SAINT MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUE OF AGRICULTURE AND DEVELOPMENT STUDIES
DEPARTMENT OF AGRICULTURAL ECONOMICS

Determinant Factors of Agricultural Loan Decision Making: A Case of Commercial Bank of Ethiopia

By

Gebissa Welteji

June, 2014
Addis Ababa

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A Thesis Submitted to Institute of Agriculture and Development Studies of Saint Mary's University in Partial fulfillment of the Requirements for the Degree of Master in Agricultural Economics

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I declare that the thesis for degree of Master in Agricultural Economics at the Saint Mary's University, hereby submitted by me, is my original work and has not previously been submitted for a degree at this or any other university, and that all reference materials contained therein have been duly acknowledged.

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This thesis entitled "Determinant Factors of Agricultural Loan Decision Making: A Case of Commercial Bank of Ethiopia" has been submitted to Saint Mary's University School of Graduate Studies for examination (defence) with my supervision and approval as a University Advisor.

Dagnew Ehete(PhD)
(Advisor)

Signature& Date

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ABSTRACT

Thorough investigation of the attitude of the bank's loan decision makers is of great importance both for borrowers and the lending institutions. Therefore, this study is mainly concerned with the analysis of factors influencing farm loan decision making process in the CBE with the aim of identifying major constraints, and for proposing measures that may help to improve the accessibility of credit to farmers. For the study, primary data was collected from 95 CBE's credit staff as targeted respondents, while secondary data was collected from Management Information System (MIS) of the Bank. For the data analysis, descriptive and econometric method was applied. A binary logit model was used to analyze factors influencing loan decision making in the bank. A total of nineteen explanatory variables were included in the empirical model adopted; and out of these variables, 5 were found to be statistically significant. The study results indicate that gender, farm experience; amount of loan request; legal framework or loan contractual enforcement; and yield risk are among the factors that highly influence the farm loan decision making by the lender. Thus consideration of factors affecting agricultural loan decision making is crucial because it provides information that would initiate to undertake measures such as revision of lending procedure, equipping credit staff with up-to-date skill so as to minimize perception of risk, with the aim of improving agricultural financing, and hence, contribute to attain a success in transformation. It would also enable lender's credit staff and management to have knowledge as to where and how to channel efforts in order to minimize the lack of credit accessibility for the farm sector.

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ABBREVIATIONS AND ACRONYMS

AEZs	Agro-Ecological Zones
ADLI	Agriculture Development-Led Industrialization
AIDB	Agricultural and Industrial Development Bank
CDF	Cummulative Density Function
CBB	Construction and Business Bank
CBE	Commercial Bank of Ethiopia
CBO	Community Based Organization
CSA	Central Statistical Authority
CPC	Centeral Processing Center
DA	Development Agent
DBE	Development Bank of Ethiopia
FAO	Food and Agricultural Organization
ESSP	Ethiopia Strategy Support Program
GDP	Gross Domestic Product
GTP	Gowth and Transformation Plan
LDCs	Least Developed Countries
MFI	Micro Financing Institution
ML	Maximum Likelihood
MIS	Management Information System
NBE	National Bank of Ethiopia
NGOs	Non-Governmental Organizations
OLS	Ordinary Least Square
SD	Standard Deviation
SDPR	Sustainable Development for Poverty Reduction
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

The aim of the study is to identify the major constraints of agricultural financing by the Commercial Bank of Ethiopia (CBE). It has become sufficiently clear that agriculture has been the lead sector for the overall economic growth in all countries in general and the agriculture-based economies in particular (World Bank, 2009). As Ethiopia is primarily an agrarian country, the role that agriculture plays in its economic development is enormous. It employs more people than any other sector, and is a major source of foreign exchange and supplies basic food needs to the population and raw materials to the industry. Hence, it is impossible for any developing nation, like Ethiopia, to undermine the role of the sector, and skip its vital stage of development.

In recognition of the vital role of agriculture, Ethiopia has rightly developed a long term economic development strategy, based on the Agriculture Development-Led Industrialization (ADLI) policy, which views agriculture as the driving force of the economy. For this growth, a role of smallholder is considered as foundation, as reflected on the ADLI strategy (Dercon S. and Zeitlin A, 2009). Aspiring to become a middle income country by 2023, the country has formulated the Growth and Transformation Plan (GTP: 2011-2015). Agriculture seems to be the path in achieving this growth and development.

Yet, Ethiopian agriculture has considerable economic and physical constraints. Among many others, lack of access to credit, information and market, land holding fragmentation, volatile farm income, and variance in input costs and external factors are to mention a few. Toward this end, the CBE has recently designed a strategy that decided loans to be directed to priority sectors of the economy to support the national growth and transformation plan. Agriculture is planned among the priority sectors.

Paradoxically, although it designed such a strategy to prioritize agriculture sector, non-agriculture loans still represents a key source of income as compared with agricultural loan for the CBE. It shows that a trend of agriculture loan by the bank is not increasing as expected. What hinders the CBE to involve further into agricultural sector financing, which takes the highest share in the economy as planned to be a priority sector is a question that needs to be

addressed. As a matter of sustainability all commercial banks including CBE would be interested in the three principles guiding their operations, which are profitability, liquidity and solvency. In that case, it seems CBE chosen to prudential guidelines to avoid failure and achieve maximum profitability in lending to non-agriculture. CBE may also perceive risk in agriculture lending. Nmadu and Peter (2010) concluded that credit risk is generally considered to be higher for loans to agriculture because of the inherently high level of risk the sector itself faces. Undoubtedly, agricultural enterprises still constitute the most risky business.

As argued by Vigano (1993) agricultural-credit risk evaluation is a complex process, which implies a careful analysis of information regarding the borrower in order to estimate the probability that the loan will be regularly repaid .The probability of regular repayment depends on objective factors related to the borrower's operating environment; the borrower's personal attitude towards loan obligation, and the bank's ability to evaluate those aspects through the information it has, and to control credit risk specific contractual condition (Aberham, 2002).

Whatever the constraint, it is time, therefore, for the CBE to take note of the importance of credit in modernization of agricultural activities and vitality of creating access of institutional credit for the rural livelihood improvements. On top of that the development of Ethiopian economy is planned to depend heavily on the speed with which agriculture grows; among many institutional support services that expected to catalyze or support the transformation process, financing agricultural and allied activities should come on the forefront of efforts. Hence availability and access to financial resources plays the key role to this transition in order for agriculture to effectively meet the challenge of being an engine of growth for Ethiopia.

Based on this background, this study attempted to identify the determinant factors of agricultural lending decision making and whether the factors systematically related to observable human capital constraints of lending officials; the lender's and borrowers' side constraints in the CBE's case using data from the informants.

1.2. Historical Background of the CBE

In history, modern banking was introduced in 1905 as Ethiopia agreed with the British owned National Bank of Egypt to open Bank of Abyssinia. In 1931, Bank of Abyssinia was liquidated and became the Bank of Ethiopia, a fully government-owned bank providing central and

commercial banking services, which was closed during the Italian invasion of 1936. During the Italian occupation, several Italian banks opened branches in Ethiopia. After the liberation in 1942, the State Bank of Ethiopia was established. It became operational in 1943, acted as the country's central bank and commercial bank (Belay, 1987).

Generally, according to Belayneh (2011, pp-14), the major events occurred in Ethiopian banking history as a result of the Ethiopia political instability since 1905 includes: the establishment of the Bank of Abyssinia in 1906, making the advent of banking into Ethiopia; the second event was the Italian invasion of 1936 resulting in a broad colonial banking network extended to encompass all Italian possessions in the Horn of Africa. Such new setup in the country was closely linked with the metropolitan financial system

Establishment of the State Bank of Ethiopia in 1943, which made the rebirth of the Ethiopian independent banking, was the third event that occurred during World War II, after liberation of the country from fascist Italy. In 1963, a new Banking Law split the functions of the State Bank of Ethiopia into central and commercial banking as the National Bank of Ethiopia and the Commercial Bank of Ethiopia respectively. The Banking Law allowed for other commercial banks to operate, the Addis Ababa Bank, in which 51% was owned by Ethiopian and the other two foreign commercial banks: the Banco di Roma and the Banco di Napoli were in operation till the revolution (Belayneh 2011)

The fourth event was the revolution of 1974, which removed the monarchy regime, nationalized banks and forms a "socialist banking"; in which the whole credit system being based on the central bank and three state-owned financial institutions, each of them enjoying monopoly in their respective market up to the end the Derg regime. The final event in the banking history was the collapse of socialist regime in 1991. Subsequently, licensing and supervision of Banking Business; issuance of Proclamation No. 84/1994 in 1994, the enactment of which the private banking companies began to flourish. It has also given autonomy to the CBE. Now CBE is expanding, keeping its leading role in the market. It has about 780 branches operating all over the country as information sourced from its MIS office.

1.3. Statement of the Problem

Agricultural lenders in today's environment face many challenges when evaluating the creditworthiness of farm borrowers (Christine, 2006). The challenges are forcing lending decision process to become much more complex. There are many challenges that are perceived to relate to agricultural lending decision in Ethiopia as well. The challenges or constraints can broadly be viewed on the borrowers' side and bank side.

The borrowers from the farming communities often grow crops for seasons without any revenue until the harvest; they may face shortage of money or working capital. Price volatility or changes always provide growers with uncertainty about the cash to be earned each year. External factors such as weather changes and natural disasters can damage the produces that can be sold by borrowers. On top of this, lenders usually ask applicants to submit financial statements of the past three years to extract tools of financial analysis for which the farmers are unaccustomed with; and they most often lack fixed asset for collaterals use. All these constraints are continuously faced as challenges.

The bank side constraints include bank's specific determinants and lenders human capital deficiency, such as lack of knowledge and skills on agri-business and risk management; lack of skill to capture information to make or assess business plans, and lack of experiences on farm lending.

In short, a risk involved in financing agriculture can be related to the production; the producers and their wellbeing or else to the financial institutions and their capacity and the regulatory environment in which they operate. Risk management instruments are required in all categories (FAO, 2009). Thus, a lot of aspects have to be put into consideration when bank evaluate farm loan applications to incorporate the wide risk spectrum in all sides. That is why bank officers take into account different kind of attributes related to the borrower's background and experience the business and conditions surrounding it and the internal aspect of the bank in the lending evaluation process (FAO, 2009).

Loan analysis seems more subjective than objective because human judgment plays important portion in loan decision making. Personal experience and expertise plays a large role in the subjectivity of approval/rejection decision of a loan request as it is the officer not the borrower

who decides on lending. However, this role seems to be inefficient, inconsistent and non uniform as criticized by researchers (Glassman and Wilkins, 1997).

To date, studies examining the agricultural lending decision process provide strong evidence that lenders consider both financial and non-financial variables when evaluating the creditworthiness of farm borrowers. However, various credit evaluation procedures and methods have been studied without achieving a consensus as to which variable measures should be used when analyzing agricultural loan applications. Furthermore, while there have been many studies, the majority of them do not explicitly consider what lenders use when made a lending decision to farm borrowers (Christine, 2006).

There are also only few studies that provide clear explanations on the relationship among each determinant factor of lending decision such as borrower's attributes or a lender's human capital and their influence on likelihood of loan approval. A study conducted in Sweden, which involved 114 loan officers from various banks, suggests that loan officers' human capital influences their loan decisions (Bruns et al., 2008); while in Malaysia, a conjoint analysis has been used as the main analytical tool; the results of which indicate that loan officer's attribute do not have significant roles in the loan-granting process while borrower's attributes are all positively related to the likelihood of loan approval on different levels as officers place different weights on borrower's attributes (Ottavia, 2011).

Determinants of agriculture loan decision making are more or less thoroughly examined in developed and emerging countries; it appears scarce, if not none in Ethiopia as most previous studies on Ethiopian banks have emphasized on other aspects of bank performance (i.e. loan repayment performance). For instance, Berhanu (2005) studied on the determinants of loan repayment performance of smallholder farmers in North Gondar; and Abreham (2002) studied on the loan repayment and its determinants in small-scale enterprise financing in Ethiopia around Ziway area, employing the Tobit model. While Assefa (2002) employed a Logit model to estimate the effects of hypothesized explanatory variables on the repayment performance of rural women credit beneficiaries in Dire Dawa. This justified that there could be limited stock of knowledge on determinants factors of agricultural loan decision-making process in the case of CBE. In effect, further research pertaining to the lender's assessment, especially as it relates to agricultural loan decision-making process by the CBE, is desirable. As credit evaluations are

based on the loan officers' subjective assessment (or judgmental assessment technique) lender's side human capital factor might influence the decision largely in the CBE. The problem should be addressed in this study is, therefore, to understand whether or not these factors are influencing and /or which factors are more significantly affect on the CBE's agriculture lending decision making process-relying on the responses of the CBE's experts who are involved in the loan decision making process.

1.4. Significance of the Study

Agriculture is believed to be the engine of growth so as to achieve the desired development strategy of Ethiopia. Although it has gotten due attention, still there are formidable obstacles that inhibits the sector from growth and advancement. One of the most crucial and leading factors is limited access to financial capital and credit especially from the formal lending institutions. One issue that has to be solved in this regard is the loan evaluation problem that banks are associating with farm borrowers. In order to solve the financing constraint, there is a need to know the perception that bankers have on this problem. To this end, knowing which factors are influencing the agriculture lending decision making currently could assist CBE to evaluate its screening criteria and revise its loan decision procedure accordingly.

The research output can, therefore, provide information for management; loan officers and senior officials make a decision on farm lending. Other researchers may also use for further study as it shades-light on the problem area in agricultural financing. Moreover, it pinpoints a policy issue that the supervisory of financial institutes should consider regarding agricultural financing by the bank. Although this study focuses on CBE case, the result may be replicable to other banks or lending financial institutes.

1.5. Objective of the Study

The main objective of this study is to determine the factors that can significantly affect the bank's decision making process whether to provide agricultural loan services or not.

The specific objectives of the study include to:

- Examine the impact of lender's human capital on lending decision making;
- Identify the influence of borrowers' attributes/characteristics on lending decision; and
- To examine the impact of bank side determinants on lending decision making process.

1.5.1. Hypotheses of the Study

Scholars argue differently on the problems of loan evaluation and decision making process: On the one hand, there are those who argue that characteristics of farm enterprises make the cost too high compared to the return on the loans. Small scale enterprises possess shallow management, often with little experience and training; they are usually undiversified product, they are sometimes new businesses, with little track record, and poor financial recording; they have little to offer by way of security to a lender; they may be reluctant to raise outside equity capital for reasons of expense. Moreover, lenders are not able to ensure that whether the clients are put full effort for the success of the investment. These characteristics of small-scale enterprises provide little incentive for any aggressive loan recovery mechanisms (Fikrte 2011, Pischke, 1980; Beker and Dia, 1987; Kitchen, 1989; Okorie and Iheanacho, 1992; Chirwa, 1997).

Others argue that the failure of lending banks in playing their roles in loan decision; disbursement and recovery process is a major contribution to default (Vigano, 1993; Fry, 1995). They contend their view that determining credit worthiness requires investment of time and resources to evaluate firm specific and industry wide variable, structural or cyclical, by analysts with specific professional skills. A mistake on the evaluation of the borrowers' characteristics or the introduction of inappropriate loan conditions may increase the total risk of the transaction (Vigano, 1993). A non-economic obstacle relating to the failure of banks lies in the risk averse attitude of loan officers (Kitchen 1989). Such a lending decision practices lead to high default rates, thereby increasing risk. So it is impossible to know which factors among the series of characteristics have relationship and more influencing on lending decision making apriori. Thus the researcher formulated and attempted the hypotheses stated in null form as follows:

A: There is no significant relationship between the lender's human capital or loan officers' characteristics and their lending decision making;

B: There is no significant relationship between borrowers' character and lending decision making;

C: There is no significant relationship between bank specific determinants and lending decision.

1.6. Scope and Limitations of the Study

In order to solve the agricultural lending constraint, there is a need to solve the loan evaluation problem that CBE is associating with farm borrowers. Since bank information is considered highly confidential, it appeared difficult to access their loan files regarding loan approval. Because of such problem, the researcher limited himself to depend mainly on experts' view or perceptions to capture the data. Thus, CBE's credit staff is targeted. The scope of the study is, therefore, limited to collecting primary data, from those targeted sampled population, questioning the current lending process and decision making problem. Information needed is not on the real loan applications, in which case the respondents may not be considered as serious as in the actual requests. Secondary data on deposit and loan balances were acquired from the MIS data base of the bank; bank wide published documents and annual reports including audited financial reports were used. The study also has time and financial resources limitations for more wide and in-depth coverage.

1.7. Organization of the Report

Chapter one covers the introductory part, while the theoretical and empirical aspects of the bank's lending process are discussed in chapter two. Chapter three discusses the Methodology applied for the study. The fourth chapter examines the data presentation, analysis and in-depth discussion; while chapter five presents the conclusion and policy implications of the study based on the research findings.

CHAPTER TWO

REVIEWS OF RELEVANT LITERATURE

2.1. Theoretical Literature

2.1.1. The Role of Credit Market and Credit Management

Theoretically, finance is central to establish and operate productive activity. Sufficient finance is a pre requisite to proper organization of production, acquiring of investment assets and/or raw materials and development of marketing outlets; increased production efficiency. It is a device for facilitating transfer of purchasing power from one individual to another (Oyatoya, 1983).

With improved financial intermediation, the banking system credit equipped entrepreneurs with purchasing power. Financial theorists including Mensah (1999) argued that if economic units relied completely on self-finance, investment will be constrained by the ability and willingness of each unit to save, as well as by its capacity and readiness to invest. Contrarily, Von Pische (1991) admitted that even though finance is a catalyst for investment, it is also a catalyst for poor investment, political patronage, corruption and other types of opportunism.

A work of credit market has evolved the problems of imperfect information and imperfect enforcement. As Hoff and Stieglitz (1990 pp-37) pointed, borrowers and lenders may have differential access to information concerning a project risk, which may form different risk appraisal. They observed asymmetric information in credit market where the borrower knows the expected return and risk of his project, the lender knows only the expected return and risk of the average project in the economy (Hoff and Stieglitz, 1990).

As argued by Ghatak and Guinnane (1999), lending institutions are facing four major problems: a) to ascertain what kind of risk the potential borrower is (adverse selection), b) to make sure the borrower will utilize the loan properly, so that he will be able to repay it (moral hazard), c) to learn how the project really did in case the borrower declares his inability to repay and d) to find methods to force the borrower to repay the loan if the borrower is reluctant to do so (enforcement). Imperfect information and enforcement problem lead to inefficiency of credit market which in turn causes to default (Ghatak and Guinnane, 1999).

A credit market differs from standard markets (for goods and services) in two important respects. First standard markets involve a number of agents who are buying and selling a homogeneous

commodity. Second in standard markets, the delivery of a commodity by a seller and payment for the commodity by a buyer occur simultaneously. In contrast, credit received today by an individual or firm in exchange for a promise of repayment in the future. But one person's promise is not as good as another. Promises are frequently broken and there may be no objective way to determine the likelihood that promise will be kept (Jaffee and Stiglitz, 1990). Differences between promised and actual repayments on loans are the result of uncertainty concerning the borrower's ability or willingness to make the repayments when they are due which creates the risk of borrowers default (Vigano, 1993).

Thorough credit assessment that takes borrowers` credit worthiness into account to minimize credit risk, which should deserve special emphasis in credit management greatly, influences the success or failure of financial institutions. An understanding of bank's credit risk management process provides an indicator of the quality of a bank's loan portfolio. The key elements of effective credit management, therefore as coined by Charles Mensah (1999), cited by Abreham (2002) are: *well developed credit policies and procedures; strong portfolio management; effective credit controls and the most crucial of all a well trained staff that is qualified to implement the system. Financial institutions must maintain basic credit standards if they are to function well and make credit available to investors. These standards include a thorough knowledge of the borrowers' business by the officer in charge; reasonable debt equity ratio; marketability and viability of the investment project and other technical capabilities. Credit analysis is in general vital for the officer to judge about the credit worthiness of the borrower as well as the project to which the loan is injected.* This effective credit management policy is particularly important in the case of small-scale entrepreneurs in LDCs like Ethiopia where most of the borrowers do not have sufficient entrepreneurship capacity to conduct market study before deciding on investing in a particular project. It would save borrowers from undertaking risky project as well as the bank from default.

2.1.2 Theories of Risk Management in Agricultural Financing

Risk is a concept that denotes a potential negative impact to an asset or some characteristic of value that may arise from some present process or future event. In everyday usage, "risk" is often used synonymously with the probability of a loss or threat. In professional risk assessments, risk combines the probability of an event occurring with the impact that event would have and with

its different circumstances. It plays a very important role in agricultural production because there are so many variable factors that go into agricultural production (http//en.Wikipedia.org/)
In risk management it is important to understand: 1) risk events, 2) risk exposure and 3) the causes of the risk. Then the risk mitigation strategies that can be taken are: a) accept the risk, b) avoid or eliminate the risk, c) transfer the risk to another party or d) control the risk. Risk that is not understood and/or properly assessed hinders or squanders an investment opportunity, which has been a weakness in rural investment (FAO, 2008)

Addressing problems of risk and vulnerability within an agricultural production and marketing system requires an understanding of the cross-cutting issues and of the multiple approaches to managing risk. These include market development and access, crop diversification, irrigation and intensification of farming, and development of financial and social capital. Changes in the agricultural system, including changes in risk management strategy, can have both beneficial and detrimental effects (FAO, 2008)

Credit risk is among the most important risks that the financial institutions face. It is considered to be higher for agricultural loans as the sector inherent high level of risk. Agricultural enterprises still constituent the most risky business (Nmadu and Peter, 2010). This is because the production environment as wells as marketing prospects are fraught with imperfect knowledge and the vagaries of nature, which is more difficult to manage.

As reported by (FAO, 2009), Financing agriculture involves three categories of risks: the first relates to agriculture production and includes natural factors and second relates to the farmers and their wellbeing, assets, skills and ability to bargain effectively in local market and the other relates to financial institutions and their capacity and the regulatory environment they operate in. Risk management instruments are required in all three categories (FAO, 2009).

2.2. Empirical Literature

2.2.1. Empirical Evidences on Other Countries

Baker (1968) introduced the simulated borrowing method as an alternative for evaluating lender responses to various managerial choices in a farm's financial and production organization. He concluded that banks and credit associations prefer loans that are: (1) self-liquidating; and (2) asset-generating.

Barry and Willmann (1976) used the simulated borrowing method to develop the decision elements for a risk-programming model of a representative case farm for the Southern Blacklands of Texas and to survey the credit responses of lenders to contract choices. They found that lenders' credit response may modify the producer's contracting plans and his/her income growth rate.

Sonka, Dixon, and Jones (1980) applied similar methods to assess the impact of the firm's financial structure on its external credit limits for 33 agricultural lenders in east central Illinois. Each loan officer was asked to evaluate and respond to five loan situations that varied by financial stress. The authors found that lender responses fell into two groups, a conservative group and a liberal group, with respect to the average loan amount approved. They also found that these two groupings of lenders responded differently to the borrower's financial position and structure.

Barry, Baker, and Sanint (1981) used two different lender surveys to examine the concepts underlying farmers' credit risks and to determine how credit may influence farmers' debt use. The authors found that a farmer's credit position was positively correlated with changes in the level of farm income and that this correlation was stronger for capital credit than for operating credit. They also found that variation in fund availability from rural banks contributed to high credit risks.

Padmanabhan (1981) mentioned some of the specific reasons for default in rural credit projects which a development banker can possibly guard against at the time of project preparation or appraisal based on Indian experience. These factors include: under financing, over investment, imperfect analysis, incidence of loan cases per field staff, unscientific banking plan allocation, feeble technical advice (inadequate technical support), improper planning of infrastructural support, ineffective tie-up arrangements, inadequate communication between branch office and head office, unrealistic repayment schedule, superficial assessment of response from the farmers, reduction in the unit value of projects and high propensity to consume.

Von Pischke (1980), in his explanation about the cause of poor loan collection performance by formal agricultural lenders in developing countries, attributed to general conditions of low levels of economic development. Farm level causes of loan arrears as cited by him include small farmers' poverty, large farmers' political influence, low returns and lack of profitable innovation

in tropical and sub-tropical agriculture, unfamiliarity with modern commercial practice among certain rural societies, cultural factors such as the weakness or absence of moral incentives or small group sanctions for timely repayment, illiteracy, lack of farm planning, insufficient supervision, and low level of formal education achieved by typical borrowers. Problems at the lender side include deficiency in loan administration and lack of market information such as system of credit rating based on repayment performance. In addition, difficulty in enforcing contracts through judicial or administrative law process could be cited as a country level problem constraining lender performance

Two problems as major causes of poor loan recovery performance were identified by Von Pischke (1980) as cited in Aberaham (2002): credit project design problems and credit project implementation problems. Credit project design problems include debt vs equity, realism vs aspiration (how realistic the projection of the project designer is), expected value vs dispersion (detailed consideration of the variety of results which occur in the field), book keeping convenience vs borrower cash flow patterns, collection mechanism, institutional scope or range of services offered, interest rates. Credit project implementation problems include low service levels, coordination, access (i.e. information problem and lack of decision making experience in lending to specific target groups) and financial recording.

Thomas (1989) indicated that both agricultural producers and agricultural lenders consider all the sources of risk studied to be important. Responding lenders in general view risk management practices including multiple-peril crop insurance (MPCI), crop hail and fire insurance, forward contracting, hedging, commodity options, enterprise diversification, and farm program participation as effective means to reduce risk associated with crop yield and price variability. Responding crop producers are much less optimistic regarding the effectiveness of these practices. Both producers and lenders rate price risk management practices higher than MPCI and crop hail and fire insurance, which are used to manage yield risk. Most responding lenders indicate that use of the risk management practices results in lenders' viewing loan requests more favorably. Producer perceptions are quite different. Fewer of responding producers believe that adoption of any of the practices other than government farm program participation has a favorable influence on lenders' attitudes (Ibid). A clear implication of this study is that many

lenders do not communicate effectively with their borrowers, at least concerning risk management practice adoption

Vigano (1993), employing a credit scoring model for development banks based on 118 sample borrowers, taking the case of Development Bank of Burkina Faso, found out that customer's characteristics, enterprise characteristics and customer's activity, profitability and revenue stability, asset value and composition, financial situation, loan use, bank-customer relationship, contractual conditions and credit risk control, quality of information and the customer's banking behavior are identified to influence the bank's credit risk. The study revealed that being women, married, aged, proximity to the bank, use of better technology and being flexible to adjust to market changes, proper use of the loan, project diversification, frequency of loan maturity, collateral, personal guarantee and being a pre-existing depositor are negatively related to loan default risk. Loans in kind, long waiting period from application to disbursement and being younger firm, past default, existence of other loan are those positively related to loan default rate.

Arene (1992), in an attempt to evaluate the credit delivery system of Supervised Agricultural Credit Schemes (SACS) among smallholder maize farmers in Anambra State of Nigeria with emphasis on loan repayment rate, conducted multiple regression analysis. The result based on 95 sample maize farmers showed that farmers with high repayment had larger loan size, larger farm size, higher income, higher age, higher number of years of farming experience, shorter distance between home and source of loan, higher level of formal education, larger household size, higher level of adoption of innovations, and lower credit needs than low repayment farmers. The regression analysis showed that size of loan, farm size, income, age, and number of years of farming experience, level of formal education and adoption of innovations are significantly and positively related to repayment rate, but distance between home and source of loan, household size, and credit needs account for less.

Njoku and Odii (1991) employing multiple regression model in Nigeria indicated that poor loan repayment performance was due to late release of loan funds, cumbersome loan application and disbursement procedures and emphasis on political considerations in loan approvals. In addition, loan diversion to non-agricultural enterprises as well as low enterprise returns resulting from low adoption rate of improved agricultural technologies contributed to poor loan repayment performance of small holders. Loan volume, years of farming experience, farming as major

occupation, years of formal education, household size, loan period, farm size, farm output, value of assets and interest paid on loan were all highly significant determinants of loan default. The coefficients of loan volume, years of formal education, household size and interest paid on loan are positive while the coefficients for years of farming experience, loan period, farm size, farming as major occupation, farm output and value of assets are negative.

As referred by Njoku and Odii (1991), a descriptive analysis made by Adeyemo (1984) on loan delinquency in multipurpose cooperative union in Kwara state, Nigeria, based on 1020 borrowers (80% of the population) revealed that natural calamities, crop failure due to pest, poor storage facilities, lack of adequate transport facilities, sales income, farm income, farm size, education, tenure status of the borrowers are factors associated with loan delinquency.

The findings above revealed that the probability of loan repayment depends on the borrowers' specific characteristics (i.e. age, education, experience, sex, household size, loan utilization), loan contract terms (i.e. repayment installment, collateral, frequency of maturity, grace period, loan volume, interest rate, number of disbursement) and other factors such as political influence, technical advice, level of social cohesion (for micro enterprises). The strong side of the empirical studies reviewed above is that they assessed al1 sources of loan default that is the borrowers` willingness and ability of repayment, the lenders` loan administration capacity, and other external economic factors.

2.2.2. Empirical Studies in Ethiopia

Berhanu T& K.Rama (2012) have carried out a study to explore the key determinants of profitability of commercial banks operating in Ethiopia using unbalanced panel data set of banks over the period 1999/00-2008/09. The internal and external factors to the banks are regressed against the return on asset (ROA) of the commercial banks. The internal factors considered are related to the bank's capital structure, liquidity, credit risk, loan portfolio, asset quality, and expense management aspects whereas the external factors are related to the industry and the macroeconomic scenarios within which the banks operate. The result of the study indicates that the most determinants of bank profitability in Ethiopia are the internal factors, factors over which a bank's management has control. Though the external factors are found to be statistically insignificant, their signs have important policy implications, and thus recommended for the attention of policy makers and bank regulators.

Hailegoriges(2011), examined the impact of bank-specific, industry specific, and macroeconomic determinants of Ethiopian commercial banks' profitability (i.e., return on asset (ROA)). The OLS technique was applied on balanced panel data of seven Ethiopian commercial banks that covers the period (2001- 2010) to investigate the impact of capital, size, loan, deposits, noninterest income, noninterest expense, credit risk, market concentration, economic growth, inflation and saving interest rate on profitability. The estimation results show that all bank-specific determinants, with the exception of saving deposit, significantly affect commercial banks profitability in Ethiopia.

2.3. Overview of Agriculture Credit in Ethiopia

Agriculture lending could be a direct type or two tier system. The direct type is that in which banks directly extended credit to the end user. In case of the two tiers, other intermediaries such as cooperatives or associations sign a loan contract with the banks and channel the borrowed fund to the end users. In the case of Ethiopia, regional government and MFIs act as intermediaries between banks and farmers. The government uses their federally allocated budget as collateral to borrow from banks and on lend the fund to farmers for purchase of agricultural inputs (ESSP, 2009). This procedure has enabled banks to lend a great deal of money to farmers. However, the inability of the formal financial sector to provide adequate financial services to small farmers and the poor in general continued regardless of the government to increase the agricultural production through the implementation of various strategies (ADLI, 1994).

A study by National Bank of Ethiopia (NBE, 1996) concluded that CBE and DBE have only catered for insignificant demand for credit of small farmers. The bulk of financial services provided to small and micro enterprises in rural and urban areas, therefore, mostly originated from the informal sector such as Iqub, money lenders and friends (NBE, 1996).

Historically, some initiation was there among banks to involve in micro financing as modalities of financing the rural. The CBE was the scheme of financing farmers on the basis of 80% guarantee from the NGO SAHEL ETHIOPIA, and Awash International Bank, a private bank, has been extending credit line with Wassassa MFI, Abysinia bank was extend credit based on partial guarantee provided from USAID (NBE, Getahun, 2002). But all these were the effort from banks initiatives. Therefore, there is a need for rousting rural financing.

2.3.1 Agricultural Loan Advanced by the CBE

The CBE has been financing the agricultural sector particularly the agricultural inputs. The bank is at a forefront of efforts to meet the objectives mentioned in the developmental strategies including ADLI Strategy. The bank has disbursed substantial amount of funds during the past for purchase of fertilizer. It based on the guarantee provided by the regional government and on sharing the spread. In effect, the annual budget of the regional government is the collateral for the loan, and as it was more secured (from various reports of the CBE). The government was gradually withdrawn as MFIs and the cooperatives gain institutional and managerial capacity (SDPRP, 2002).

CBE grants two types of Agricultural loan- input loan & Agricultural investment loan. Agricultural input loan includes fertilizer loan and other input loan (both short term) for the purchase of agricultural inputs other than fertilizers like improved seeds, and/or agro-chemicals. The applicant can be associations, Cooperatives, Unions, Commercial Farms, Individuals, or Regional States. If the request is from Regional States, the Regional President should sign on the loan application letter, and present a letter of guarantee from the Ministry of Finance and Economic Development (as per credit procedure).

Agricultural Investment Loan, which is also granted to Associations, Cooperatives, Unions, Commercial Farms, or Individuals for working capital as well as purchase or lease of buildings, agro-processing machinery and equipments (such as water pumps, generators, combiner harvesters, tractors, vehicles, etc) for plant and animal production in small/medium/large-scale farming in short to medium terms. The Bank gives priorities to modern commercial agriculture ventures that produce for export market.

Box-1 Eligibility Criteria for CBE Agriculture Loans	
If it is input loan the applicants requested	**If it is project financing the applicant requested**
The applicant shall provide Land Holding Certificate and/or Land Lease Agreement, as a case may be.	• project feasibility study; contribute at least 20% of the project cost ;
If the applicant is individual, he/she shall provide a supporting letter that confirms its/his/her excellent past performance from Wereda Agricultural Bureau, Association, Cooperative, Organizing Agency, or other appropriate government body as deemed necessary. • The applicant shall provide its/his/her business performance plan. • The applicant should have been in the business for at least one year and with a good business track record. • All applicants shall provide audited financial statements; and acceptable collateral to the Bank	If the loan request is to purchase or lease of buildings, agro-processing machinery and equipments • the Bank shall disburse the approved amount directly to the supplier or leaser If the request is working capital loan, • the applicant shall have been in the business for at least one year with good business track record • All applicants shall provide audited financial statements; and acceptable collateral to the Bank If the applicant is an Association, Cooperative, Union, or Commercial Farm: 1.Power of attorney to borrow and operate a Bank loan account on behalf of them including the full name and the delegated responsibility
If the applicants are Associations, Cooperatives, Unions, or Commercial Farms, they shall provide a document that confirms acquiring or renting basic infrastructure, such as appropriate office and store (working premises).	2.They shall provide a document that confirms acquiring or renting basic infrastructure, such as appropriate office and store (working premises); and 3. They shall provide design, specification and bill of quantities for farm infrastructure (buildings and constructions).
If the applicants are Associations,	If the applicant is an Association, Cooperative,

Cooperatives, or Unions Minutes of a resolution acknowledging and authorizing the loan passed by three-fourths of the members of the General Assembly of the Associations, Cooperatives, or Unions shall be presented	or Union: 1.Minutes of a resolution passed by three-fourths of the members of the General Assembly of the Association, Cooperative, or Union shall be presented to acknowledge and authorize the loan; 2.They should acquire legal personality from the concerned government body; and they should have an Article of Association and a Memorandum of Association that govern their affairs
	If the applicant is individual: He/she shall provide a supporting letter that confirms past performance from Wereda Agricultural Bureau or Cooperative or Association or Organizing Agency or other appropriate governmental body as deemed necessary

Source: CBE Credit procedure (2008)

2.3.1.1 A Trend of Loan and Advances of the CBE

The total outstanding balance of loan and advances of the Bank shows a modest growth with declining rate at the end of the study period. The share of loan disbursement to agriculture sector and the balance of agricultural loan outstanding balance follow increasing trends but turned down at last in the year 2013 whereas the non-agriculture shares goes the opposite direction.

Table 2.1: Share of Agriculture loan from outstanding loan balances (2008-2013)

Year	Agriculture	Non-Agriculture
2008	0.158	0.842
2009	0.164	0.836
2010	0.190	0.810
2011	0.229	0.771
2012	0.232	0.768
2013	0.172	0.828

Source: CBE MIS & own computation

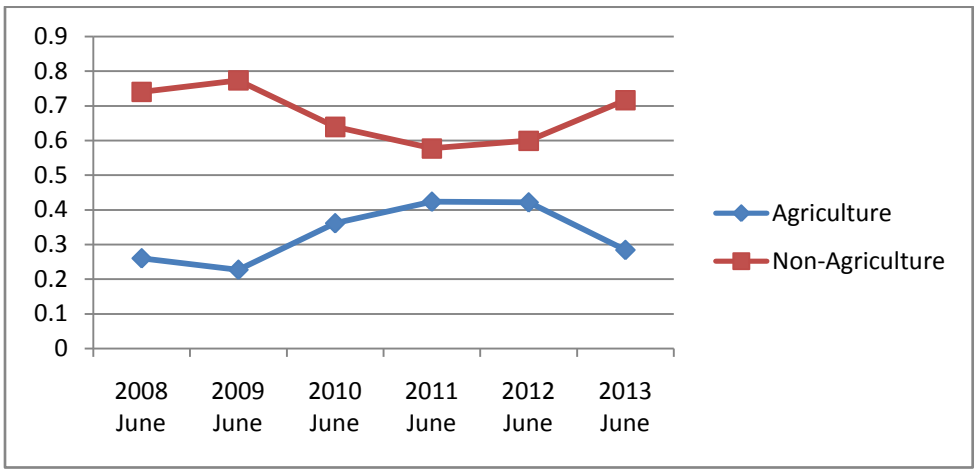
2.3.1.2 Ratio of Agriculture Loans in CBE

Loan ratio can be defined as the ratio of outstanding agricultural loans to total bank loans for commercial bank. Banks have different investment options, including agricultural lending. Using total loans as the denominator shows the relative importance of agricultural loans in the bank's investment program by recognizing the non-agriculture investment options available to a bank (e.g., government securities) that compete with agricultural loans for investable funds. This ratio increases or decreases 'as more funds are moved in or out of agriculture relative to other investment opportunities.

Table 2.2: Proportions of loan and advances disbursed to Agriculture & other sectors

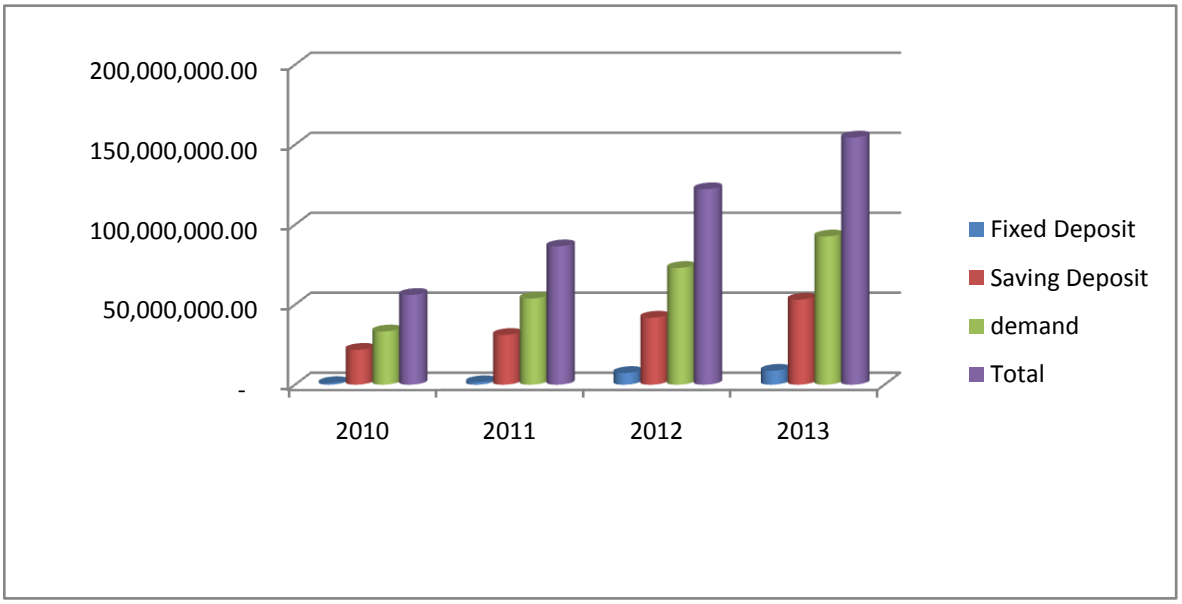
Year	Agriculture (a)	Non-Agriculture (b)	Total (c)	RATIOS	
				(a/c)	(b/c)
2007/08	3,534,357.00	10,040,516.00	13,574,873.00	0.260	0.740
2008/09	2,516,035.00	8,576,378.00	11,092,413.00	0.227	0.773
2009/10	3,737,357.00	6,614,115.00	10,351,472.00	0.361	0.639
2010/11	7,520,524.00	10,259,376.00	17,779,900.00	0.423	0.577
2011/12	12,812,276.00	19,127,848.00	31,940,124.00	0.401	0.599
2012/13	7,707,495.00	19,471,708.00	27,179,203.00	0.284	0.716

Fig 2.1: **The graphical representation of Agricultural loan share in the CBE's loans**



This graph illustrates the trade-off between agriculture and non-agriculture loans in CBE during this period.

Fig* 2.2: Graphical presentation of deposit structure in the CBE during the period *(in millions)



Source: CBE MIS & Own computation

The deposit balance of the CBE has been growing. The total deposit of the bank reached Birr 154.5 billion signifying growth as compared to year 2010, despite the stiff competition within the banking industry. The growth was assumed to take place following the high level confidence placed on the CBE, its wide branch network and rich experience in the banking industry. Demand deposit continued to be the most dominant in the structure of the total deposits of the Bank (Fig. 2.2). In the current year (2014), it is even expected, the Bank will encourage even higher levels of deposits by employing various deposit mobilization scheme including branch expansion and depositor prize scheme as sourced from the bank's plan document. Statistical trends of agriculture loan to interest bearing deposit or loanable fund is reviewed for the period of (2008-2013).

***Fig* 2.3: Graphical illustration of Agriculture loan share from loanable funds in the CBE**

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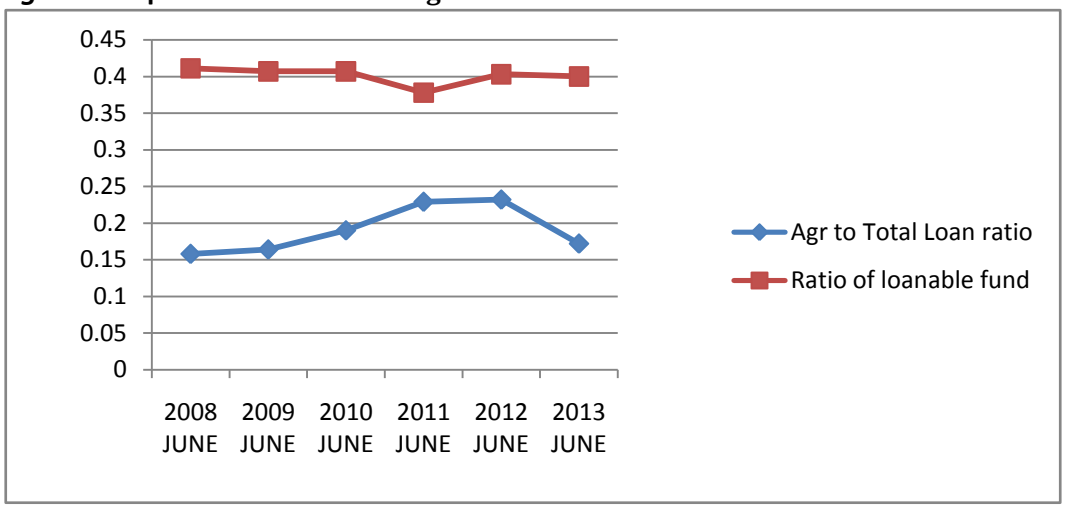


Source: MIS and own computation

The above line graph illustrate that although the CBE has loanable fund its lending to the agriculture is yet lower as compared with non-agriculture sectors. It is known that a cost of a fund may influence the Bank to invest or lend to non-agricultural sectors due to the risk/return expectations. In most of the cases agricultural investments earn a return after a period of time. This will lead the Bank to think of opportunity cost. The graph shows that as CBE's deposits or loanable fund ratio almost keeps constant, the proportion of agricultural loans relative to total loans decline significantly.

2.4. Credit Assessment, Analysis and Decision Making Process

After getting a full loan document from the relationship Managers or Loan officers, analysts prepare a full appraisal report that will be presented to the Credit Committee for loan decision. This process demands both objective and subjective ideas, in which a recommendation whether to approve or reject a loan application is done in most banks including CBE. It is a long process and evidenced in section below.

2.4.1. Assessment and Analysis of Loan

There are many ways a loan officer can analyze a loan application. The process begins with establishing the character and ability of the borrower. The loan officer must meet with the borrower to assess the character of the borrower. A research concluded that the longer the

relationship between borrower and lender, the lower servicing and monitoring costs were. It also provided that the more loan extensions made between the borrower and lender led to small decreases in costs (Ottavia, 2011). This shows the loan officer's relationship with the borrower is the foundation for the loan process. The borrower is assessed on a subjective basis as the loan officer analyzes the operation, credit history, and general behavior of the borrower. If there is any indication of poor character, the loan officer assesses the borrower as a high risk.

After character is established, the farm & its management will be evaluated subjectively. Then, the loan officer must look at the applicant's credit risk via the submitted financial information collaterals using tools or ratios. The analysis is to be in relation to cash flows to determine the potential borrower's ability to repay the loan. Loans are priced by their interest rates, which are the costs of borrowing money. It has been shown there is an inverse relationship between the bank's size and their pricing - the larger the bank, the smaller the spread, and vice versa (Sullivan 2011).

Even if there is a tangible asset, it is sometimes difficult to collect on it. For example, if crop inventory is used as collateral and there is a large drought, then the crop doesn't survive and the farmer has no profit to pay the loan back within which case a risk contingent credit lending is a possible alternative to collateralized lending on operating loans. This risk contingent credit lending ties the interest rate to the risk of the commodity as well as the borrower, and has a built-in option or insurance which compensates the lender for a large, unexpected drop in the commodity's market price (Turvey and Shee 2010). After the loan application is assessed risk analysis would be followed.

2.4.2. Bank's Credit Risk Evaluation and Decision Making

Substantial research on credit risk assessment in agricultural lending has yielded mixed results about which factors to include in the development and validation of credit scoring models. Miller and LaDue (1989) focused on the development of credit scoring models for dairy farmers by employing measures of farm size, liquidity, solvency, profitability, capital efficiency, and operating efficiency as explanatory variables. They used 203 dairy loans from an agricultural loan portfolio for a single bank in New York. Using logistic regression, they found that quality of larger borrowers was predicted by liquidity, profitability, and operating efficiency measures.

Gustafson, Beyer, and Saxowksy (1991) administered a survey to ten agricultural loan officers in the Red River Valley of southeastern North Dakota and west central Minnesota to determine information sources, credit evaluation procedures used in lending process. In the survey, lenders described their methods of credit evaluation and responded to seven hypothetical credit situations. They found that lenders placed significant weight on the borrower's financial information and personal characteristics (honesty, integrity, reputation and production-management ability) when making decisions regarding approval, levels of credit, and need for servicing debt.

Ellinger, Splett, and Barry (1992) utilized a survey to examine credit evaluation procedures, risk assessment methods, and credit model consistencies among agricultural banks in Illinois and Iowa. They found that, following the farm financial crisis of the 1980s, lenders used more formal and comprehensive methods to evaluate the creditworthiness of agricultural borrowers. Their results indicated that nearly 60% of the lenders used a credit-scoring model to assist in loan approval, loan pricing, loan monitoring, and evaluation of loan portfolio risks. However, their results indicated a relatively high level of disparity among the systems in use by lenders.

According to Gustafson (1989), agricultural lenders use the five C's of credit (capacity, capital, collateral, character, and conditions) when evaluating an agricultural loan application. The first C, which is capacity, refers to a borrower's ability to repay a loan obligation and bear the subsequent financial risk (Gustafson, 1989). Lenders generally analyze a borrower's repayment capacity by conducting an analysis of both historical and projected profitability and cash flow of the farm business. Capital is the second C of credit and refers to the funds available to operate a farm business. To assess capital, lenders review balance sheets from both current and previous years, and calculate financial measures of liquidity and solvency. This allows the lender to gauge the amount of equity a borrower has invested in the operation and how effectively that investment generates cash flows. The third C, which is collateral, represents a security agreement that serves as a final source of repayment to the lender if the borrower defaults on the terms of the loan agreement. Conditions are the fourth C of credit and refer to the intended purpose of the loan. Lenders consider factors such as the loan amount, the use of the funds, and the repayment terms. The lender also considers the overall economy, including interest rate levels, inflation rate, and demand for money. The fifth C, which is character, encompasses personal factors such as honesty, integrity, and reliability. The borrower's risk attitude is an important element of this

human factor considered in the loan decision-making process. If it has a negative evaluation on this factor, the loan may be rejected even if the other four factors are very good.

Gustafson (1989) states that lenders judge these attributes using information obtained from previous experience with a borrower in conjunction with financial statements, references, and other documentation. An individual lender or committee decides whether a borrower possesses ample ability to repay for the use of loan funds. While Gustafson (1989) acknowledges developments in credit evaluation, he suggests that research focusing on the relationship between management decisions, attributes, and traits that distinguish one farmer's behavior from another could enhance assessment accuracy.

Once this is complete, the loan officer considers all the components of their assessment and analysis in order to recommend for their decision. The decision process for a loan is a multi-attributed decision in which decisive variables are taken into account and analyzed through the eyes of the individual loan officer (Stover, Teas, and Gardner 1985). The determinant variables for decision making are discussed in the following section.

2.5. Determinant Factors of Lending Decision Making

There are many determinants that may constraints the lending decision making process. The loan officers' character or lenders' human capital; the borrowers' side constraint and the bank specific determinants will be considered in this study as design in the conceptual framework.

2.5.1 The Loan Officers' Character or Lenders Human Capital Attributes

Human capital takes an important role in various organizational activities such as decision making, strategic planning, and product development, forecasting and marketing (Van Buren, 1999). If it is well-measured, it can be used to verify current performance levels, to check how it has improved or drawn back and to understand whether any activities or initiatives have affected the company's performance. Additionally, all of this information can be used to test and review strategies and can be employed as a basis for decision making (Marr, 2008). In a bank loan processing case, human capital can be defined as the knowledge, skills and experience possessed by loan officers to evaluate and process loan applications. These sets of competencies and experience can be operationalzed by the loan officers' education backgrounds, their experience working in banking industry, their experience related to lending activities, and most specifically,

their recent exposure to loan application processing. Those four human capital attributes reflect the loan officers' accumulated experience on the loan evaluation procedure and their competency to perform the job. Loan officers with a higher level of human capital would provide better performance to the bank by giving a more accurate analysis on the repayment intention and the capacity of potential borrowers to benefit the bank's interest (Dimov & Shepherd, 2005). Loan officers with a higher level of human capital will be more likely to use different approaches and effective ways to better define the risks of applicants in the decision process. They will have the knowledge, experience and skills needed to give more accurate assessment of the business risks; at the same time, they take into account all aspects of the customers; collateral, capacity, character, capital and conditions (Bruns et al.,2008). Even though there have been many attempts to make the loan decision-making process uniform across loan officers, the human capital factors that are carried by each loan officer have retained their influential place in the decision-making process, causing decisions over loan applications to vary depending on the loan officer's experience and knowledge (Andersson, 2001). Different knowledge, familiarity, and self-efficacy related to different levels of human capital influence the perception of risk, give different judgment, and affect the determination of a potentially successful loan project completion through the bank's loan application processing tools (Bruns et al., 2008).

2.5.2 Bank Specific Determinants

Bank specific Determinants are internal determinants of the banks. They are factors that management can control, which account for the inter-firm differences in profitability, given the external environment.

An internal determinant of bank is factors that are influenced by a bank's management decisions. Devinaga (2010) stated internal determinants as factors that can be classified into financial and non-financial statements variables. The financial statement variables are determining factors which are directly driven from items in a balance sheet and profit & loss accounts of the bank. While non-financial ones are those factors which do not directly displayed on the financial statements accounts. The balance sheet account includes asset, liabilities and equity balances and it indicates the financial position of the firms.

Asset management is concerned with the asset portfolio decisions which attempt to maximize returns at an adequate level of liquidity. But liability management is concerned with the decisions in relation to deposit mix, borrowings and capital which meet the dual objectives of minimizing funding costs and achieving a desired level of stability in available funds. Since these decisions are controllable by management, they are thus categorized as internal determinants (Devinaga 2010). The most frequently used bank internal determinants which are driven from financial statement include among others: capital, bank size, asset composition, deposit funds (Belayneh, 2011).

2.5.3 Borrowers Attributes or Characteristics

Because there are too many borrowers' attributes to be considered in the loan decision process, this study only focuses on: relationship with the bank, firm size, value of collateral, related business experience, and share of investment. These five factors were the ones mostly mentioned in the preliminary interviews with loan officers each of which discussed as follow:

Relationship with Bank: A bank can get more information from the client's relationship with both lending and other bank services such as deposit and daily transactions. Other forms of bank relationships can be used as reference for future credit relations and creditworthiness (Jimenez & Saurina, 2004).Therefore, it can be concluded that having a stronger relationship with the bank lowers the loan officers' screening level, resulting in the bank's increased willingness to take more risks. If borrower has relationship it is expected to have high probability to be granted loan.

Value of collateral: By having collateral mortgaged to the bank, they push the borrowers to exert more effort because they have their assets in hostage. It also reduces the moral hazard when banks lend money out (Jimenez & Saurina, 2004). Banks expect higher collateral from borrowers with higher risks. Having collateral as safety net may increase the banks willingness to take risks. Collateral can also be seen as an instrument to ensure good behavior from the borrowers' side (La Porta et al, 2003). Borrowers are obliged to perform their business in a certain level that complies with the bank's regulation or there is a risk that they will lose the asset once the loans default. Study found a significant positive relationship between collateral and loan default recovery (Dermine & de Carvalho, 2006).

Firm size: firm size is related to the business scale and the business scope. Both represent the organizational capacity that offers survival benefits (Bercovitz & Mitchell, 2007). Mitcchell

(1994) proved that larger firms and businesses tend to survive longer than smaller companies. In practice, banks give different treatment based on the size of the companies. Smaller companies face relatively more difficulties to acquire a loan compared to their larger counterparts (Harhoff & korting, 1998). Hence, there is higher likelihood for smaller companies to be rejected.

Related business experience: Knowledge is cumulative (Arthur, 1994). From their accumulated knowledge and experience, entrepreneurs gain a self-reinforcing capacity (Minniti & Bygrave, 2001). This industry-specific know-how contributes to both business survival and growth (Gimeno-Gascon, Woo, 1994). Therefore, with the skills obtained over time, these firms will have a greater chance of sustaining and achieving business success. Thus, when they apply for a loan from the bank, it will create a more favorable condition for acceptance by the bank.

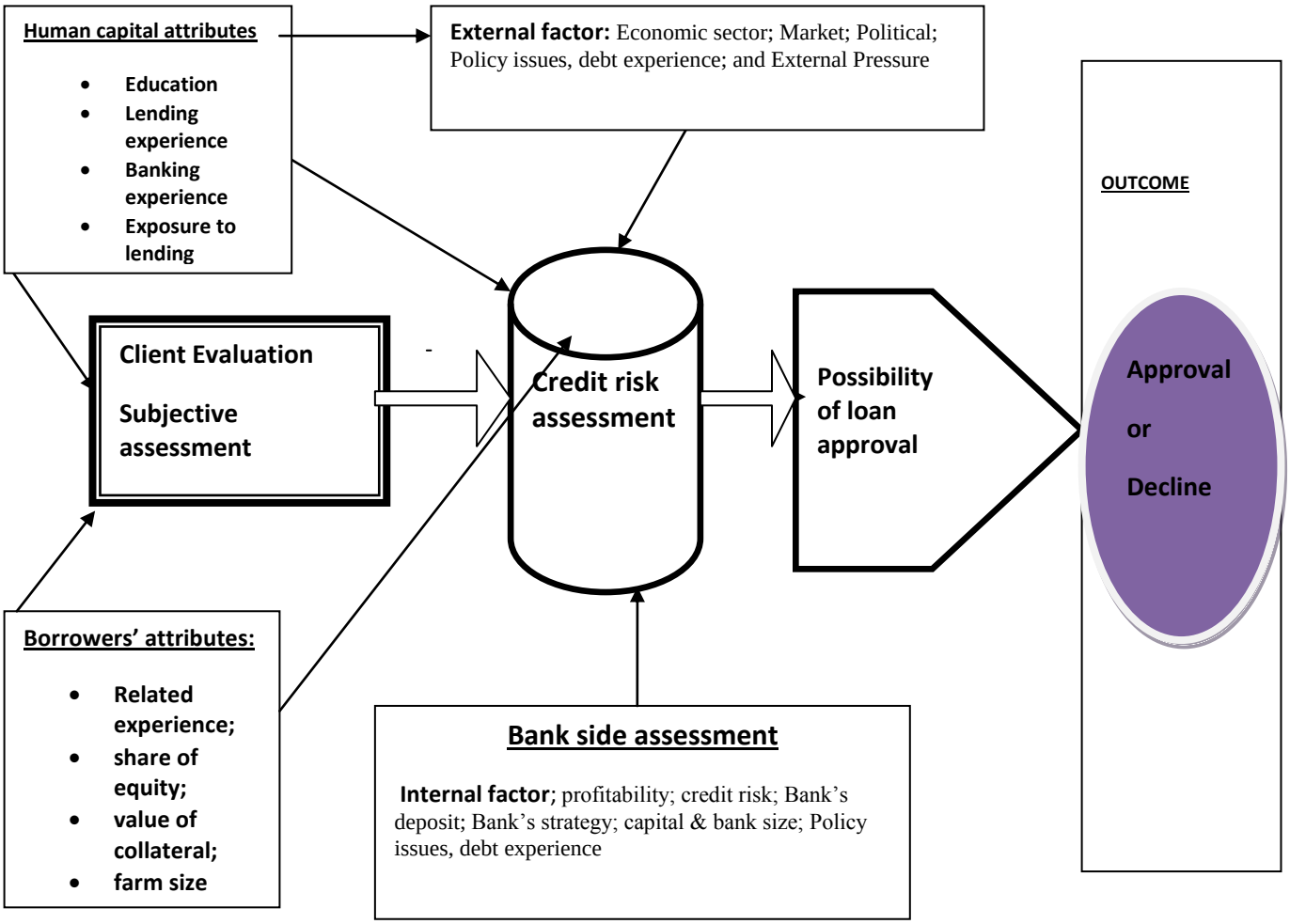
Share of investment- relates to how much capital is invested by the owner towards the operation of the firm. Insufficient financial resources lead to business failure (Chandler & Hanks, 1998). An owner's share of investment is one of the major considerations in loan assessment because it affects the ratio analyses upon which the loan decisions are based (Vaughn, 1997, Chandler & Hanks, 1998). If the owner invests more capital into the firm's operation, owner will share more business risk with the lender, leaving banks with relatively lower risk.

In literature, studies done so far in Ethiopia as mentioned earlier concentrated more on the determinants of loan repayment performance. In general empirical studies on lending problem in Ethiopia is limited, it appears scarce, if not none as most previous studies on Ethiopian banks have emphasized on other aspects of bank performance (i.e. loan repayment performance). It comes into view too difficult to review the factor influencing agricultural loan decision making particularly in the CBE. Hence, this research could contribute its share towards narrowing this gap. Conversely, various studies were conducted on the determinants of loan decision making in different countries and identified factors that most probably influences the lenders. Moreover, the major independent variables (factors) such as official attributes (banking experience, lending experience, education level), borrowers attributes(farm experience, bank relationship; equity; collaterals and farm size) and bank side constraints (internal factors) etc. were analyzed using different models which in turn would help to compare and contrast those finding with the results of intended study so as to recommend/suggest remedies that might mitigate the problems to be identified.

The diagram below shows, the conceptual framework of lending practice of the CBE. The flow is long and involved variable decision making steps.

2.6. Conceptual Framework

***Fig* 2.4: Illustration of credit evaluation process (flows) in diagram.**



Source: Credit evaluation process-(designed from CBE's procedure and practice)

As shown by the diagram, the credit analysts prepare a full appraisal report that will be presented to the Credit Committee who usually made loan decision. It demands both objective and subjective ideas. The analyst/ officers' role should not end with the preparation of the analysis. Rather, they should take responsibility for proposing (or rejecting) a specific loan. An assessment of the client's personal repayment willingness should be part of a clear loan recommendation. The member of the committee usually depend on the loan amount, lower loan amounts to lower organizational levels, and higher loan amounts to be decided by the top management.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter deals with methodology of the study, including the type of data collected, sampling method used and techniques adopted for data analysis as well as explanation of variables and working hypothesis.

3.1 Data Types and Sources

Both primary and secondary data sources were used to collect qualitative and quantitative data for the study. Both quantitative and qualitative data were used to triangulate the methodology for further strengthen the research findings. The primary data was sourced from targeted respondents. Secondary data was also sourced from Management Information System of the Bank (MIS); published documents including annual reports and audited financial reports.

3.2 Sampling Technique

The CBE organizational structure is divided into 12 processes (Department) among which 2 processes are in charge of assessing and managing credit transactions. Recently the bank adopted a system of central processing hence credit is processed at centers. The credit processing centre (CPC) where the credit officials (from two credit processes) are working in is at head office, in Addis Ababa. Thus, CPC staff as study population is targeted for the study so as to capture their expertise, beliefs and perception on the determinants factors of lending decision making process in the CBE. Purposively, three districts' credit staffs were selected among 11 districts to incorporate supplementary information.

3.3 Data Collection Technique

Both probability and non-probability methods of data collection was employed. Self administrative instruments were designed for the purpose. Pre-testing of the questionnaire was conducted to get feedback in advance from professionals and staff in other processes of the CBE. The revised questionnaires were distributed and relevant data were captured during the month of February, 2014. Similarly, data collection from those sampled respondents of 3 districts (Nekemte; Dessie and W/sodo) was also followed the survey method, which was used to get

complementary information from those who are involving in the lending process and decisions making at district level. On top of e-mail, a telephone interviewing was conducted with some of them. Moreover, a group discussion was carried out with the CPC sample staff member.

3.4 Methods of Data Analysis

In this section, both descriptive and econometric data analysis methods were discussed; theoretical econometric model, which used in this study, was also discussed

3.4.1 Descriptive Data Analysis

In descriptive method of analysis, descriptive statistics (mean, median, correlation coefficient, etc.) were applied to describe the data analysis. In effect, tools such as mean, percentage, standard deviation and frequency distribution were widely presented in tabular and/or matrix forms. With the support of the statistical packages (SPSS; STATA), an output of test statistics such as chi-square test; R-square test and P-values was produced and used as it may help and fitting to the data discussion.

3.4.2 Econometric Analysis

For the inferential statistics, it required to focus strictly on regression just to analyze which and how much the hypothesized regressors were related to the factors affecting agricultural loan decision in the CBE. To measure the relative importance of significant explanatory variables on decision making of agricultural loan in the CBE; tenable model have been specified.

3.4.2.1 Specification of Empirical Model

An analysis of a likelihood that a given characteristics threaten the decision making behavior of credit officials is non-linear. Estimation of this type of relationship requires the use of qualitative response models. In this regard, the non-linear probability models, via logit and probit models are the possible alternatives. Probit and logit models are similar and yield essentially identical results and are commonly used in studies involving qualitative choices (Amemiya, 1973). The choice between them therefore, revolves around practical concerns such as the availability and flexibility of computer programs, personal preference, experience and other facilities. The probit probability model is associated with the cumulative normal probability function whereas, the logit model assumes cumulative logistic probability distribution and for non-linear relationship between dependent and the explanatory variables. And Logit model is a powerful and easy to interpret statistical technique that allows researcher to explore the influence of multiple numeric

and/or categorical variables on a binary outcome of interest. Maddala (1983) reported that the normal and logistic CDFs are very close in the mid-range, but the logistic function has slightly fatter tails than the normal function. This binary outcome is most often thought of as whether an event occurs or not, but any outcome that represents the presence or absence of a characteristic, success or failure, in a group can be examined using binary logistic regression. Categorical outcome variables with more than two categories can be handled using special forms of logistic regression. Outcome variables with three or more categories which are not ordered can be examined using multinomial logistic regression, while ordered outcome variables can be examined using various forms of ordinal logistic regression. Based on this argument, binary logistic regression (logit) was preferred and specified with lending decision making as a function of series of characteristics. The dependent variable was the function of socio-economic loan specific, business and lender related factors. The function specified as:

Lending decision (Y) = f (Demographic factors; loan officials characteristics, institutional or bank character Borrower's characteristics, farm credit risk proxy... etc)

$$Y= f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, X_{18}, X_{19}\ldots) \quad \textbf{(1.1)}$$

$Zi=Y= f(Xs)$; Where:

Y = Decision to identify the factors by the ith credit staff (y=1 if the respondents able to perceive &identify the factors as determinant and y=0 if they perceived as non-determinant)

f = a cumulative density function (CDF)

Xs = represent the vectors of various characteristics that is expected to affect the decision whether to approve loan or not; α and β are an intercept term and parameter, respectively. It would be discussed in length under the estimation technique sub-section.

3.4.2.2 The Logit Model

The logit models become popular in 1974 after Daniel McFadden's derivation of the conditional Logit analysis used on his theory of discrete choice, which was the subject of his Nobel Prize in Economics in the year 2000. Logit model are used to model a relationship between a dependent variable Y and one or more independent variables X. The dependent variable, Y, is a discrete variable that represents a choice, or category, from a set of mutually exclusive choices or categories. The independent variables are presumed to affect the choice or category or the choice maker, and represent a priori beliefs about the causal or associative elements important in the choice or classification process /www.setscholars.org/

Binary logistic regression is estimated using Maximum Likelihood Estimation (MLE), unlike linear regression which uses the Ordinary Least Squares (OLS) approach. MLE is an iterative procedure, meaning that it starts with a guess as to the best weight for each predictor variable (that is, each coefficient in the model) and then adjusts these coefficients repeatedly until there is no additional improvement in the ability to predict the value of the outcome variable (either 0 or 1) for each case. While OLS regression can be visualized as the process of finding the line which best fits the data, logistic regression is more similar to cross tabulation given that the outcome is categorical. Logistic regression does not make many of the key assumptions of linear regression and general linear models that are based on ordinary least squares algorithms – particularly regarding linearity normality, homoscedasticity, and measurement level. */www.statisticssolutions.com/*. Thus, based on the specified function the variables are incorporated in the adopted logit model, which can be achieved by the following estimation techniques.

3.4.2.3. Estimation Techniques

Hosmer and Lemeshew (1989, cited in Assefa, 2002; Fikirte 2011) agree with the advantage of logistic distribution in the analysis of dichotomous outcome. Therefore, the logistic function is selected for this study. Following (Verbeek, 2008 cited in fikrte, 2011) the cumulative logistic probability is specified as:

$$\text{Prop}(Y=1) = \frac{1}{1+e^{-zi}} = \frac{1}{1+e^{-(\alpha+\beta Xi+\varepsilon)}}$$

Taking log form:

$$\text{Logit}(E(Y_i)) = \text{Log}\left(\frac{p_i}{1-p_i}\right) = \text{Intercept} + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_i X_i$$

Where: Y=1 if the respondents able to perceive &identify the factors as determinant of decision and 0 otherwise; P=is the probability of identifying determinant factors of decision making and β is a parameter ; X_i are various characteristics considered as independent variables(see annex-4)
This is the method by which the outcome of certain event can be calculated by having a measure of odds against and odds in favor in a logarithmic based relation. If p is a probability then **P/ (1 −p)** are the corresponding odds, and the logit of the probability is the logarithm of the odds.
Once the logit model has been estimated, then transformed the logit in to a probability, first it is required to exponetiate the logit, then find the odds and convert the odds in to probability *(i.e. Odds= P/1-P Or P= Odds/1+Odds);* where: p= a probability of event.

The unknown parameters (β's) are estimated by likelihood function. The statistics of primary interest in logistic regression are the β coefficients (β_1,β_2,β_3...), their standard errors, and their *p-values.* Like other statistics, the standard errors are used to calculate confidence intervals around the *beta* coefficients. The interpretation of the *beta* coefficients for different types of independent variables is as follows:

If X_j is a **dichotomous variable** with values of 1 or 0, then the β coefficient represents the log odds that an individual will have the event for a person with X_j=1 versus a person with X_j=0. In a multivariate model, this β coefficient is the independent effect of variable X_j on Y_i after adjusting for all other covariates in the model. If X_j is a **continuous variable**, then the e^{β} represents the odds that an individual will have the event for a person with X_j=m+1 versus an individual with X_j=m. In other words for every one unit increase in X_j, the odds of having the event Y_i changes by $\mathbf{e^{\beta}}$**,** adjusting for all other covariates in a multivariate model.

3.5 Explanation of Variables and Working Hypothesis

$Z_i=LR_i$ or Y= f (Xs); **y** is the dependent variable or the value of the function, and x_s is the independent variable or the argument of the function.

3.5.1 Dependent Variable

Decision (Y), which is the dependent variable for the logit analysis, has a dichotomous value representing the status of identifying determinant factors of loan decision making. The perceptions of respondents were measured on the scale that ranges from very likely to very unlikely to identify whether the factor has influence on approval or not. Thus loan decision (dependent variable) has been taken based on the weight of response result (very likely, likely=1, others=0) to decide whether the factor is determinant or non-determinant on loan decision making. If a given response outweighs on **likely** to constrain than **unlikely** it represented by value of **1** in the logit model under the **decision** (1/0). So the logit model estimates a value of "1" for factor determines on loan decision making and "0" otherwise.

3.5.2 Independent Variables

After identifying the dependent variable and clearly delineating of analytical procedures, identifying the potential explanatory variables that appeared to influence the decision on the loan requests was followed. Characteristics or attributes that are influencing or correlate to influence

with lending decision making was identified as independent variables (see annex-4). The explanation of those explanatory or independent variables (*the Xs*), which specified in the logit model along with the working hypothesis for each explanatory variable was explained based on research findings, literature review, authors and expert's assessment as indicated in section that follows:

a) Lender's Human Capital/Loan Officer's Character

In bank loan context human capital can be defined as the knowledge, skills and experience possessed by loan officers to evaluate and process loan applications. These sets of competencies and experience can be operationalised by the loan officers' education backgrounds; their experience working in banking industry, their experience related to lending activities, and most specifically, their recent exposure to loan application processing. To operationalise the loan officers' human capital, this study has adapted four human capital factors that have been used in the previous study (Bruns et. al 2008)

i. Education

Loan officers with higher level of education are considered to have broader knowledge, information processing and problem-solving skills to make more effective and faster decisions as well as a larger learning capacity (Forbes, 2005).Thus, positive sign is expected for the coefficient

ii. Training

Human capital could also serve as a long-term resource that leads to a better financial performance of the bank or firm. It has a positive correlation with company financial performance (Bruns et.al 2008). Therefore, it is also important as a physical asset. It creates a core competitive advantage because it is difficult to be imitated by competitors (Browne, 2000). The appropriate investment (as training) and usage of human capital will positively affect performance, productivity and profitability (Arthur, 1994). Even if it is not considered as formal education, on-the-job training in a bank gives a better understanding of the products, processes and services available in the bank. Formal training in class, on-the-job training, and experience provide bankers with tacit knowledge on how to perform the assigned job more effectively (Berman, Down, & Hill, 2002 cited in Ottavial, 2011). Therefore, training may influence on the likelihood of loan decision making or approval, positive sign expected for the coefficient

iii. Banking Experience

Banking experience and on-the–job training increase specific human capital or skill acquired (Bruns et.al 2008). Thus, positive sign is expected for the coefficient:

iv .Lending Experience

Loan officers with greater lending experience will have a higher self-efficacy, different viewpoints, and reach different solutions regarding loan applications compared to those with less experience (Ottavia, 2011). Therefore, positive sign is expected for the coefficient

***v. Exposure to Agriculture Lending*:** lack of exposure decrease the capacity of officers or negatively relate to the likelihood of loan approval

b) Borrower's Attribute/Character

There are too many attributes to be considered in the loan decision process. This study only focuses on five borrower's attributes: relationship with the bank, firm size, value of collateral, related business experience, and share of investment. The factors are assumed to represent the creditworthiness (five C's) for this study. The hypothesis of each factors presented as follows:

i .Relationship with the Bank

Researchers concluded that having a stronger relationship with the bank lowers the loan officers' screening level, resulting in the bank's increased willingness to take more risks (Jimenez & Saurina, 2004, La Porta, Lopez-Desilanes, & Zamarripa, 2003). A conjoint analysis was applied to check the relationships between the borrowers' attributes and the likelihood of loan approval. Borrower's relationship with bank, which is represented by the number of years, was proved that applicants with stronger relationship would have a higher likelihood of receiving loan approval. Therefore, expected sign for the coefficient of this variable is positive:

ii. Value of Collateral

Banks expect higher collateral from borrowers with higher risks. Having collateral as a safety net may increase the banks' willingness to take risks. According to Jimenez and saurian (2004), collateral reduces a bank's risk exposure and provides it with incentive to be less careful and to take more risks. Other study concluded that the higher the value of collateral pledged to cover the loan, the more pressure for borrowers to perform according to the bank's requirements. Consequently, it will reduce the possible moral hazard and risk for the bank. Based on the above result, therefore, the expected sign for the coefficient of this variable is positive

iii. Firm size/Farm size

Firm size is related to the business scale and the business scope. Both represent the organizational capital that offers survival benefits (Bercovitz & Mitchell, 2007). A study by Mitchell (1994) proved that larger firms and business tend to survive longer than smaller companies. Size, which is related to sales levels, directly affects the profitability and the sustainability of business (Mitchell et.al 2007)

In practice, banks give different treatment based on the size of the companies. Smaller companies face relatively more difficulties to acquire a loan compared to their larger counterparts for reasons such as a less-comprehensive track record, limited performance portfolio, or low asset possession (Harhoff &korting, 1998). Hence, there is higher likelihood for smaller companies to be rejected when they are applying for a loan. Larger firms have higher sustainability and are more likely to survive in the business, resulting in a lower risk for the bank. They also have more bargaining power. This imply that the higher the firm the larger the likelihood of loan approval. Therefore, the expected sign for the coefficient is positive

Farm size-This is measured as the total land size cultivated by the farm household. It is a continuous variable. It is assumed large farms have higher probabilities of being credit constrained that may arise from the need to purchase more variable inputs, which in turn leads to greater demand for credit. The larger the cultivated land size the more the demand for variable inputs that might be obtained through credit. As the farmer who cultivates larger size of land can utilize more variable inputs and therefore will be more credit constrained; the expected sign for the coefficient of this variable is positive. On other hand, Nmadu and Peter (2010) argued that large companies are less likely to encounter credit constraints in the market for external finance because of reputation effects. Therefore, company size may be an important determinant of bankruptcy. Finally, the economic cycle and industry sector may determine a company's access to finance. Therefore, the expected sign for this coefficient is indeterminate *a priori*

iv .Related Business Experience

A more experienced firm will be more able to revive from a default status. Therefore, with the skills obtained over time, these firms will have a greater chance of sustaining and achieving business success. Thus, when they apply for a loan from the bank, it will create a more favorable condition for acceptance by bank. In similar way Ottavia et.al (2011) also concluded that related

business experience has a positive relationship with the likelihood of loan approval. The expected sign for the coefficient of this variable is positive

v. Share of Investment

An owner's share of investment is one of the major considerations in loan assessment because it affects the ratio analyses upon which the loan decisions are based (Vaughn, 1997). If the owner invests more capital into the firm's operation, she/he will share more business risk with lender, leaving banks with relatively lower risk. Ottavia et.al (2011) also argued that the larger the investment share, the higher is the likelihood of loans to be approved. The expected sign for the coefficient of this variable is positive

c). Institutional or Bank Character

The flow of agricultural credit depends on the availability of funds with financial institutions, rate of interest, and the government policies. So various institutional factor may influence on lending decision negatively or positively. The expected sign for the coefficients of those variables is impossible to determine a priori.

i. Loan Ratio

This variable was defined as the ratio of outstanding agricultural loans to total bank loans for commercial bank. Banks have different investment options, including agricultural lending. Using total loans as the denominator shows the relative importance of agricultural loans in the bank's investment program by recognizing the non-agriculture investment options available to a bank (e.g. trade and services) that compete with agricultural loans for investable funds. This ratio increases/decreases 'as more funds are moved in/out of agriculture relative to other investment opportunities. So the coefficient is indeterminate *a priori*

ii. Deposit Structure

A ratio of a bank's time and savings deposits to total deposits (DEPOSIT) was used to represent the proportion of total deposits that are sensitive to interest rate changes. It can be argued that there is a positive relationship between (DEPOSIT) and loans in general because time and savings deposits enhance the stability of loanable funds. Therefore, banks need less liquidity and can invest more money in loans. It can also be argued that there is a negative relationship. Deposits are more interest rate sensitive and banks may choose to increase investments in interest rate sensitive assets and to decrease investments in loans, Banks may choose to invest in

more investment securities because their interest rate movement more closely matches the interest rate movements on deposits, thus, reducing interest rate risk. Thus, the sign on the estimated coefficient is indeterminate a priori.

iii. Equity (Capital Base)

An important function of bank capital is to reduce risk. A well-capitalized institution is in a better position to take on risk by investing more in loans and less in safe assets like government securities. Its large equity base would cushion the institution against large loan losses. However, the decision makers of less capitalized institutions may choose a similar investment strategy to increase expected profits, although at a greater risk. It is consistent with this risk/return preference for them to invest in more risky assets such as loans because of their higher expected returns. Thus, the estimated coefficient of the equity variable, which was defined as the bank's capacity to fit for seasonal loan demand variations, is indeterminate a priori.

On top of this one can observe the external determinants of all the combined variables operating on commercial bank's loan decision making. However, this study was not designed to capture the interrelationships and influences of macro variables such as population; GDP and Market competition as the study deals with internal loan decision making determinants of the CBE only.

d). Risk Proxy Variables (Perceived Risk)

Business risk is uncertainty about the future operating. Business risk is determined by uncertainty about demand, output price, and cost and also price sensitivity of the customer (Sadgrove, 2005). Many factors including vagaries of nature, diseases, insect infestations, general economic and market conditions contribute to the price, yield or net return variability of agricultural producers. Salimonu and Falusi (2009) classified market failure, price fluctuation, drought, pest and diseases attack and unpredictable rainfall are the most important sources of risk facing by food crop farmers in Niger State, Nigeria. Results by Tru and Cheong (2009) referred by Nmadu and Peter (2010) show that, in general, price and production risks were perceived as the most important risk in Vietnamese catfish farming. Agricultural enterprises still constitute the most risky business. The borrowers who have enough experience and knowledge about the risk and risk coping strategy are engaged in the risky business type. Based on the above discussion it can be said that a coefficients for a risk proxy variables is indeterminate *a priori*

CHAPTER FOUR
RESULTS AND DISCUSSION

This Chapter presents the results from the descriptive and econometric analyses. The descriptive analysis made used of tools as percentage, mean, standard deviation and frequency distribution. In addition, the Chi-square statistics were employed to see the significance of explanatory variables. Econometric analysis was carried out to identify the most important factors that affect the loan decision making process and to measure the relative importance of significant explanatory variables on decision making of farm loan in the CBE

4.1 Descriptive Results

4.1.1 Demographic and Socio-economic Characteristics of the Respondents

As shown in Table 4.1 below, more than half of the respondents are below the age of 36 year indicating that most of the credit officials are young and in same age groups (both male and female). According to the information in Table 4.1, 29 males and 13 females in total 42 respondents are under the 31-35 age categories. The proportion of the employees who are older than 4o years of age is only 13 percent, while the rest of them are below the age of 40 years. Moreover, the analyzed information in the same Table show that, there are more males than females in the target population (i.e. 75 percent are males and only 25 percent are females).

When we observe the service years, most employees (both male and female) in the target group have served in CBE's credit process for more than 5 years. Specifically 34 males and 14 females responded as they stayed for more than 5 years in credit. Next, the service period 2-3 years takes the next higher proportion for males' respondents and 3-4 years for females regarding their service in credit. Overall proportional rate shows, 57 percent of the respondents served more than 5 years, while 21percent for 2-3 years and 16 percent were respond as they served for 3-4 years. This indicates that most of the respondents have exposure for bank lending, see Table below

Table 4.1: Descriptive results of socio-economic analysis

No.	Category	Number (N)	Percentage (%)
1	**Age**		
	Age2=(26-30)	*13*	*13.7*
	Age3=(31-35)	*42*	*44.2*
	Age4=(36-40)	*27*	*28.4*
	Age5=41 and above	*12*	*12.6*
	Total	*95*	*100.0*
2	**Gender**		
	female	*24*	*25.3*
	male	*71*	*74.7*
	Total	*95*	*100.0*
3	**Banking Experience**		
	1-5 year	*13*	*13.7*
	6-10 year	*18*	*18.9*
	11-15 year	*45*	*47.4*
	16 year and above	*19*	*20.0*
	Total	*95*	*100.0*
4	**Service in Credit**		
	<1year	*6*	*6.3*
	2-3years	*20*	*21.1*
	3-4years	*15*	*15.8*
	5 and above	*54*	*56.8*
	Total	*95*	*100.0*

Source: Survey result, 2014

Regarding educational qualification of the respondents all of them have a minimum of first degree in business fields (Table 4.3), although there are few employees who extended their qualification sideways (to other degree in business field). The data shows that male are more qualified with second degree (21 male respondents) while there are only 2 females who advanced their education to second degree.

Table 4.2: A Cross tabulation of sex of respondents with level of education

Level of education	Sex of respondents		Total
	Female	Male	
BA	22	50	72
MA/MSc	2	21	23
Total	24	71	95

Source: Survey result, 2014

When one observes the distribution of respondents across the stream of different business area, most respondents have been found having qualification of Accounting and Finance followed by Management. Agricultural Economics appears as the least owning one first degree and one MSc degree holder in the target population. The variability may arise from lack of access to those fields of study in different Ethiopian Universities including private educational institutions which were more focused to delivering Accounting courses and related field.

Table 4.3: Level of education of respondents and their field of study

Level of education	Field of study					Total
	Agriculture economics	Economics	Accounting	Management	Others	
BA	1	10	42	12	7	72
MA/MSc	1	3	5	10	4	23
Total	2	13	47	22	11	95

Source: Survey result, 2014

There are different job titles in the credit area of the CBE. Every credit staff is participating in credit decision making process based on their position and role in the loan decision making process. As their position go up on the organization's ladder it is expected that the number of employee will decrease. This is what observed in the following Table. There are 45 percent customer relationships Managers among the survey respondents, followed by 23 percent of both credit appraisal and credit analysts while other portion goes to the share of the other credit staff involvement.

Table 4.4: Proportion of each position from the total respondents

Levels of Position	Number	Percent
Credit appraisal Managers	3	3.2
Customers Relationship Mgrs	43	45.3
Credit Appraisal Expert and analyst	22	23
Others	27	28.4
Total	95	100.0

Source: Survey result, 2014

Most quantitative data could be sourced from secondary data; while qualitative data is to be generated from logical views, ideas and perceptions of the respondents while both information is believed to be used in decision making. Information is a tool in any decision making process. To

that end, respondents were asked which type of information they prefer more when they made a loan decision making. So the respondents' preference is presented in the Table below

Table 4.5: Respondents' preference on the types of information they used for decision

Types of information	Number	Percent
Quantitative	3	3.2
Qualitative	12	12.6
both qualitative & quantitative	75	78.9
Total	95	100.0

Source: Survey result, 2014

The survey results indicate that 79 percent of the respondents did agree that both quantitative and qualitative information is helpful for lending decision making. But 13 percent of the respondents' preferred qualitative information for loan decision making.

Adequate information is necessary for making efficient decision. In this regard, respondents were asked as they "could receive adequate information and regulation for loan processing timely". The responses are presented accordingly in Table 4.6 below.

Table 4.6: Responses on availability of adequate information for decision making timely

Type of response	Number	Percent
No	19	20.0
Yes	48	50.5
Rarely	28	29.5
Total	95	100.0

Source: Survey result, 2014

Although some (51 percent) of the respondents agreed that they can receive supportive information for lending decision, about 30 percent were agree as they rarely accessible to supportive information for decision making. And yet about 20 percent were disagreed that they could not get access to information for decision making. This may be a signal to show a risk of loan default as the decision makers are in lack of adequate information for loan decision making, in which case smooth flow of information and communication among the staff is desirable.

4.1.2 Human Capital Characteristics of the Respondents

In bank loan context human capital can be defined as the knowledge, skills and experience possessed by loan officers to evaluate and process loan applications. These sets of competencies

and experience can be prepared by the loan officers' education backgrounds; their work experience in banking industry, experience related to lending activities, and most specifically, their recent exposure to loan application processing (Bruns, 2008). To analyze the loan officers' human capital characteristics, this study has used education; training; experience and exposure as a proxy to the capability of human or decision makers that have influence on the decision making process (Bruns, 2008).

Thus, respondents were asked as "different educational background and self-efficacy influences the perception of risk, and subjective judgment on loan applications". The respondents' perception is reported in Table 4.7 below showing that most of them (85 percent) agreed as educational background influences loan decision making.

Table 4.7: Perceptions of respondents on the influence of educational background for loan decision

Response	Number	Percent
Unlikely	7	7.4
Undecided	6	6.3
Likely	52	54.7
very likely	29	30.5
Total	95	100.0

Source: Survey result, 2014

To cross check that the influence level of educational on lending decision making, respondents were also asked as " only officials with a higher level of education would provide accurate analysis to give better decision on loan processing and approving"..

Table 4.8: Perceptions on whether level of education alone can influence loan decision making

Response	Number	Percent
very unlikely	14	14.7
Unlikely	29	30.5
Undecided	26	27.4
Likely	26	27'4
Total	95	100.0

Source: Survey result, 2014

About 33 percent of the respondents perceived as level of education alone is unlikely to influence loan decision making. But for same question, about 27.4 percent of the respondents believed that level of education alone can influence the decision making process.

Although it is not considered as formal training, provision of on-the-job training to the employees gives a better understanding of the products, processes and services available in banks. Formal training in school/college, on-the-job training, and work experience provide bankers with tacit knowledge on how to better perform the assigned job more effectively (Berman, Down, & Hill, 2002). To know the influences of skill training on lending decision making respondents were asked as" training influences the credit officials' loan processing and decision making capability". The responses result indicated that more than 87 percent of the respondents perceive that training has an influence on the decision making of lenders. The output is illustrated in the Table 4.9 below.

Table 4.9: Perceptions of respondents on influence trainings have on loan decision making

Response	Number	Percent
Undecided	10	10.5
Likely	40	42.1
very likely	43	45.3
Total	95	100.0

Source: Survey result, 2014

Banking experience and on-the–job training (skill acquired) increase specific human capital (Bruns et.al 2008). The banking experience possessed by the credit officials for evaluating and processing loan applications may lead for the variation of decision making among the decision makers. Regarding the influence of banking experience on loan decision making, about 60 percent of the respondents agreed that it is likely to have an influence (see Table 4.10).

Table 4.10: Perceptions of respondents on influence bank experience has on loan decision making

Response		Number	Percent
Valid	very unlikely	4	4.2
	Unlikely	8	8.4
	Undecided	24	25.3
	Likely	45	47.4
	very likely	14	14.7
	Total	95	100.0

Source: Survey result, 2014

Loan officers with greater lending experience will have a higher level of skill acquired on duty; they could have different viewpoints to reach on different solutions regarding analyzing the loan applications as compared to those with less experience (Gavetti & Levinthal, 2000). Therefore,

lending experience may cause variance among their views and decision making. Respondents' argument on the need of exposure to lending practice in which case, most of respondents (81 percept) of them were agreed that it likely to influence loan decision making (see Table below).

Table 4.11: Perception on need to have an exposure of lending practice for loan decision making

Response	Number	Percent
Unlikely	6	6.7
Undecided	11	12.4
Likely	52	58.4
very likely	20	22.5
Total	89	100.0

Source: Survey result, 2014

For this case, lack of practical exposure for lending activities may influence and decreases the capacity in which case the likelihood of loan approval is expected to be negative or declining as the responses indicated (see in Table above).

4.1.3. Respondents View on Bank Side Constraints of Loan Decision Making

The flow of agricultural credit depends on the availability of funds from financial institutions, rate of interest, and the government policies directions. So, various institutional factors may influence on lending decision either negatively or positively. A decision makers within strong capital bases banks (both financial & human) would be in a better position in market to take on risks by investing more in loans and less in safe assets like government securities. However, the decision makers of banks with less capital may not choose a similar investment strategy to increase expected profits. Thus banks have different investment options, including agricultural lending. In short, bank is consistent with the risk or return preference to invest in a risky investment such as loans because of their higher expected profitability. Respondents were asked whether expected bank profitability can limit the lending decision possibility to farm borrowers in the case of CBE for which their responses are summarized in Table 4.12 below.

Table 4.12: Perception on the influences of expected bank's profitability for loan decision

Expected bank's profitability	number	Percent
very unlikely	8	8.4
Unlikely	20	21.1
Undecided	26	27.4
Likely	32	33.7
very likely	9	9.5
Total	95	100.0

Source: Survey result, 2014

The result of the response indicates that only few (30 percent) of the respondents believed that expected CBE's profitability is unlikely to limit the decision possibility of loan to farm borrowers. While more than 43 percent of the respondents agreed to accept the factor as a determinant for decision making. Few respondents take the middle position indicating either they could not decide or needed further information to decide.

In banking business, lending is a risky decision as future is uncertain. Thus respondents have been provided with a question of "expected credit risk influences loan processing & decision making". Most (90 percent) respondents agreed as they perceived that credit risk is a determinant factor that affects lending decision. Hence, the result indicates that about 90 percent perceived the factor can influence on lending decision see Table below.

Table 4.13: Respondents' perception about the influence of expected credit risk to lending decision

Expected credit risk	Numbers	Percent
Unlikely	3	3.2
Undecided	6	6.3
Likely	54	56.8
very likely	31	32.6
Total	95	100.0

Source: Survey result, 2014

It can be argued that, there is a positive relationship between deposit and loans in general because time and savings deposits enhance the stability of loanable funds. Therefore, banks need less liquidity and can invest more money in loans. It can also be argued that, there is a negative relationship between deposit and loans as deposits are more interest rate sensitive; and banks may choose to increase investments or save in interest rate sensitive assets and to decrease

investments in loans. Decision makers for lending in CBE, however, may perceive as lack of sufficient fund in the bank would limit for the lending decision making. The response result on this regard is presented in Table 4.14 below. Most (46 percent) of the respondents disagreed with the perception of others about the shortage of fund as a limiting. They perceived as there is no such shortage of fund in the CBE.

Table 4.14: Respondents' perception on non-availability of loanable fund in CBE

Type of response	Number of Respondents	Percent
very unlikely	20	21.1
Unlikely	24	25.3
Undecided	27	28.4
Likely	18	18.9
very likely	6	6.3
Total	95	100.0

Source: Survey result, 2014

Decision makers should have clear and precise understanding on the policy; rules and regulation of the organization. In this regard, survey respondents were asked as whether there is workable lending procedure in the CBE to handle farm lending decision making. The survey result (see Table 4.15) indicates that it is unlikely to perceive as there is no convenient procedure of farm lending in the CBE. Almost (56 percent) of the sample respondents denied for the absence of convenient lending procedure in the CBE. Their perception is summarized in Table 4.15 below.

Table 4.15: Respondents' perception on non-convenience of CBE's farm lending procedure

Perceptions	Numbers	Percent
very unlikely	24	25.3
unlikely	29	30.5
undecided	20	21.1
likely	21	22.1
Total	95	100.0

Source: Survey result, 2014

Almost all (83 percent) of the respondents agreed that expected default by farmers would most likely influence the lending decision of the lender. This is demonstrated by the response of informants based on the survey question "probability of farmer default can influence lending decision" in which case it come to be very likely to influence the lending decision (Table 4.16).

Table 4:16 Respondents' perception of loan default by farmer influence the decision making

Perceptions	Number	Percent
Unlikely	5	5.3
Undecided	11	11.6
Likely	51	53.7
very likely	28	29.5
Total	95	100.0

Source: Survey result, 2014

4.1.4. Respondents' View on Borrowers' Side Determinants of Lending Decision Making

There are too many attributes to be considered in the loan decision process. This study only focuses on five borrowers' attributes namely: relationship with the bank, firm size, value of collateral, related business experience, and share of investment. Informants were asked to give their perceptions regarding the influence of same factors on lending decision making. Adequate collateral is reported to be a big determinant factor affecting the borrowers. The sample responses of which are shown in Table 4.17.

Table 4.17: Respondents perception on collateral adequacy as limiting factor for farm loan

Perceptions	Numbers of Respondents	Percent
very unlikely	2	2.1
Unlikely	22	23.2
Undecided	13	13.7
Likely	47	49.5
very likely	10	10.5
Total	95	100.0

Source: Survey result, 2014

The survey results in Table 4.17 above shows that about 62 percent of the informants perceived that lack of collaterals influence the loan decision making of the bank. This is agreed with the practice that banks expect higher collateral from borrowers with higher risks. Having collateral as a safety net may increase the banks' willingness to take risks. Respondents were also asked whether borrowers' farm experience or farming practice can influence or affect the provision of loan services or to get loan from the CBE. About 72 percent of the respondents perceive that the borrower's farm experience can determine lending decision (for detail Table 4.18 below).

Table 4.18: Perceptions of respondents on farm experience as a determinant factor

Perceptions	Number of Respondents	Percent
very unlikely	3	3.2
unlikely	9	9.5
undecided	14	14.7
likely	57	60.0
very likely	11	11.6
Total	95	100.0

Source: Survey result, 2014

Share of investment or equity contributions-is an owner's share of investment which to be among the major considerations in loan assessment because it affects the ratio analysis upon which the loan decisions are based. So survey respondents were asked whether borrowers' equity contribution is considered as criteria to decide farm loan. More than half (63 percent) of the respondents agreed that equity share is considered in loan decision making of the CBE.

Table 4.19: Respondents' perception on borrowers' equity contribution

Perceptions	Numbers of Respondents	Percent
very unlikely	4	4.5
Unlikely	15	16.9
Undecided	13	14.6
Likely	38	42.7
very likely	18	20.2
Total	89	100.0

Source: Survey result, 2014

Practice in banks along with many researchers including (Ottavia et.al, 2011) validated that if the owner invests more capital into the firm's operation, investors will share more business risk with the lender, leaving banks with relatively lower risk. In other words, the larger the investment share, the higher is the likelihood of loans to be approved. Informants were questioned as if equity contribution is considered as constraint factors; some (63 percent) of them responded that equity contribution of the borrowers is most likely influence lending decisions making.

Borrower's relationship with bank, which is represented by the number of years, was believed that stronger relationship between applicants and the bank would have a higher likelihood of getting loan approval. Existing customer would have long and strong relationship with banks than a newcomer customer. A view that perceives bank relationship can constrain agricultural loan decision making was questioned. Most respondents (61 percent) agreed that being

newcomer is unlikely to constrain lending decision. This is not to mean relationship is only being newcomers. So the relationship may be viewed in other forms. Moreover, studies concluded that having a stronger relationship with the bank lowers the loan officers' screening level, resulting in the bank's increased willingness to take more risks (Jimenez & Saurina, 2004).

Table 4.20: Respondents perceptions on Bank service Relationship of borrowers as determinant

Perceptions	Numbers	Percent
very unlikely	10	10.5
Unlikely	31	32.6
Undecided	17	17.9
Likely	29	30.5
very likely	8	8.4
Total	95	100.0

Source: Survey result, 2014

In business, size is related to the scale and the scope of the business. Both represent the organizational capital that believed to offer survival benefits against failure /risky. Hence, there is a belief that higher likelihood for smaller companies to be rejected when they are applying for a loan. Larger firms have higher sustainability and are more likely to survive in the business, resulting in a lower risk for the bank. They have also more bargaining power. This imply that the higher the firm the larger the likelihood of loan approval. Therefore, the CBE considers for farm size and land holdings (i.e. subsistence, commercial and/or farm investment) for granting agricultural loans. Informants also responded that CBE does not consider land holding below 30 hectares. The detail of response is presented (Table 4.21).

Table 4.21: Respondents perceptions on borrowers land holding (farm size)

Perceptions	Numbers	Percent
very unlikely	2	2.1
Unlikely	4	4.2
Undecided	13	13.7
Likely	49	51.6
very likely	27	28.4
Total	95	100.0

Source: Survey result, 2014

4.2 Econometric Analysis

This section discusses and presents the characteristics or attributes that are influencing or correlate to influence with lending decision making using probabilistic model (logit model). The likelihood that a given characteristics threaten the decision making behavior of credit officials was analyzed. In order to test the hypothesis, binary logistic regression is specified with lending decision making as a function of series of characteristics. The unknown parameters (β's) are estimated by likelihood function. In this case the dependent variable is the function of socio-economic or demographic factors; loan officers' attributes; business or borrowers' specific and lender related factors. Results or outputs of econometric analysis and discussion based on the logit model are presented in the section that follows.

4.2.1 Analyzing Factors Influencing the Loan Decision Making

As discussed in chapter 3, the logit econometric model was selected for this study. The software (STATA) was run to identify and determine the independent (explanatory) variables that are good predictors of the determinants of loan decision making of the CBE. The logit regression model was done using the maximum likelihood estimation method. The details result of the analysis is presented in annex 2 &3.

As summarized by Fikrte (2011) referring (Windmeijer, 1995, Cameron and Windmeijer, 1997 also in Pindyck & Rubinfeld, 1998), the measure of goodness-of-fit used in the binary choice model is the pseudo R2. A pseudo R2 measure is a measure that has the same kind of interpretation as the OLS-R2 in the linear model; and so at least lies in the [0, 1] interval. Usually not very high value in range (0.1 - 0.5) is normal in binary models. The relevant behavior of several pseudo-R2 measures is analyzed in a series of mis-specified binary choice models, the mis-specification being omitted variables or an included irrelevant variable (Fikrte 2011). As shown in annex-1, the pseudo R2 is 0.50 in this logit model. The results showed five of the 19 predicted influencing factors were statistically significant (Chi- Square=59.05, P-Value=0.0001, 19 degrees of freedom). The coefficients were statistically different from zero, variously at the 1%, 5% and 10% levels of significance. Overall, the logistic model successfully predicted the factors that contributed 50% to the loans decision making by CBE's credit officials. The unexplained part will expected to go for un-captured information.

The likelihood ratio test statistics exceeds the Chi-square critical value with 19 degree of freedom. The result is significant at less than 0.01 probability indicating that the hypothesis that all the coefficient (β's) except the intercept are equal to zero is not tenable. Thus, the null hypothesis is rejected. Likewise the log likelihood value (-29.48) was highly significant at 1% level of significance.

4.2.2 Discussion on the Significant Explanatory Variables

The estimated logit model is shown in annex 2&3. A total of 19 explanatory variables were considered in the econometric model. Out of the 19 variables hypothesized to influence the lending decision of farm loan, only 5 variables were found to significantly influence the probability of loan decision making at different significance level. Gender, Farm experience (FarmExp); amount of loan request (Amount); uncertainty or yield risk (yldrisk), and legal framework (enforcement) are among variables included in the model that are found to be statistically significant (annex 2&3).

The maximum likelihood estimates of the logistic regression model showed that the significant positive sign on the *Gender* variable indicated that the probability of identifying determinant problem was higher for males than for females as hypothesized. Male decision makers were involved in the loan decision making and they are many in a number than the females decision maker. Their probability to report the determinant factors were more expected to be positive and significant in that case. *Farm experience* of the borrowers, the amount or magnitude of credit that the applicants applied for; the uncertainty of production; yield and market price or yield risk perceived by the lender, and the legal framework that the bank used to enforce the repayment of the loan if the repayment fail by farmers are important factors getting consideration for influencing the lending decision making in the bank under this specific study. More specifically, amount (with positive) and yield risk (with negative) were statistically significant at less than or equal to 1 percent probability level. While the coefficients of farm experience and enforcement, both have positive coefficients, at 5% level of significance. On the other hand, the coefficients of those non-significant independent variables were appearing to be less powerful in explaining the lending decision making process.

Regarding the signs of the coefficients of non-significant variables, which show the direction of the relationships: Age(age2 age4 age5); farm size (Farmsize); service in CBE (serviceincbe);

position or title (post1); expected credit risk by lender (creditrisk); preference of qualitative or quantitative information (preference) convenient lending procedure (procedure) all have shown negative at different significance while; education background (education); bank relationship (BankRel*) equity contribution (Equity); availability of loanable fund (fund); availability of collateral adequacy (coladequacy) have positive coefficients. Most of the variables come up with the hypothesized signs.

Table 4.22: The probability of maximum likelihood estimates for loan decision (Marginal effects)

	Variables (X)	***β***	***dy/dx***	***Std.Err***	***z***	***p>(z)***
1	Gender	1.479***	0.259	0.887	1.67	0.095
2	Farm Experience (FarmExp)	1.229**	0.174	0.523	2.35	0.019
3	Amount of loan request (Birr amount)	1.342*	0.190	0.481	2.79	0.005
4	Expected yield risk (Yldrisk)	-2.120*	-0.299	0.786	-2.70	0.007
5	Legal framework (enforcement)	0.905 **	0.128	0.387	2.33	0.020
	Cons	-4.233	0	4.440	-0.95	0.340
	*** ** * (10%; 5%; 1% of significance respectively)					

Source: Survey result, 2014

As the likelihood ratio chi-square of 59.05 with a p-value of 0.0001 tells us that the model as a whole fits significantly (annex-2). The coefficients of those significant variables, their standard errors, the z-statistic and associated p-values are indicated above (Table 4.22). Farm experience; amount of loan request; expected yield risk and enforcement are statistically significant as indicated (annex-2). In what follows, the results of the model estimates are interpreted in relation to each of the statistically significant variables: β is the value for the logistic regression equation for predicting the dependent variable from the independent variable. They are in log-odds units. Where **p** is the probability of being in favor of lending decision making, expressed in terms of the variables used in this study, the logistic regression equation would be as follow:

Log(p/1-p)=--4.233+ 1.479*Gender + 1.229*FarmExp+1.342*Amount-2.120*yield risk +0.905*enforcement

These estimates showed us about the relationship between the independent variables and the dependent variable, where the dependent variable is on the logit scale. The logistic regression coefficients (β) showed the change in the log odds of the outcome for a one unit change in the predictor variable. Thus, the logit estimates tell the amount of increase (decrease) in the

predicted log odds of (y = 1) that would be predicted by a 1 unit increase (or decrease) in the predictor (X), holding all other predictors constant.

In that case, in the equation, it shows that for every one year change in farm experience (increase/decrease), the loan decision (versus non-decision) increases by 1.229; for a change of an improvement in enforcement, the decision of being granted farm loan from bank increases by 0.905, and for a one unit increase in amount of loan request, the log odds of being granted farm loan from bank increases by 1.343. However, the indicator variable for expected yield risk has a different interpretation. For example, having a perception of risk in agriculture lending by the officials, versus having less perception of same by other officials, decreases the lending decision of farm loan by -2.120.

The maximum likelihood estimates of the logit regression model reported that except the yield risk all the three significant variables have a positive sign, which shows direction of relationships. Additional information can be obtained through an analysis of the marginal effects calculated as the partial derivatives of the non-linear probability function, evaluated at each variable's sample mean (Greene, 2003).

The **marginal** effect calculated to predict the probability of influence of the determinant factors, holding all other variables in the model at their means or constant is also presented (Table 4.22). For example, the results showed that a unit increase in the year of a farm experience of a borrower will increase the probability of loan approval or to be granted a credit by the bank by 17.3%; and a unit increase in the amount of loan requested would have a 18.9% probability that a borrower could get loan or a bank could approve loan. Similarly, a unit change or improvement in legal enforcement factor resulted in a 12.7% increase in probability that a bank credit staff would be confident to decide on farm lending. However, a marginal increase (change) of risk perceptions may lead to a decrease of farm loan decision by a 30%, which would have very significant impact on loan decision making by the CBE as the result indicated. Those variables are explained as follow:

Farm Experience: A more experienced farm/firm will be more able to revive from a default status. Therefore, with the skills obtained over time, these firms will have a greater chance of

sustaining and achieving business success. Thus, when they apply for a loan from the bank, it will create a more favorable condition for acceptance by the bank.

Amount of loan: this variable is statistically significant at less than or equal to 1 percent probability level with positive coefficient. Larger firms have higher sustainability and are more likely to survive in the business, resulting in a lower risk for the bank. They also have more bargaining power. This imply that the higher the firm the larger the likelihood of loan approval or there is higher likelihood for smaller companies to be rejected when they are applying for a loan. Therefore, the sign for the coefficient of this variable is positive as theoretically acceptable.

Yield risk: Many factors including vagaries of nature, diseases, insect infestations, general economic and market conditions contribute to the price, yield or net return variability of agricultural produces. Based on this idea, a coefficient for a risk proxy variable was hypothesized as indeterminate a priori; but, the response result of this study indicates that yield risk has a negative coefficient.

The flow of agricultural credit depends on the availability of funds with financial institutions, rate of interest, and the government policies. So, various institutional factors may influence on lending decision negatively or positively. The expected sign for the coefficients of those variables is impossible to determine a priori. But the result of this study came up with positive sign of coefficient at 5% level of significance for the **enforcement** variable, which is among the institutional factors. Thus the sign is theoretically acceptable. In depth explanation on the results and significant explanatory variables would be presented in the following section.

In conclusion, this research has identified and presented the findings on the perceptions of credit staff of the CBE, which focused on general areas: the human capital constraints; the borrowers' side constraints and bank internal constraints of loan decision making. Farm experience; amount requested (from borrower side), gender (from demographic factors of officers) and enforcement (from bank side); yield risk is from sector specific characteristic were appeared to be statistically significant to impact on lending decision.

4.3 Discussion

This section discusses on the empirical findings and evidenced on the determinant factors that influencing agricultural lending in the CBE. There are a number of studies made on determinants factors of loan decision making in other countries. Most of those studies have identified

determinants under the classification of demographic factors; borrowers' attributes and business sector attribute. This study classifies determinant factors of loan decision making into demographic factors; loan officers' attributes; business or borrowers' specific and lender related characteristics. About 19 independent variables were specified from these series of characteristics on which respondents were questioned their perceptions for the likelihood of those variables to threaten the decision making and used in the Logit model. Important relationships were found in this analysis, which demonstrated agriculture loan decision relates to one or more of the variables specified as function of series characteristics or attributes. The result indicated that out of the 19 variables incorporated in the model, gender of credit officials; farm experience of the borrowers, amount of loan requested, legal framework or enforcement and risk perceived by respondents were found to influence the probability of loan decision making at different significance level. An output confirmed further that gender of the respondents relates with loan decision making positively and significantly indicating that the probability of identifying determinant problem was higher for males than for females as hypothesized. The reason behind might be due to more involvement of male respondents in the loan decision making and they are many in number than the females respondents in the target group. Their probability to report the determinant factors were more expected to be positive and significant in that case. Farm experience of the borrowers, was also significant and positively related to loan decision making. Respondents perceived that a more experienced farm owner would likely to get acceptance by bank. In similar way, (ottavia 2011) concluded that related business experience (farm experience) has a positive relationship with the likelihood of loan approval. So, a sign for the coefficient of this variable was positive as it was hypothesized.

The amount or magnitude of credit that the applicants applied for was also reported as determinant factor and was statistically significant (with positive) at less than or equal to 1 percent probability level. Its positive relationship implying that as the Birr amount of loan request increased, the perception that loan decision makers would have and confidence developed would be increased expecting that the customer would be loyal to the bank. Others findings coincides with this direction of relationships; Von Pischke (1991) noted that efficient loan sizes fit borrowers' repayment capacity and stimulate enterprise. If the amount of loan released is enough for the purposes intended, it will have a positive impact on the borrower's capacity to repay. On the other hand, in case of over and under finance, the expected sign is

negative. If the amount of loan exceeds what the borrower needs and can handle, it will be more of a burden than help and extra funds may go toward personal use (Norell, 2001), thereby undermining repayment performance. If the loan is too small, it may also encourage borrowers to divert the loan to other purposes (Vigano, 1993; Fikrtie, 2011). In other words, the amount of loan requested may go with the farm size, which is measured as the total land size cultivated by the farm household. The larger the cultivated land size the more the demand for variable inputs that might be obtained through credit. As the farmer who cultivates larger size of land can utilize more variable inputs and therefore will be more credit constrained. Thus, the sign for the coefficient of this variable was reported to be positive as theoretically acceptable

In practice, banks give different treatment based on the size of the companies. Smaller companies face relatively more difficulties to acquire a loan compared to their larger counterparts for reasons such as a less-comprehensive track record, limited performance portfolio, or low asset possession (Harhoff &korting, 1998). Hence, there is higher likelihood for smaller companies to be rejected when they are applying for a loan. Larger firms have higher sustainability and are more likely to survive in the business, resulting in a lower risk for the bank. They also have more bargaining power. This imply that the higher the firm the larger the likelihood of loan approval.

The legal framework that the bank used to enforce the repayment of the loan if the repayments fail by farmers was other variable found significant (with positive) at 5% level. The flow of agricultural credit depends on the availability of funds with financial institutions, rate of interest, and the government policies. So, various institutional factors may influence on lending decision negatively or positively. The expected sign for the coefficients of those variables was impossible to determine a priori. But the result of this study came up with positive sign of coefficient at 5% level of significance for the enforcement variable, which is among the institutional factors. Theoretically, banks release funds to the sector with sound lending policy; workable procedures, rules & legal framework. Lack of this condition may threat on the decision makers' confidence. Thus, the sign for the coefficient of this variable was reported to be positive as theoretically acceptable

Many factors including vagaries of nature, diseases, insect infestations, general economic and market conditions contribute to the price, yield or net return variability of agricultural produces. This is because the production environments as well as marketing prospects are fraught with

imperfect knowledge and the vagaries of nature. The complex nature of weather and climate as well as other factors make agricultural enterprises more difficult to manage. The borrowers who have enough experience and knowledge about the risk and its coping strategy are engaged in the risky business types. So a coefficient for a risk proxy variable was hypothesized as indeterminate a priori; but, the result of this study indicated that the uncertainty of production; yield and market price or yield risk perceived by the respondents (with negative) was statistically significant at 1% probability level on loan decision making. This finding coincides with many among others; Nmadu and Peter (2010) argue that agricultural enterprises still constitute the most risky business. As acknowledged by Fikrte (2011), Meuwissen et al. (2001) found that price and production risks were perceived as important sources of risk. Salimonu and Falusi (2009) classified market failure, price fluctuation, drought, diseases and pest attack and erratic rainfall as the most important sources of risk. Tru and Cheong (2009) referred by Nmadu and Peter (2010) show that, in general, price and production risks were perceived as the most important risk in Vietnamese catfish farming. In view of Ezirim (2005) bank lending decisions generally are fraught with a great deal of risks, which calls for great deal of caution and tact in this aspect of banking operations. The success of lending activity to a great extent therefore, lies on the part of the credit analysts to carry out good credit analysis, presentations, structuring and reporting. Thus the sign is theoretically acceptable

In summary, as discussed in the introduction part of the study, there were three general hypotheses developed from banking area theories and empirical studies concerning the determinant factors of loan decision making. The hypothesis (in combined form) stated that 'there is no significant relationship between the loan officers' characteristics; borrowers' characteristics; bank specific constraints with lending decision making. Under this hypothesis there were 19 variables that incorporated in the survey instruments to capture the perception of respondents. The outcome showed that these three hypotheses fail to be accepted on this research because those determinants have positive/ negative and significant effect on the lending decision making in the CBE based on the response findings. The first hypothesis was not accepted as gender of the officers has related positively with their lending decision making and significant. The second hypothesis was also not accepted as hypothesized since the result showed that farm experience of the borrower's influences significantly and positively related to loan decision making. Respondents perceived that a more experienced farm owner would likely to get acceptance by bank. For the third hypothesis; this study disproved that the enforcement variable, which is among the institutional factors influencing on lending decision, has related positively at 5% level of significance.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND POLICY SUGGESTIONS

5.1 Summary

Recently, the CBE has designed a strategy that decided loans to be directed to priority sectors of the economy to support the national growth and transformation plan. Agriculture sector is among the priority sectors that the bank has planned to finance. Although it designed such a strategy to prioritize agriculture sector, non-agriculture loans still represented a key source of income as compared with agricultural loan for the CBE. What hinders lending to agricultural sector, which takes the highest share in the economy of Ethiopia is a question that needs to be addressed. Based on such background, this study aimed to identify the major factors that constrain CBE's agricultural financing. The study attempted to identify whether farm credit evaluation process and the resulting lending decision are systematically related to observable human capital constraints of lending officials; the lender's and borrowers' side constraints based on primary data from the informants in credit process and secondary data from MIS of the CBE.

An analysis of the secondary data for the past six years, as discussed in chapter 2, illustrated that although a proportion of loanable fund in the CBE shows increasing, its proportion of lending to the agriculture sector is yet lower and has even been declining during this GTP period (2011-2013) as compared with lending to non-agriculture sectors. It is known that a cost of a fund may influence the bank to invest or lend to non-agricultural sectors due to the risk/return expectations. In most of the cases agricultural investments earn a return after a period of time. This will lead the bank to consider the opportunity cost of its return. As confirmed by researchers including Al-Mamun Md (2012) and showed that as commercial bank deposits become more sensitive to market rates, the proportion of agricultural loans relative to commercial bank total loans decline. Furthermore, the finding argued that a 1 % increase in the ratio of time and savings deposits to total deposits, it was associated with 0.85 percent decline in the ratio of agricultural loans to total assets or loans.

The intent of using primary data was to identify the important determinants factors of loan decision making in the CBE, which needed to base on the perception, experiences and views of

credit staff. The variable of interest was the information required in loan application of the CBE Though it is very tough to reach to such level of confidential information; the researcher was able to collect adequate required data through designed questionnaires. A total of 117 commercial bank's credit staffs were included as samples in this survey. out of the total 117 designed questionnaires 85 questionnaires was distributed to all head office CPC credit staff and 63 was completed and returned, while about 32 questionnaires were distributed to three district offices (Nekemte, Dessie and Wolayta Sodo), which were purposively chosen by random from 11 districts outside the head office in which case all 32 questionnaires were completed and collected. All in all 95 (82 percent) was responded.

Out of the total 95 completed questionnaires some 4 filled questionnaires were rejected as the responses were found to be outliers. Hence, a total of 91 questionnaires based responses were selected for the regression analysis lastly. The respondents gave their validation on the determinants of loan processing or assessment, which threaten the decision making based on the information in the questionnaires. The perceptions of respondents were measured on the scale that ranges from very likely to very unlikely to determine whether the factor has influence on approval or not. The loan decision making (dependent variable) has been taken based on the weight of response result (very likely, likely=1, others=0) to decide whether the factor is determinant or not on loan decision making. In order to identify the important factors, descriptive statistics and binary logistic regression were employed. Many variables were analyzed in the descriptive statistics, while 19 variables were included in the econometric model. The analysis results show that 4 of the 19 predicted influencing factors were statistically significant (Chi- Square=59.05, P-Value=0.0001, 19 degrees of freedom). The coefficients were statistically different from zero at various levels of significance.

Respondents were able to identify the major challenges in the loan decision process. These include: insufficient loan recovery rate, unavailability of information and weak follow-up due to lack of infrastructure accessibility. In line with this, they perceived that CBE has many internal and external challenges such as; lack of insurance coverage, high risk in the sector, insufficient documentation of land ownership; and improper financial plan and weak farm management capacity of the borrowers.

5.2 Conclusion

Agriculture is believed to be the engine of growth so as to achieve the desired development strategy of Ethiopia. Regardless of this due attention, still there are formidable obstacles that inhibit this sector from growth and advancement. One of the most crucial and leading factors is limited access to financial capital and credit especially from the formal lending institutions.

In order to solve the financing constraint the sector is facing, there is a need to know determinant factors that CBE has on this sector. One issue that has to be known in this regard is the loan evaluation problem that CBE's credit staff is associating with farm borrowers. In effect, the likelihood that a given characteristics threaten the decision making behavior of credit officials was analyzed. In order to test the hypothesis, binary logistic regression was specified and applied with lending decision making as a function of series of characteristics. In this case the dependent variable is the function of socio-economic or demographic factors; loan officers' attributes; business or borrowers' specific and lender related characteristics. About 19 independent variables were specified from these series of characteristics and used in the econometric model. Important relationships were found in this analysis, which demonstrated agriculture loan decision relates to one or more of the variables specified as function of series characteristics or attributes.

Out of the 19 variables hypothesized to influence the lending decision of farm loan, 5 variables were found to significantly influence the probability of loan decision making at different significance level. To begin with, gender, farm experience (FarmExp) and amount of loan request (amount) are from borrowers' side constraint; perception of uncertainty or yield risk (yldrisk) from loan officer's attribute, and legal framework (enforcement) from lender related characteristics were among variables that are found to be statistically significant.

The maximum likelihood estimates of the logistic regression model reported that gender, farm experience of the borrowers, the amount or magnitude of credit that the applicants applied for; the uncertainty of production; yield and market price or yield risk perceived by the lender and the legal framework that the bank used to enforce the repayment of the loan if the repayment fail by the farmers were important factors getting consideration for influencing the lending decision making in the CBE under this specific study. In view of relationships' of these variables, the coefficients of farm experience(positive) at 5% level; amount of loan (with positive), and yield risk (with negative); were statistically significant at less than or equal to 1 percent level. The

variable legal enforcement has a positive sign of coefficient at 5% level of significance. This is in agreement with the finding of Von Pischke (1980), in his study on the cause of poor loan collection performance by formal agricultural lenders in developing countries; he reported that difficulty in enforcing contracts through judicial or administrative law process could be cited as a country level problem constraining lender performance

On the other hand, the coefficients of those non-significant independent variables were appearing to be less powerful in explaining the lending decision making process. This is emanated from lack of a variety and/or difference among the respondents as most of their responses go towards similar direction as their frequency distributions describes.

Overall, the logistic model successfully predicted (R=50%) of the factors that contributed to the loans decision making problems of CBE's credit staff. The unexplained part will expected to go for un-captured information. The likelihood ratio test statistics exceeds the Chi-square critical value with 19 degree of freedom. The result is significant at less than 0.01 probabilities. Important relationships were found in the analysis in which case the loan decision making (dependent variable) relates with one or more of the series of attributes (independent variables). This confirms the objectives of the study as it demonstrates the impacts of these variables on the dependent variable. In mean while it nullify the hypothesis to be tested by indicating that all the coefficients (β's) except the intercept are equal to zero is not tenable. Thus, the null hypothesis "no relationship between loan decision making and various attributes", is rejected.

5.3. Policy Suggestions

As to my knowledge, there is no comprehensive study that has been conducted in CBE on determinant factors of agricultural loan decision making. The main objective of this paper is, therefore, to identify whether or not the decision variables have relationships and significant impact on lending. The study highlighted problems such as lack of information flow; inadequate skill of credit staff (training); credit risk and expected CBE profitability; was hindering factors as described by respondents. The econometric analysis result was also strongly suggested that perceived risk; farm experience; loan amount to be requested; and legal framework or enforcement case should always be considered in evaluating the determinants of agriculture

lending. Thus, it is the researcher's belief that this output would have an implication for the CBE and other users. Among many possible implications:

- The study findings could help to understand the factors influencing the farm lending process in the CBE. Thus, it has the potential to assist the credit performers and manager facing problems on loan decision making since it indicates the most important factors affecting farm borrowers' loan accessibility currently. It may also draw a landmark or basis to the CBE for undertaking further studies on similar problems;
- This type of research could provide a bird's-eye view for researchers or policy designer whose concern has been the improvement of agricultural financing from banks.
- It also pinpoints a policy issue that the supervisory of financial institutes (NBE) should design to improve agricultural financing by banks. Such concern of policy makers would help to formulate successful credit procedure that enables CBE to be encouraged and highly involved in rural development thus bringing about the needed transformation of the agriculture;

Particularly, CBE may consider these findings as yardstick by which it identifies current problems in its agricultural lending practices. Thus, based on the findings, the following points are possible policy suggestions made for CBE's management to consider:

- The bank should exert maximum effort to improve the risk awareness of its credit employees. The risk awareness creation could be tackled through training, workshop, discussion and experience sharing sessions. To this end, equipping the credit staff with sector specific skills to enable them to capture relevant information, scan, analyze, interpret and project the risk return trade-off of the farm investment financing seems a forefront policy issue of the CBE; and
- CBE should have a revised procedure that addresses legal enforcement problem in agriculture loan contractual agreement as the legal framework that the bank uses to enforce farm borrowers for collection upon the default is perceived as important determining factor.

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ANNEXES

Annex 1: Sample Questionnaire filled by Employees of CBE

The main purpose of this questionnaire is to collect data to analyze the level of perception of employees. The research is to be conducted "***on determinant factors of agricultural lending decision in the CBE"*** for the partial fulfillment of Master's degree in agricultural economics. You are not required to write your name. Please put a tick mark (✓) in the corresponding boxes to indicate your perception. Please note that the term 'Bank' represents the CBE and the term "credit officials" represents all staff in credit processes

Thank you in advance for your cooperation and timely response.

Part I – Background Information

Please put (✓) in each box for the option that best describes your current status:

1. **Age :** 20 – 25 ☐ 26 – 30 ☐ 31 – 35 ☐ 36 - 40 ☐ 41 and above ☐

2. Please indicate(✓) in boxes under **Gender** and **Marital status** in Table below

Gender		*Marital status*			
Male	Female	Married	Unmarried	Widow	Divorced
☐	☐	☐	☐	☐	☐

3. **Education level** : Diploma ☐ B A Degree ☐ Masters ☐ PhD ☐

4. How long did you serve in the **CBE**?

A - 1 - 5 Years ☐ B - 6 - 10 Years ☐

C - 11 - 15 Years ☐ D – 16- 20 Years and above ☐

5. How many years of experience do you have in **credit process** of CBE?

A - Below 1 Year. ☐ B - 2-3 Years ☐ C - 3-4 Years ☐ D-above 5 years ☐

6. **Field of study**: A- Agricultural Economics ☐ B- Economics ☐ C- Accounting ☐

D- Management ☐ E- Others (specify) _____

7. What is your current work position/title in the Bank?

A – Director ☐ B – Credit Appraisal Manager ☐

C – Relationship Manager ☐ D. Credit Appraisal expert ☐

E. - Credit analyst ☐ F. Loan recovery officer ☐

G. other (specify) _____

8. Which information do you prefer more for lending decision (quantitative☐; qualitative☐; both☐; none☐)

9. Do you receive adequate information and regulation for loan processing timely? (Yes ☐ no ☐ rarely☐).

Part II – Main Information

The following section aims to know the **confidence level** as well as validation on the determinants of loan processing or assessment, which threaten the decision making as **subjective judgments**. The scale of the credit officials' perceptions ranges from **very likely** ⟷ **very unlikely** to recommend/approve loan applications. (***Scale:*** *5=very likely; 4=likely; 3=undecided; 2=unlikely; 1=very unlikely)*

	I. Credit officials' Characteristics or attributes	**Possible perceptions**				
		5	**4**	**3**	**2**	**1**
1.	The loan decision-making is expected to be uniform in the CBE but the human capital factors influence decisions on loan applications	☐	☐	☐	☐	☐
2.	Different **educational** background and self-efficacy influences the perception of risk, and subjective judgment on loan applications	☐	☐	☐	☐	☐
3.	Only officials with a higher level of education would provide accurate analysis to give better decision on loan processing and approving	☐	☐	☐	☐	☐
4.	The **banking experience** possessed by credit officials to evaluate and process loan applications leads the decision making to vary	☐	☐	☐	☐	☐
5.	Analysis and interpretation of data for agriculture loan processing and approving requires more experienced staff than knowledge	☐	☐	☐	☐	☐
6.	Officials are hesitating in agriculture lending as there is no incentives that derives to be engaged in this risky decision making	☐	☐	☐	☐	☐
7.	Officials' expertise and **subjective judgment** on decision criteria are the key factors in loan decision making ; no need of long time **lending experience**	☐	☐	☐	☐	☐
8.	Interviewing borrowers and capturing relevant information requires experienced staff;	☐	☐	☐	☐	☐

		Very likely	*likely*	Un decide	Un likely	Very unlikely
9.	**Exposure** to farm lending increases familiarity and reduces risk perception or fear	☐	☐	☐	☐	☐
10.	loan evaluation does not need **exposure** of loan processors and decision makers;	☐	☐	☐	☐	☐
11.	**Training i**nfluences the credit officials' loan processing and decision making capability	☐	☐	☐	☐	☐
	II. Bank characteristics (the CBE's specific determinants)	☐	☐	☐	☐	☐
12.	Expected bank profitability can limit the lending possibility to farm borrowers	☐	☐	☐	☐	☐
13.	Expected credit risk influences loan processing & decision making	☐	☐	☐	☐	☐
14.	Expected probability of loan default by farmer influence the decision making	☐	☐	☐	☐	☐
15.	CBE's branch outreach is not accessible to farm borrower every where	☐	☐	☐	☐	☐
16.	The CBE has no available loanable fund to lend for all farm borrowers	☐	☐	☐	☐	☐
17.	lack of lending experience to Farm limits CBE in loan processing & decision making	☐	☐	☐	☐	☐
18.	CBE's institutional capacity cannot fit with demand variations in agricultural cycle	☐	☐	☐	☐	☐
19.	CBE's agricultural lending procedure is not convenient to support loan processing and approving	☐	☐	☐	☐	☐
20.	The strength of external pressure (from government) influences bank's credit officials on processing and decision making of farm loan	☐	☐	☐	☐	☐
21.	CBE can avail farm loans to borrowers without having collateral	☐	☐	☐	☐	☐
22.	The CBE always requires fully documented applications to start loan processing which may challenges officials decision	☐	☐	☐	☐	☐

	III. Borrowers characteristics (borrowers' side constraints)	Very likely	*likely*	Un decide	Un likely	Very unlikely
23	Farmers are unaccustomed to using business plan and financial statement	☐	☐	☐	☐	☐
24	Complexity of farm sector calls for higher variations in loan processing and decision making	☐	☐	☐	☐	☐
25	Limitation of borrowers' **collateral** adequacy is a big determinant	☐	☐	☐	☐	☐
26	Borrowers' **farm experience** or Farming practice limits to get loan	☐	☐	☐	☐	☐
27	Bank **relationship** (being newcomer) is constraining borrowers	☐	☐	☐	☐	☐
28	Borrowers' **equity** contributions is the major factor to decide loan	☐	☐	☐	☐	☐
29	Regional or location (as urban/ sub-urban) or distance from the branch and the market centre constrains farm borrowers	☐	☐	☐	☐	☐
30	**Amount of loan** or credit requested, influence the confidence of loan processors or decision makers	☐	☐	☐	☐	☐
31	CBE considers for **farm size** and land holdings (i.e. subsistence, commercial and/or farm investment) for granting agricultural loans	☐	☐	☐	☐	☐
32	Approval depends on how well customers present their business plan, and financial needs , which is not set as decision criteria	☐	☐	☐	☐	☐
	IV. Challenges (risk proxy variables)					
33	**Uncertainty** on yield, price and market due to unique character of farm sector business challenges the loan decision making of lender	☐	☐	☐	☐	☐
34	As agriculture consists of many different sub-sectors with significantly varying **investment and risk patterns** that makes a cash-flow-based lending difficult	☐	☐	☐	☐	☐
35	Designing contractual agreement and **enforcement** with farmers is a challenge	☐	☐	☐	☐	☐

10. In your opinion, is there any valuable observation you want to add especially, if there is any point or question that is not raised so far by the researcher, please? ----------
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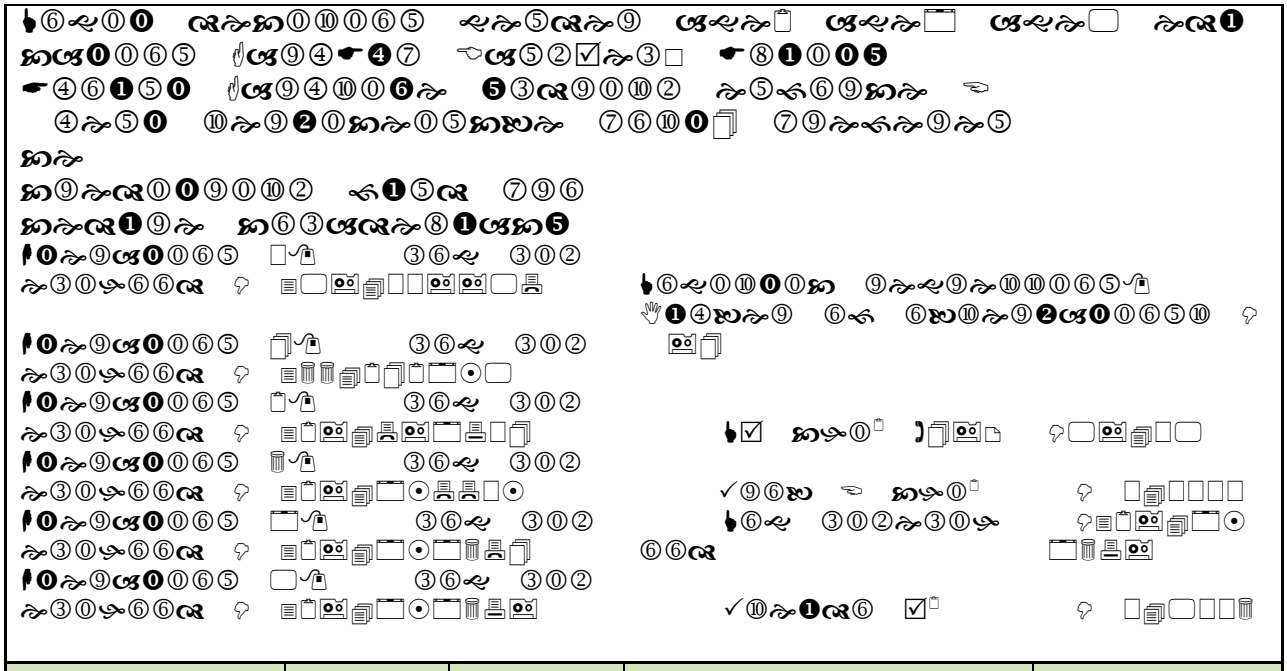

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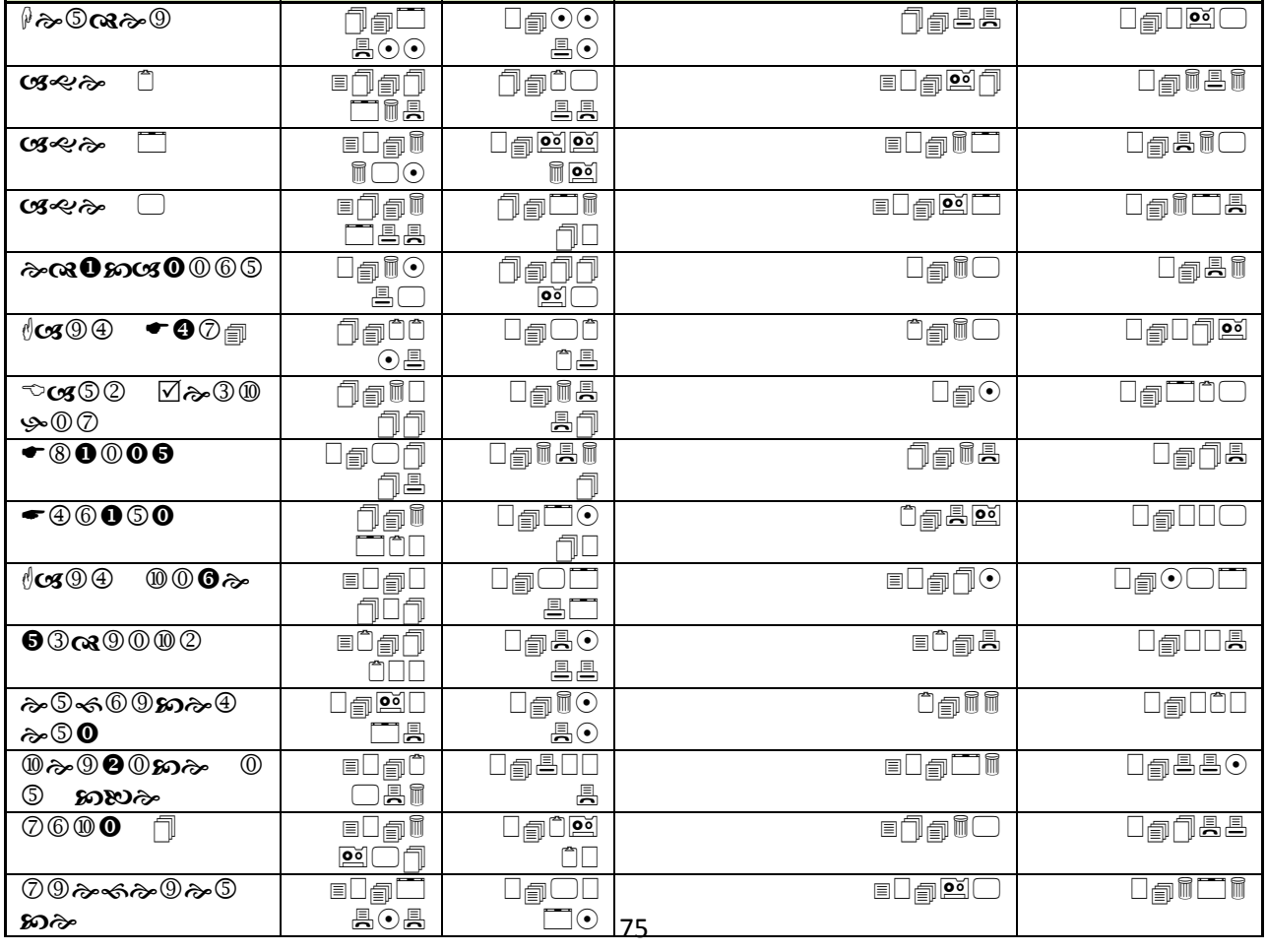
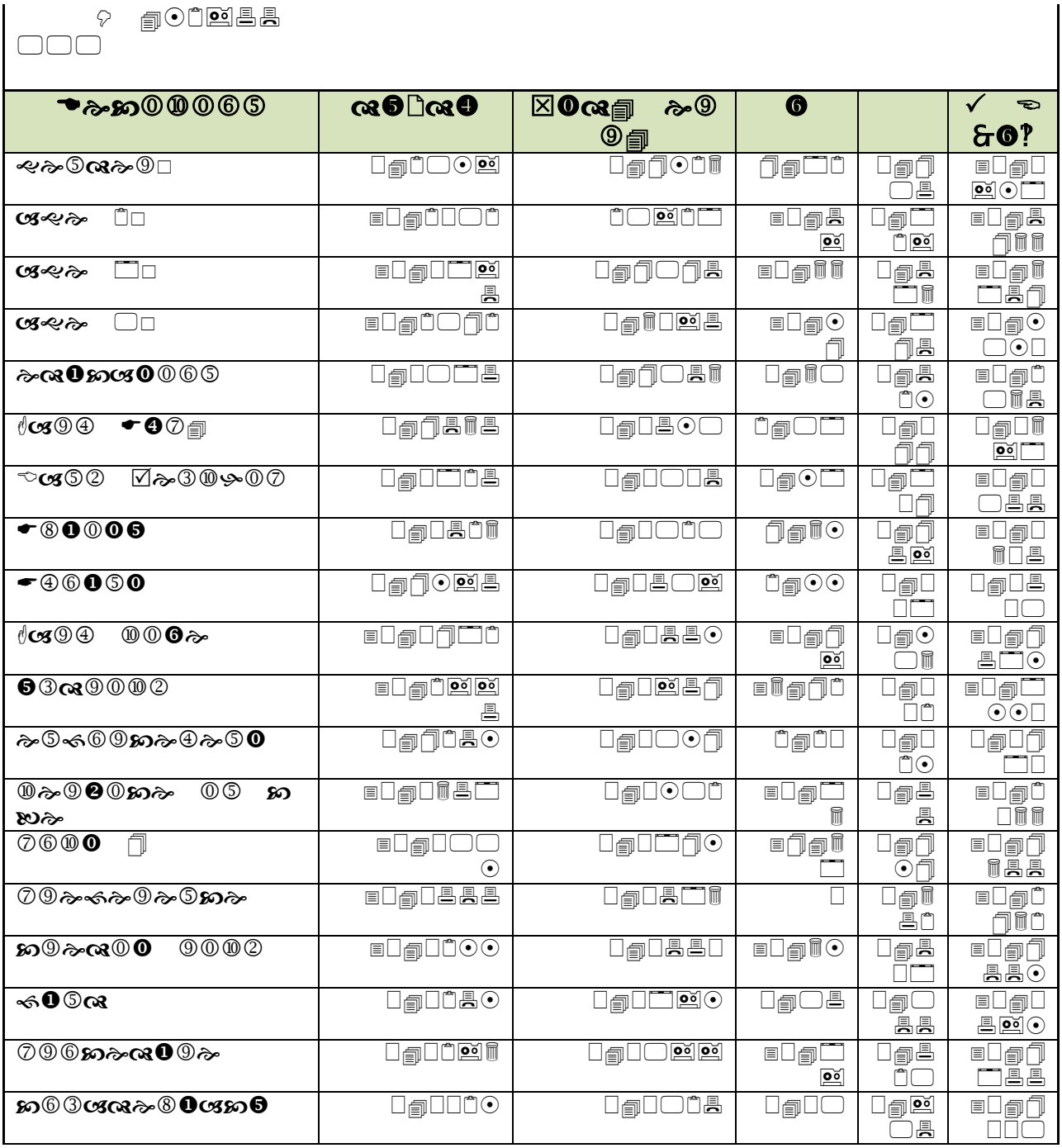
				

Annex 2: Results of Logistic Regression



Annex 4: List of Explanatory Variables and their Expected sign

Var	Description of Variables	Expected sign
Y	***Lending Decision (Y),*** which is the **dependent variable** for the logit analysis, has a dichotomous value representing the status of identifying determinant factors of loan decision making (1/0).	
Xs	**Independent or explanatory variables**	
I	*Demographic Factors*	
X1	Gender: gender of officials (1=male, 0=female)	+
X2	Age of the credit officials (20 – 25; 26 – 30; 31 – 35; 36 – 40; 41 & above)	?
X3	Marital status of the officials (1=married, 2=unmarried, 3 &4=others)	+
II	*Lender's Human Capital (Officials')*	
X4	Educational background or educational level of officers; Training	+/-
X5	Banking Experience (years)	+
X6	Lending Experience (years)	+
X7	Exposure to Agriculture Lending (years)	+
III	*Borrower's Attribute*	
X8	Relationship with the bank; (being newcomer)	(+/-)
X9	Value of collateral or Collateral adequacy	+
X10	Amount of loan or credit requested (farm size or scale of the business)	?
X11	Related business experience or Farm Experience (years);	+
X12	Share of Investment or equity contribution (%)	+
IV	*Institutional or Bank Specific Character*	
X13	Availability of loanable fund (DEPOSIT);	+
X14	Bank lending procedures, enforcement	?
X15	Expected credit risk	(+/-)
X16	Expected default of farmers	(-)
X17	Expected bank profitability	(+/-)
V	*Risk Proxy Variables*	
X17	Information about unpredictable price and market (yield risk)	???
X18	production uncertainty unpredictable,	???
X19	Preference of information (qualitative or quantitative))	???

Signed Declaration

I declare that the thesis for degree of Master in Agricultural Economics at the Saint Mary's University, hereby submitted by me, is my original work and has not previously been submitted for a degree at this or any other university, and that all reference materials contained therein have been duly acknowledged.

Declared by:

Name: Gebissa Welteji

Signature: _____

Date: _____

Place: Saint Mary's University, Addis Ababa

Endorsment

This thesis entitled "Determinant Factors of Agricultural Loan Decision Making: A Case of Commercial Bank of Ethiopia" has been submitted to Saint Mary's University School of Graduate Studies for examination (defence) with my supervision and approval as a University Advisor.

Dagnew Ehete(PhD)
(Advisor)

Signature& Date