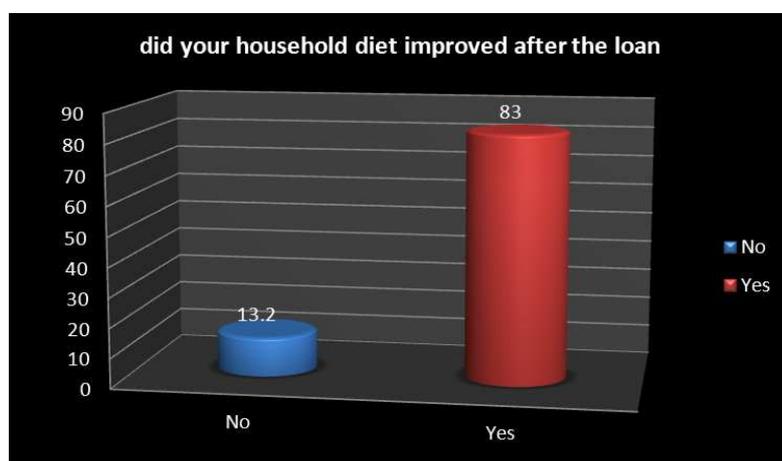
Category of respondents			Frequency	Percent	Valid Percent	Cumulative Percent
Treatment(Loan received)	Valid	No	7	13.2	13.7	13.7
		Yes	46	83.0	86.3	100.0
		Total	53	96.2	100.0	
	Missing	System	0	3.8		
	Total		53	100.0		

Several factors lead to household self-sufficiency levels of which the availability of sustainable income, diet, health and social cohesion are among the prominent. The majority (88%) of the EDIB farmers confirmed that their business has improved their standard of living compared to the situation before they took the loan. In the same vein about 13% believe that their dairy business has helped them diversify their diet, hence nutritional status.

The background on household nutrition in Eritrea might provide more pictures on the contribution of the EDIB loan scheme. The 2003 food security strategy document of the government (the only official document released so far) noted that "As a result of widespread periodic food shortages, child malnutrition in Eritrea is high. About 38 percent of children in Eritrea under five years are stunted (low height for age), 15 percent are wasted (low weight for age) and 44 percent of children are underweight. Nearly 50 percent of children suffer from anemia. The situation after the release of the document remains the same if not worst though this hasn't been scientifically proved due to the extreme paucity of data prevalent in the country. Moreover, the document noted that "Caloric intake and nutritional composition of the typical Eritrean diet are below minimum standard. High levels of poverty restrict household access to food".

Against the above backlog, it is interesting to note that the EDIB loan scheme has substantially improved the farmers quality of life and their dietary diversity as reported by the beneficiaries interviewed during the study.

Fig. 6.2.6 Household diet improvement after the loan



The above figure indicated that households improved their diet due to loan is 83% and with no improvement is 13.2%.

Household diet improvement was explained in different ways for the farmers as provided in table 6.2.6 (2). For the majority of respondents improvement in household diet was in their ability to buy more cereal staples followed by their ability to buy more suitable foods (like pasta). A large majority of the respondents also reported that they have been able to buy more condiments, vegetables and legumes, an indicator where households are getting a balanced diet. This adds into the fact that many of the EDIB farmers have noted that they do consume milk quite regularly.

Table 6.2.6(3): How farmers improved their diet

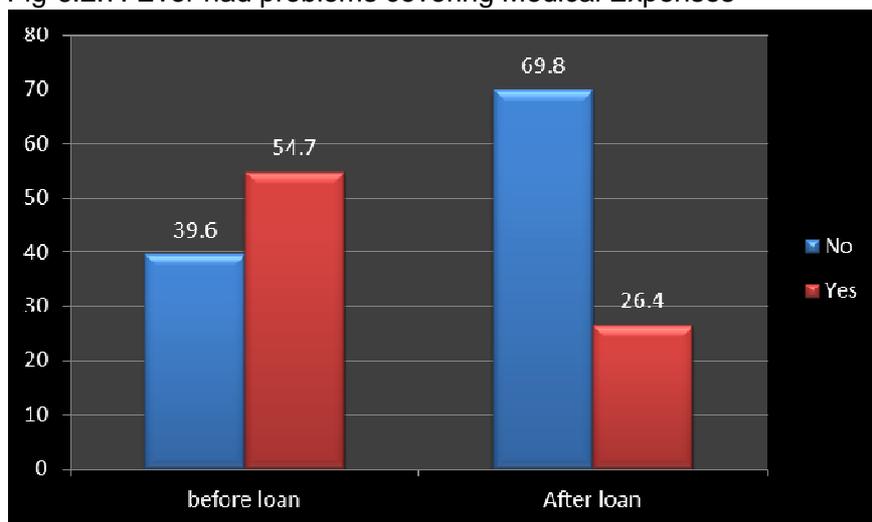
	Responses		Percent of Cases
	N	Percent	
household diet ^a Able to buy more cereal staples	35	27.6%	94.6%
Able to buy more condiments, vegetables, legumes	18	14.2%	48.6%
Able to buy more animal/diary products	22	17.3%	59.5%
Able to buy more convenience foods like pasta	31	24.4%	83.8%
Able to buy more cooked foods	2	1.6%	5.4%
Able to eat better during the hungry season	8	6.3%	21.6%
Able to eat 3 meals in a day	11	8.7%	29.7%
Total	127	100.0%	343.2%

a. Group

6.2.7 Improved ability in covering Medical costs

Another measure of self-sufficiency and poverty reduction is household's ability to cover medical expenses. Although, health services are highly subsidized in Eritrea many prefer to go to the private health facilities than the government hospitals in case of serious health fallouts. The private facilities require large payments both for medical check-ups and the cost of ailments.

Fig-6.2.7: Ever had problems covering Medical Expenses



Against this context the number of farmers with cases of having problem covering medical costs decreased from 55% to 27% after starting the business using the loan. This confirms to the high levels of cash turnovers the farmers are able to make despite the fact that they tend to under-report their sales volume.

Table 6.2.7 (1) Ever had problems in covering medical expenses before the credit

Category of respondents			Frequency	Percent	Valid Percent	Cumulative Percent
Treatment(Loan received)	Valid	No	21	39.6	42.0	42.0
		Yes	29	54.7	58.0	100.0
		Total	50	94.3	100.0	
	Missing	System	3	5.7		
Total			53	100.0		

Table 6.2.7 (2) Currently have problems in covering medical expenses

Category of respondents			Frequency	Percent	Valid Percent	Cumulative Percent
Treatment(Loan received)	Valid	No	37	69.8	72.5	72.5
		Yes	14	26.4	27.5	100.0
		Total	51	96.2	100.0	
	Missing	System	2	3.8		
Total			53	100.0		

6.3 Growth Potential

The growth potential of the EDIB loan farmer has been assessed in terms of their ability to repay back their loans and the prospects of sustaining their dairy business in the future (ability to withstand manageable shocks). In the growth potential of the business, the dimensions are financial, strategic, Structural and Organizational growth. These dimensions have been assessed through different mechanisms and organized in the following sub-topics.

- 6.3.1 Change in number of cattle ownership
- 6.3.2 Loan scheme adequacy
- 6.3.3 Repayment status and prospects
- 6.3.4 Percent share of Profit for investment and saving
- 6.3.5 Other income generating schemes-
- 6.3.6 Animal health management and practices/affordability- control Vs treatment groups

6.3.1 Change in number of cattle ownership

Table 6.3.1(1): Number of diaries currently

Control(With no loan)	N	Valid	20
		Missing	0
	Mean		2.6000
	Median		2.0000
	Std. Deviation		.82078
	Percentiles	25	2.0000
	50	2.0000	
	75	3.0000	
Treatment(Loan received)	N	Valid	52
		Missing	1
	Mean		3.0962
	Median		3.0000
	Std. Deviation		1.08934
	Percentiles	25	2.0000
	50	3.0000	
	75	4.0000	

Table 6.3.1 (2): Number of dairies currently

Category of respondents			Frequency	Percent	Valid Percent	Cumulative Percent
Control(With no loan)	Valid	2.00	12	60.0	60.0	60.0
		3.00	4	20.0	20.0	80.0
		4.00	4	20.0	20.0	100.0
		Total	20	100.0	100.0	
Treatment(Loan received)	Valid	1.00	3	5.7	5.8	5.8
		2.00	12	22.6	23.1	28.8
		3.00	20	37.7	38.5	67.3
		4.00	12	22.6	23.1	90.4
		5.00	4	7.5	7.7	98.1
		6.00	1	1.9	1.9	100.0
		Total	53	98.1	100.0	
	Missing System	0	0			
Total	53	100.0				

The mean/average number of cattle owned by the treatment group is higher than those of the control group. On average every member of the EDIB group has three cattle, while that the non-EDIB has merely two. The distribution of cattle ownership is linear for the first lower quartile (25%) in each of the groups but slightly higher for the second (50%) and last quartile (75%) in the treatment group. For both the second and last quartiles the average cattle size is three and two for the treatment and control groups respectively. This provides the basis on noting how much the mean in the treatment group has been skewed toward the lower quartile.

The treatment group (EDIB group) demonstrated increasing number of cattle since they take loan, while for the control group size of cattle appear to have remained the same for the past four years. The increasing trend in number of cattle warrants for the future growth potential of the EDIB group, though it either doesn't indicate otherwise for the control group.

Generally, the dairy business in Eritrea exhibits high variability of growth. Where supply of feed is sustained it demonstrates a boom but falls down once feed supply is compromised. The EDIB groups appear to have relatively better feed access through their linkages with the EDIB and their extension contact farmers who have the voice to make to the government officers via the EDIB.

6.3.2 Loan scheme effectiveness and adequacy

The total loan size provided to the farmers is 50,000Nfa (circa 2500 euro) each. The loan period is for five years while the repayment is scheduled quarterly on a declining basis. There is a principal payment of 10,000Nfa divided into three or four quartiles every year. The interest payment is about 12,000Nfa spread over five years on a declining basis. There is no grace period, while delays/defaulting are managed by the declining nature of the loan scheme as interest is compounded.

Table 6.3.2: Loan Adequacy Frequencies

		Responses		Percent of Cases
		N	Percent	
Positive things about the loan ^a	Low interest rate	53	51.0%	100.0%
	Training or technical assistance	2	1.9%	3.8%
	Long repayment period	49	47.1%	92.5%
Total		104	100.0%	196.2%

a. Group

All clients agree that Low interest rates and long repayment period are the qualities of the loan scheme. EDIB charges interest of 12%/year on a declining basis (interest is charged on the remaining balance). Loan is returned back within 5 years, for all loan cycles, on the basis of fixed installments. These findings are in agreement with studies by the Graeub and Kraehenbuehl (2004) in Eritrea about the REIP credit program, the clients of this program satisfied with the long repayment period of 5 years.

However the loan size has been reported to be low for business startup by 67% of the clients. Each farmer has the possibility of buying only two or three cattle using this amount as the price of good cattle breed varies between 15,000-25,000Nfa. The least amount suggested by the clients is on the average of Nakfa 100,000.

6.3.3 Loan repayment

Table 6.3.3(1): Ability to repay the loan on schedule

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	11	15.1	20.8	20.8
	Yes	42	57.5	79.2	100.0
	Total	53	72.6	100.0	
Missing	System	20	27.4		
Total		73	100.0		

Table 6.3.3 (2) : Amount of not repayed to date

N	Valid	53
	Missing	0
Mean		17976.744
Median		2
Std. Deviation		15000.000
Percentiles	20	9323.5196
	15	10000.000
	25	15000.000
		20000.000

Loan repayment is calculated on fixed installments spread over five years. The payment schedule is declared to the beneficiaries. Despite a clear evidence of good performance, about 57% of the clients have been able to pay their agreed installments on schedule. The EDIB didn't yet produce its loan arrears and repayment rates; however, the fact that only 25% of the surveyed farmers haven't been able to repay an optimum amount of Nakfa 20,000 (or less) against the loan size of 50,000Nfa plus a principal of 12,000Nfa indicates that these farmers are in large arrears and the Loan Portfolio at risk is equally high at the time of data collection. The majority of these farmers have a large share of outstanding balance. Low repayment rates and high loan arrear rates are reflections of the poor loan collection capacity of the EDIB. During the interviews many of the farmers utterly hoped that the EDIB would write-off their loans. Problems for not repaying the loan on due time has also been reported elsewhere in Africa (Afolabi 2010), these could be business failure, family commitment, untimely disbursement of loan and high cost of production.

In principle the EDIB has a rule that states "if for any reason Borrower fails to make any payment on time, Borrower shall be in default." In reality the EDIB should have demanded the immediate payment of the entire remaining unpaid balance of this loan for all the 53 farmers; even without giving anyone further notice-as per EDIB's policy. However, the EDIB either could not enact the rules that it has developed itself. Hence, the high levels of arrears and under-repayment are by no means signs of poor growth potential.

As Marketing is closely linked to credit as an associational ingredient in the set of services a farmer needs in order to develop his/her production potential. The dairy farmers of EDIB sale their milk through both formal and informal marketing outlets and all of them replied that there is no market problem for their milk. Although they are encouraged to sale their product to the formal market (processing industry), but majority of them goes to the informal markets. This is because they can earn more profit as they sale in the informal one. This profit could help them to repay their loan and hence for the growth of the business. These findings are in agreement with the studies by Holloway 2002 in Ethiopia, he explained that 85% of total milk produced goes to the informal outlet.

6.3.4 Percent share of Profit for investment and saving

The majority of the farmers indicated that they spend a lion share of their profit on basic household expenditures. A few though (circa 6%) use the profit for re-investment and saving which tallies to 30% of the respondents. The main re-investment milieus include 'reinvesting in own business', 'saving', 'animal raising'. It is also noted that there is a very small margin of profit due to the fact that the market (price and vending) is regulated by government and hence majority of the farmers utilize what they can gain as their profit to cover basic needs as shown in table 6.3.4.

Table 6.3.4: Frequencies: allocation of profits

		Responses		Percent of Cases
		N	Percent	
Profits utilization ^a	Buy food	43	19.0%	97.7%
	Buy clothing	43	19.0%	97.7%
	Pay school expenses	43	19.0%	97.7%
	Pay health related costs	42	18.6%	95.5%
	Buy items for the house	42	18.6%	95.5%
	Reinvest in my business	8	3.5%	18.2%
	Save	2	.9%	4.5%
	Animal raising	3	1.3%	6.8%
Total		226	100.0%	513.6%

a. Group

The findings embedded within the above table signal a financial growth potential of the dairy business as farmers derive multiple benefits from establishing the business. At a time critical economic slowdown at national level having an alternative income earning ventures is considered as a healthy business growth.

6.3.5 Other income generating schemes and Loan utilization other than the business objectives

Table 6.3.5 Have other source of income other than dairy business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	30	41.1	58.8	58.8
	Yes	21	28.8	41.2	100.0
	Total	51	69.9	100.0	
Missing	System	22	30.1		
Total		73	100.0		

For a large percent of the farmers they have other income generating schemes other than the dairy business. Generally, income source diversification warrants sustainable growth potential. Often, and within the Eritrean context one has to have a strong capital base if s/he is to run multiple business entities at the same time. This also indicates to the emerging organizational capability of the farmers; thus, inferring 'organizational growth potential' of the dairy businesses. The dairy farm business can be run while at the same time engaged with other income generating activity as nearly 40% of the framers are observed to undertake such practices.

Despite the very serious constraints on running their businesses, all (100%) of the farmers reported that they never used the portion of the loan for other purposes. Although, it is

undisputable that farmers would not utterly confirm for such practices, it appears that Eritrean farmers have high respect for laws and regulations.

6.3.6 Breed type and health management practices

Table 6.3.6(1). Cows face health problems

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No	26	35.6	35.6	35.6
Yes	47	64.4	64.4	100.0
Total	73	100.0	100.0	

Table 6.3.6(2). Cows treat Frequencies

		Responses		Percent of Cases
		N	Percent	
How cows treated ^a	Consult the veterinary	19	25.0%	46.3%
	Buy medicines by myselfs	36	47.4%	87.8%
	MoA provides with appropriate treatment	21	27.6%	51.2%
Total		76	100.0%	185.4%

a. Group

Table 6.3.6 (3). Afford to pay drug expenses for animal health

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid No	19	26.0	26.0	26.0
Yes	54	74.0	74.0	100.0
Total	73	100.0	100.0	

98 percent of the farmers own Holstein Frisian breeds which provide a yield of 4 litres at the minimum and 20 litres at the maximum per day per cow with an average yield of 10litres. As Staal et al 2008 stated the use of exotic cattle genes is a rapid and potentially sustainable path to higher productivity most of the EDIB farmers own the Holstein breeds. These cows provide 3050 litters/305 lactation.

These are the common commercial breeds in Eritrea. These breeds demand higher caution and feeding if they are to yield optimally. 65percent of the farmers have experience of facing health problems with their cows and 88% of them buy the medicines by themselves followed by 51.2% of the farmers reporting to get them treated through the MoA. In general 74% say they can afford the expenses for the animal health. These facts attest to the economic, structural and organizational growth potential of the dairy farm business.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

This part summarizes this paper and draws conclusion based on the reflections of conceptual framework, the results and discussions of the effect of credit on the dairy sector in Maekel Region of Eritrea. This is in an attempt to answer the research question on what is the effect of credit based on the poverty reduction and growth potential of the business.

The credit supplied by the EDIB contributes significantly to the poverty reduction of the households in the study area and hence needs to be promoted. So the credit has a positive effect in the poverty reduction for majority of the EDIB farmers. These positive effects are increasing the herd size, improving the family milk consumption per day and also positive effect on income and house hold diet. In addition the study has shown that credit contributes in growth of the business as compared with those who are not in the credit scheme. Despite the overriding constraint of lack of feed the government helps in supplying the feed at a reduced price to the EDIB farmers and the number of cattle has been increasing for the majority of them. This indicates that the credit contributes in the growth and poverty reduction as well. Though some of the EDIB farmers are not repaying their loan on the scheduled time due to strict following up by the EDIB but majority of them are able to pay back. This dairy business helps them in improving the food security and poverty alleviation. Most of the farmers face the health problems with their cows and they are now able to buy the medicine by them selves and this sounds that the credit contrubutes positive effect in the health status of their animals though the government particularly the Ministry of Agriculture is providing the Veterinary services. Finally this study indicates that credit supply enhanced the standard living of the farmers and helps them to expand the economies of size, besides it helps to increase the productivity dairy sector.

7.2 Recommendation

In the recommendation making, the study results, information gathered during the investigation was considered and synthesized as below.

- Farmers should get continues follow up and advisory through regional advisory systems such as a trained extension agent and their animals get an adequate vaccination against the prevalent and contagious diseases. Besides, MoA had to create a plat form in the form of participatory approach among farmers themselves to exchange ideas. This has to be taken in to action taking of the fact that farmers are different in their level of knowledge and sharing an experience among each other could facilitate the delay encountered by any authorized technical advisory.
- Farmers should be in groups or in the form of cooperatives so as to access veterinary services at reasonable price that could help them in alleviating the health constraints facing for their dairy cows.

- The EDIB should improve its method of loan collection so as to follow up the loan repayment schedule by monitoring the herd size on a yearly base like for instance considering the reproductive turn over.
- Awareness regarding the repayment should be increased to the farmers in order to follow the schedule and to pay back the loan on due time.
- As dairy business is a also a risky venture like any other agricultural sector specially in SSA countries like Eritrea, the farmers should intruduce or improve other source of income along with the dairy business like poultry farming or horticulture.
- The amount of loan should be improved or increased as the price of feed and other constraints are the major problems facing the dairy farmers and farmers had to experience with help of the expertise from the MOA on producing a reliable and sustainable green feed production and reduce their dependency on relaying the expensive concentrate feeds. In this instance farmers had to work hand in hand with local range land officers on how to get productive, drought tolerant and perennial forage seeds.

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Annexes

Annex 1: Questionnaire

Hello, my name is _____. I'm conducting a research on The Effect of EDIB's credit on small scale dairy business in Maekel Region, Eritrea.

I assure you that any information given to me is meant only for educational purpose and it is anonymous and confidential. Therefore, you are free to respond this questionnaire honestly. In addition, feel free to ask if you have any doubt. I would appreciate your participation in answering the questions in advance. Thank you for your cooperation.

I. Background information

1. Questionnaire Number _____
2. Name _____ (Optional)
3. Address _____ Zoba _____ Sub Zoba _____
4. Age _____
5. Gender Male Female
6. Occupation _____
7. Marital status
 Single Married Divorced Widowed
8. Family size _____
Adults--18 years of age or older _____
Children--17 years of age or younger _____
9. Educational level
1= Primary (1-5)
2=Junior (6-8)
3=Secondary (9-12)
4=12 and above _____

II. Growth Potential

10. How many was your cattle when you were starting your business? _____
11. Currently how much dairy do you have? _____
12. Where do you sell your milk? 1=Formal (milk processing plant) ____, 2= informal__
13. Do you have market problem to your products? If no, skip question 13.1
1= Yes 0= No
- 13.1 If yes what kind of problem?
1= Price fluctuation
2=in adequate information about prices, consumers and competitors
3=others (specify) _____
14. How much do you sell per litter? _____
15. Do you think that the loan is enough for starting your business? If yes, skip question 15.1
1=Yes 0= No
- 15.1 If no how much do think is enough to start the business? _____
16. Have your cows ever faced with health problems? If no, skip question 16.1

1=Yes ___ 0= No___

16.1 If yes, how did you treat them?

1. Consult the veterinary doctor
2. Buy medicines by my selves
3. MoA provides with appropriate treatment
4. Other (specify)
99. Don't know

17. Are you able to pay the drug expenses needed for the Animal health?

1=Yes ___ 0= No___

18. What is the positive thing of the credit programme?

1. Low interest rate
2. Training or technical assistance
3. Long repayment period
4. Easier guarantees than loan alternatives
5. Other (specify)
6. Nothing
99. Don't know

19. Are you able to pay the loan on due time? If yes, skip question 19.1

1=Yes ___ 0= No___

19.1 If no what will be the consequences?

20. Since you start the business how much do you able to pay back?

21. Have you ever used portions of the loans to other house hold activity rather than your dairy business? If no, skip question 21.1

1 = Yes 0= No

21.1 If yes, how do manage your business during the unavailability of cash at hand?

22. Constraints during running the project?

- 1=Feed
- 2=Capital
- 3=Management, Knowledge
- 4=Other _____

III. Contribution to Poverty reduction

23. When did you start your business? _____

24. How many was your cattle when you were starting your business? _____

25. Currently how much dairy do you have? _____

26. Family milk consumption/day _____litter

27. How much milk (litters) for sale _____ litters

28. Who is taking care of the animal?

- 1=Family _
, 2=laborer_____, 3=both_____

29. Since you start your business does your house hold income..?

- 1= Greatly
Decreased 2= Decreased 3= Stayed the Same 4=increased 5= Increased greatly
99. Don't Know

If increased skip question 29.1

If decreased skip question 29.2

29.1 If decreased at all) why did your house hold income decrease?

(Do not read answers. Multiple answers possible. Fill in an answer for each box. Then go to #29.2)

1. Household member has been sick/died 1 = Yes 0 = No 1. _____
2. I have been sick 1 = Yes 0 = No 2. _____
3. Natural disaster (flood, earthquake) 1 = Yes 0 = No 3. _____
4. Poor agricultural season 1 = Yes 0 = No 4. _____
5. Poor sales 1 = Yes 0 = No 5. _____
6. Could not collect credit 1 = Yes 0 = No 6. _____
7. Other (specify) _____
99. Don't know 99. _____

29.2 (If increased at all) why did **your house hold income** increase?

(Do not read answers. Multiple responses possible. Fill in an answer for each box.)

1. Expanded existing enterprise 1 = Yes 0 = No 1. _____
2. Undertook new enterprise 1 = Yes 0 = No 2. _____
3. Good agricultural season 1 = Yes 0 = No 3. _____
4. Sold in new markets 1 = Yes 0 = No 4. _____
5. Increase in demand/sales 1 = Yes 0 = No 5. _____
6. Other (specify) _____
99. Don't know 99. _____

30. Since you engage in the business how do you utilize/allocate the profit?

- | | | |
|---------------------------------|-----------------------------|--------------------|
| 1 = Buy food
(specify _____) | 5 = Buy items for the house | 9 = other |
| 2 = Buy clothing
know | 6 = Reinvest in my business | 99 = don't
know |
| 3 = Pay school expenses | 7 = Save | |
| 4 = Pay health-related costs | 8 = Animal raising | |

31. Do you think that this business has helped you in your standard of living? If no, skip question 31.1

1= Yes 0= No

31.1 If yes what type of change did make in your livelihood?

32. Do you have incomes other than your dairy business?

1= Yes 0= No

A. Health status

33. Compare to 4 years ago, how would you rate your family health status in general now?

- 1=Much better now than 4 year ago
- 2=somewhat better now
- 3= about the same
- 4=somewhat worse
- 5= Much worse

34. Have you ever visited the health center for your medical check up? If no, skip question 34.2, If yes, skip question 33.1

1= Yes 0=No

34.1 If yes, when? 1=before the business started _____, 2=after _____

34.2 If no, why? 1=Low income _____, 2=no health center, 3= other specify _____

35. Before you start the business, were you had difficulties in covering your medical costs? I

1= Yes 0= No

36. What about now do you face difficulties in covering the medical costs?

1= Yes 0= No

B. Nutritional Status

37. Since you start the business, has your house hold diet

1 = Worsened 2=Stayed the same 3= Improved 99 = don't know

37.1 If it is improved, how has it improved?

1=able to buy more cereal staples such as maize rice

2=Able to buy more condiments, vegetables, legumes, to eat with staples

3= Able to buy more animal/dairy products—meat, milk cheese, eggs

4= Able to buy more convenience foods like pasta

5= Able to eat better during the hungry season

6= able to eat 3 meals in a day

7= other (specify)

99= don't know

Annex 2.

Loan Repayment Schedule

Loan amount – 50,000 Nakfa

Interest – 12,000 Nakfa for the whole five year

Repayment – 10,000 Nakfa

Year	Principal Repayment	Interest Payment	Outstanding Balance
2006			
March			50000
31-March	2500	1000	47500
30-June	2500	1000	45000
30- September	2500	1000	42500
31-December	2500	1000	40000
Sub-total	10000	4000	
2007			
30-April	3333.33	1066.67	36666.67
31-August	3333.33	1066.67	33333.33
31- December	3333.33	1066.67	30000
Sub-total	10000	3200	
2008			
30-April	3333.33	800	26666.67
31-August	3333.33	800	23333.33
31- December	3333.33	800	20000
Sub-total	10000	2400	
2009			
30-April	3333.33	533.33	16666.67
31-August	3333.33	533.33	13333.33
31- December	3333.33	533.33	10000
Sub-total	10000	1600	
2010			
30-April	3333.33	266.67	6666.67
31-August	3333.33	266.67	3333.33
31- December	3333.33	266.67	0
Sub-total	10000	800	
Total	50,000	12,000	62,000

Annex 3: Milk sales and consumption

Descriptive Statistics

Category of respondents		N	Mini mum	Maxi mum	Mean	Std. Deviati on	Skewness		Kurtosis	
		Statis tic	Statis tic	Statis tic	Statis tic	Statis tic	Stati stic	Std. Error	Stati stic	Std. Error
Control(Wit h no loan)	Daily milk consumption by family members	20	1.00	2.00	1.500 0	.51299	.000	.512	- 2.23 5	.992
	Amount in litres of milk sale per day	20	10.00	30.00	18.25 00	6.0426 1	.822	.512	- .526	.992
	Valid N (listwise)	20								
Treatment(Loan received)	Daily milk consumption by family members	50	1.00	5.00	2.280 0	.96975	1.35 7	.337	2.09 8	.662
	Amount in litres of milk sale per day	53	4.00	57.00	21.88 68	11.523 66	.888	.327	1.13 2	.644
	Valid N (listwise)	50								

Annex 4: Daily milk consumption and milk sales Correlations for Treatment and Control Groups

		Category of respondents	Daily milk consumption by family members	Amount in litres of milk sale per day
Category of respondents	Pearson Correlation	1	.381**	.157
	Sig. (2-tailed)		.001	.185
	N	73	70	73
Daily milk consumption by family members	Pearson Correlation	.381**	1	.457**
	Sig. (2-tailed)	.001		.000
	N	70	70	70
Amount in litres of milk sale per day	Pearson Correlation	.157	.457**	1
	Sig. (2-tailed)	.185	.000	
	N	73	70	73

** . Correlation is significant at the 0.01 level (2-tailed).

Annex 5: Photos:



Photo 1: Filling the questionnaire with farmer



Photo 2: Dairy cows in their house

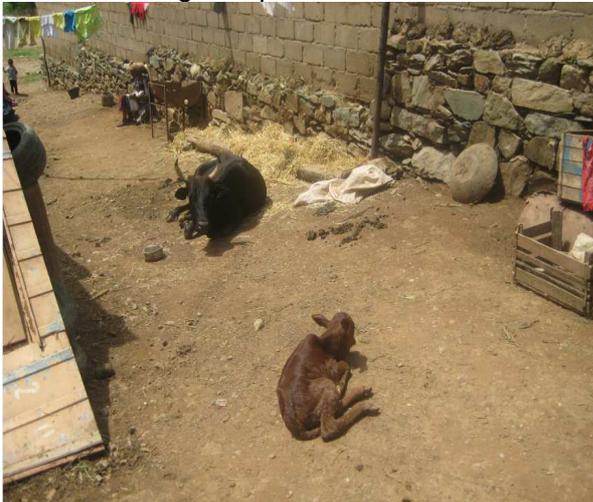


Photo3: Indigenous breeds



Photo 4: Filling the questionnaire with woman farmer



Photo 5: Holstein Frisian



Photo 6: Holstein Frisian in Maekel region