ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DETERMINANTS OF LOAN REPAYMENT PERFORMANCE OF PRIVATE COMMERCIAL

COTTON PRODUCING FARM IN ETHIOPIA: THE CASE OF DBE BORROWERS

BY

JEMAL HASSEN (ID NO 246)

DECEMBER, 2015

ADDIS ABABA, ETHIOPIA

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DETERMINANTS OF LOAN REPAYMENT PERFORMANCE OF PRIVATE COMMERCIAL COTTON PRODUCING FARM IN ETHIOPIA: THE CASE OF DBE BORROWERS

A Thesis Submitted to St. Mary's University, School of Graduate Studies, in Partial Fulfillment of the Requirements for the Degree of Master of Science in Agricultural Economics

JEMAL HASSEN

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SCHOOL OF GRADUATE STUDIES
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APPROVED BY BOARD OF EXAMINERS

As member of board of examiners of the MSC thesis open defense we certify that we have read and evaluated the thesis prepared by Jemal Hassen, we recommended that the thesis be accepted since it fulfills the thesis requirement for the degree of Master of Science in Agricultural economics.

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Dean, Graduate Studies   Signature

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Advisor   Signature

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External Examiner   Signature

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DECLARATION

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This thesis has been submitted to Saint Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

_____   _____

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ACRONYMS

ADLI -   Agricultural Development Led Industrial

AIDB-   Agricultural & Industrial Development Bank

DBE -   Development Bank of Ethiopia

KYC -   Know Your Customer

LDCs -   Less Developed Countries

MOARD---   Ministry of Agriculture and rural Development

NBE -   National Bank of Ethiopia

NPLs -   Non-Performing Loans

PLC.   Private Limited Company

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ABSTRACT

This study with objective of identifying the loan repayment determinants examined the loan repayment performance among private commercial cotton grower borrowers of the Development Bank of Ethiopia. Secondary data was collected from development bank of Ethiopia. the data was collected for operational cotton farms that are under repayment obligation and covers 72 percent of them .area wise the data covers those borrowers that are located in potential cotton producing areas such as Gambela,Metema ,Awash and Afar etc. All the farms that are considered here are operate under the leased land and rain fed production systems. Both descriptive and A probit model is applied to identify the factors that influence loan repayment. Sixteen variables hypothesized and are analyzed to reach the major determinants of the loan repayments performance of commercial cotton growers of DBE. The findings indicated that five variables namely loan processing time, value of collateral, equity level of borrowers, having substantial off-farm income and Credit experience of borrower found to be significant variable that determine the loan repayments of commercial cotton borrowers of DBE, The analysis of partial marginal effect shows that equity contribution level of borrowers is the most important factor among the other five variables has impacts on the loan repayment performance of the borrowers. Based on the findings, policy implication is reducing /rejecting those loans with long processing time, initiating legal action for those with less value of collateral or requesting additional guarantees. Giving emphasis on selection of those with the high equity level of contribution, Credit experience and with substantial other sources of income. Other recommendation includes providing incentive for those who repaid timely, appealing for causes of the defaults by DBE to stake holders, provision of training, improved technologies and focusing on intensive farming will help in improving the loan repayment performance among private commercial cotton growers,at the same time will facilitate the sustainable loan recycling and development of the cotton production sector.

Key words; Private commercial cotton growers; loan repayment performance; Development Bank of Ethiopia

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CHAPTER ONE
INTRODUCTION

1.1 Background of the study

A strong and efficient agricultural sector has the potential to enable a country like Ethiopia feed its growing populations, generate employments, earn foreign exchange and provide raw material for industries. The vibrancy of the sector has a multiplier effect in Ethiopia's socio-economic and industrial fabrics, because of its multifunctional nature. Ethiopia is not only naturally endowed with vast agricultural land for cotton production which is estimated to be 2,570,810 ha (Mord, 2005), but also has geographical condition that favors cotton production throughout the years. For most of Ethiopian population, cotton production is a source of income, employment and family lively hood.

However, in spite of Ethiopia having high agricultural facility such as land and water for cotton production, the land utilization was not exceeding from 125,000 ha until 2005 (MOA, 2005) Small holder farmers cultivate about 56,000 ha while the rest is held by private commercial farmers including state owned farms.

Since 2003, considering the unsatisfactory level of utilization of the existing potential for cotton production, the government has developed a package of incentives under Regulations No.84/2003 for investors engaged in new enterprises and expansions, across a range of sectors The government's policy regime includes but not limited to providing access to land at very cheap price, full customs duty exemption, and access to institutional long term loans at low interest rate along with investments in the economic and social infrastructural developments in the potential cotton Producing areas With the implementation of such policy regime, the involvement of private individuals in cotton production has shown very significant increase. The expansion in commercial cotton productions has been accompanied by growth in the textile and ginning factories. The cotton market also integrated with local industries. Most of the cotton that has been produced so far consumed locally, though the export level decline to zero since 2013/14 due to increase in local demand   about 10 percent of the total productions is exported to

Africa, Asia and Europe, with Asia alone accounting for 67% of the total exports in previous year. Ethiopia also imported cotton (USDA ,2015 and MOARD,2005).

However, despite the improvement observed in the cotton production and cotton farms enterprises, the available data indicated that the country harvested covers only about 5.4 percent of its potential (USDA, 2015). At small scale farm level, the cotton production sector is suffering from poor extension service, inadequate availability of improved varieties, poor market linkage and access to land and from access to short, medium and long term loans (Bosena et.al. 2011). Especially, since cotton production is a capital intensive operation, lack of access to credit at small scale farm level remained as constrain, not only cotton sector. Apart from cotton sector , In Ethiopia, inadequate access of the agricultural sector to credit from formal financial institution has remained a central concern for farmers, a key constrain to the modern and diversification of their activities along with limiting their production, the income ,investment and overall quality of life . Data on credit access to agricultural sector indicated that the sector received about 4-10 percent since1990s (NBE, 2014) and it is not above 10 percent of the total credit provided to the economy since 1960.

On the other hand, despite the need to provide credit accesses to agricultural sector, Lending is a risky enterprise, because repayment of loans can seldom be fully guaranteed. Generally In spite of the importance of loan in agricultural production, its acquisition and repayment are fraught with a number of problems especially in the small holder farming. Large rate of default has been a perennial problem in most agricultural credit schemes (Awoke, 2004). The loan default reduce the lending capacity of financial institutions; it also denies new applicant access to credit from financial institutions along with promoting negative perception to provide access to loans to agricultural sector. In other words, it may distort the normal inflows and out flows of a financial institutions that has to keep staying in sustainable credit management. Thus, in order to increase the flow of credit to agricultural sector in general to cotton sector in particular from formal financial institutions investigating factors that determine loan repayment has unquestionable significance in designing and implementing a policy direction at all level that will assist easy accesses and flow of credit to agricultural sector along with promoting timely loan repayments.

The study will deal on the issues of loan repayments with specific topics on determinant of loan repayment of the commercial private cotton farms with focuses on the borrowers of Development Bank of Ethiopia.

Development Bank of Ethiopia is one of the institutions created by the government for providing accesses to credit to government priority area. The Bank is serving the country over hundred years. The Bank was providing accesses to investment credit to small holder farmers during the period of 1974 up to 1990. Since 1990's, the Bank diverted its attention to serving private sector borrowers.

Currently, almost the total credit demand for private commercial cotton enterprise is covered by DBE .The Bank so far has been financed about 172 private commercial cotton farm enterprise borrowers. Although the Bank's main financial resources has to comes from timely loan collections of the granted credit , there are problems in settlement of the loans on agreed loan contract repayment time .while some repays timely ,other are not .There is no investigation so far made how received credit by cotton producing enterprises has been repaid timely by some while others not and which socio–economic and other factors influencing on repayment behavior of farmers Thus, this study will deal with socio –economic and other factors that influence the loan repayments of the borrowers of the Bank.

Based on the study, a proportional policy that will assist the promotion of loan repayment will be recommended.

1.2 Problem statement

Access to credit facilities considered to be the direct solution to increasing investment in agriculture in Ethiopia. Credit is a crucial factor in agricultural production and in many cases may be a limiting factor in small holder agriculture. According to Miller (1977), credit provides the means for the temporary transfer of assets from an individual or organization to one which has not. Credit may be described as a facility extended from the lender to the borrower and is repayable at maturity, which may range from a few days to several years. For a credit transaction to be completed, the borrower must provide some evidence of debt obligation in return for the loan where the loan is based solely on good

reputation, financial position of the borrower and trust. Credit can also be extended to the borrower in the form of assets possessed by the lender i.e. in cash (Miller 1977, Abayomi and Salami, 2008)

DBE is one of those three   government owned financial institutions that are engaged in provision of credit access for increasing agricultural investments in Ethiopia. The Bank provides the credit for selected priority sector from its assets that include domestic credit, external loans and through loan collections. Loan collections consists the major assets of the Bank.

In the past five years and especially since the year 2012, the Development Bank of Ethiopia has been engaged in availing credit for private commercial cotton enterprises. For availing credit, the Bank has employed its screening criteria in order to select cotton production enterprises projects borrowers in particular which the Bank thought are credit worthy.

The Bank so far has extended its finance to private commercial cotton production farms from regional office with loan approval ceiling of Birr 25 millions, while the rest or above Birr 25 millions is financed by head offices. With the year to year growth in number of borrowers, since the year 2011, DBE has been financing about 172 major private commercial cotton farms projects operating in the country. During these years, the Bank (DBE) has approved Birr 3, 6 billions and disbursed a total loan amount of Birr 1.5 billion (DBE, 2015).

Although the Bank's main financial resources has to comes from timely loan collections of the granted credit , there are problems in those commercial cotton farms that are fully operation in settlement of the loans on agreed loan contract repayment time .while some repays timely ,other are not . There is no investigation so far made how received credit by cotton producing enterprises has been repaid timely by some while others not and which socio –economic and institutional factors influencing on repayment behavior of farmers .These are empirical questions that the study has to answer. This variation also leads us to ask question why some borrowers perform better than others?

Although research has been done on the factors that determine the loan repayment of DBE, they were focused on either flower sector (see Muluken,2015) or on the analysis of the

determinants of loan repayment of the agricultural sector in general (see Mulugeta,2004). Therefore, this research is meant to analyze the determinants of loan repayment of private cotton farms financed by the Development Bank of Ethiopia, which have not been studied in the past.

My interest in conducting the researcher on privately owned commercial cotton farms developed because of my observations. on the actual design and operation of the farms They are mostly are operating on rain fed situations with local managers, where the risk of loan repayments especially from nature not yet highly minimized. This case make them different from DBE financed flower projects where the risk of loan defaults from nature and management is minimized through use of sophisticated technologies and expatriate management .These characteristic of the project make them typical representative for understanding factors that determine loan repayment from flourishing private commercial farm such as sesames and others in Ethiopia**.**

This study aims to address the following research objectives and research questions.

1.2 Objective of the study

1.2.1 General Objective

The main purpose of the study focus is to critically evaluate the loan repayment performance of privately owned commercial cotton production enterprise with emphasizes to those financed by DBE and to investigate the major determinant behind their loan recovery.

1.2.2 Specific objectives

- To examine empirically the factor behind the loan repayment performance of privately owned commercial cotton enterprise credit schemes financed by DBE.
- To find the major factor used as a means of screening and to evaluate whether the factors are the loan repayment determinant
- To draw policy implication for the proper utilization of the limited financial resource of the country to meet the envisaged development objective and future development.

1.3 General research questions

1. What are the internal conditions that contributed to delay and not to delay of the loan repayments of cotton production enterprises loan borrowers?

2. What are the external factors affecting private commercial cotton production enterprise loan repayment?

3. What are the problems observed on part of the clients that constrained the full loan repayments within the time they agreed to repay?

4. Why some clients pay as agreed while some others clients not?

1.4 Hypothesis of the Study

Borrower's peculiar characteristics such as educational level, loan characteristics such as loan amount, the project characteristics such as business form of organization and institutional factors such as supervisor visit, the policy toward cotton sector growers are thought to be central issues behind the explanation of the difference to be current in loan repayments of Performance of private commercial cotton enterprises.

1.5 Significance of the study

Analysis of factors affecting loan repayment performance of cotton producing enterprises borrowers would help policy makers to formulate successful credit policies and programmes that enable to allocate scarce financial resources to the development of these basic sectors of the economy. It also pinpoints a policy direction that the government should design/improve to promote the development of cotton sector in particular and agricultural sector in general.

The research output could also help the financial institute (DBE) to evaluate its screening criteria and revise it accordingly. Revision of its criteria in favor of credit worthy borrowers could also alleviate the financial constraint of cotton sector which are potentially efficient but couldn't able to fulfill the Bank's lending requirements. It will help the Bank to identify the major characteristics that distinguish credit worthy borrowers and defaulters so that it could act accordingly for future screening purpose.

Other researchers can also make use of the research outcome. It wills serves' background information on entrepreneurship capacity of cotton producers, marketing and production activities of their products, and other social and economic enterprises.

1.6 Scope and Limitations of the Study

The study focuses on private commercial cotton enterprise borrowers financed by DBE. In fact, other Banks were also engaged in financing this sector of the economy. However, this study doesn't incorporate borrowers of other Banks because of time and financial constraints. The study concentrates on DBE because it is the forefront financial institute engaged on financing commercial cotton enterprises that constitute the major part in the country credit schemes.

Despite the study is restricted only to DBE borrowers, its finding is expected to somehow reflect some of the common features of others Banks (especially government owned ones) since some of the problems exhibited in DBE is also observed on others.
Further, the study is limited to the collection of secondary data due to mainly the financial constrains that prevented the researcher to collect and interviews the customers who are located well over away from the capital by750 Kilometers.

1.7 Organization of the Thesis

The thesis is organized into five chapters. The first chapter consists of background of the study, statement of the problem, objectives of the study, significance of the study, and delimitations of the study. The second chapter reviews the literatures relevant to the study which includes theoretical and empirical studies. Brief description of methodology that is the population and sampling technique of the study; the sources of data; the data collection tools/instruments employed; and the methods of data analysis are presented in the third chapter. The results and discussions of the findings are presented in chapter four. Finally, the conclusion and policy implication of the study are presented in chapter five.

CHAPTER TWO

LITERATURE REVIEW

2.1 Definition of Concepts

Credit: Defined as the power or ability to obtain good and service in exchange for promise to pay for them later (Beckman and Foster, 1969). In a similar manner, credit is the power or ability to obtain money, by the borrowing process, in return for the promises to repay the obligation in the future. Credit is necessary in a dynamic economy because of time elapse between the production of good and its ultimate sale and consumption. The risk in extending credit is the probability that future payment by the borrower will not be made. Futurity is thus a basic characteristic of credit and risk is necessarily associated with the time element.

Financial Systems: According to the *International Financial Statistics* of the International Monetary Fund (2011), the financial system consists of three groups of financial institutions: central Banks, deposit money Banks, and other financial institutions. The first group comprises the central Bank and other institutions that perform functions of the monetary authorities. The second group comprises all financial institutions that have liabilities in the form of deposits transferable by cheque or otherwise usable in making payment. The third group comprises institutions that serve as financial intermediaries, while not incurring liabilities usable as means of payment. These are Bank-like and non-Bank financial institutions (i.e. development Banks, institutions that accept deposits, but do not provide transferable deposit facilities, intermediaries that finance themselves mainly through bonds, insurance companies, pension funds, etc).

Financial Intermediation: Is defined as the process of channeling resources from agents that have a surplus to agents that have a deficit and require resources to finance investment projects. This in turn hinges upon the ability of Banks (and other intermediaries) to perform a number of tasks that cannot be accomplished in the capital markets through direct contact between savers and borrowers. These tasks include: the monitoring of borrowers; the production of information (otherwise unavailable) about investment opportunities; the provision of insurance against shocks to a consumer's consumption path; the supply of a

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medium of exchange and a payment system; the transformation of maturities (i.e. borrowing shorter term in order to finance longer term lending) and risk (i.e. converting risky investment into relatively risk-free ones); and the borrowers in financial distress. In the absence of Banks capable of doing that, domestic private savings cannot be efficiently and effectively mobilized (Stieglitz, 1993).

Formal Financial Institutions: Are those which are an organized, registered, and regulated subsector, made up of the Banking sector, non-Banking sector and financial markets (Obamuyi, 2007).

The Informal Financial System (IFS): Consists of all the other institutions that are virtually outside the control of the established legal framework, including the money-lenders and the rotating savings and credit associations (Obamuyi, 2007) and of course, cooperative groups.

Non defaulters: Are credit worthy borrowers who settled the debt amount on the due date signed on the contract. This implies that the clients are committed on the agreements made with the lending institution (Hunte, 1996).

Defaulters: Are non-credit worthy borrowers who breach their loan contract and have repayment problem on the due date (Hunte, 1996).

Loan in arrears: are loans that are past due date (loans that are not paid on date as agreed on loan contract ,)but some argue that they are not necessarily lead to default and that debtors may eventually pay their debts. However, as pointed out by Meyer and Larson (1993), even if a significant proportion of debtors in arrears end up paying, the collection process may entail high costs to the lender, and the proportion of arrears that do default may suddenly increase. The researcher used this definition in conducting the researcher or to represent the delayed repayments.

Non-Performing loans: Loans whose credit quality has deteriorated such that full collection or principal and /or interest not paid in accordance with the contractual agreement of the loan , as per National Bank of Ethiopia Directive, (2009) .

Asymmetric Information: Arise from the fact that borrowers know their own quality (e.g. whether they are going to repay the loan or not), while the Banks do not. So, to allocate resources efficiently and minimize the operational risk, Banks must screen all demands for

loans. In order to facilitate the screening, Banks should be provided with tools to monitor the private sector and gather as much information as possible on the credit history of potential borrowers(Stieglitz and Weiss, 1986) as stated by (Besely, 1999).

Willful defaulting: A situation where a borrower is unwilling to repay loans as per the contractual agreement despite adequate earning obtained from business (Udoh, 2008).

2.1.2 The Nature and Role of Credit Market

Credit is a device for facilitating transfer of purchasing power from one individual or organization to another. According to Miller (1977), credit provides the means for the temporary transfer of assets from an individual or organization to one which has not. Credit may be described as a facility extended from the lender to the borrower and is repayable at maturity, which may range from a few days to several years (Abayomi and Salami, 2008).

Credit is an indispensable tool for achieving socio economic transformation of the rural communities. If well applied, it would stimulate capital formation and diversified agriculture, increase resource productivity and size of farm operations, promote innovations in farming, marketing efficiency and value addition while enhancing net farm incomes (Nwagbo et al. 1989). Credit plays a major role in the transformation of traditional agriculture into a modern large-scale commercial type which enhances agricultural development. It is necessary for purchasing inputs needed for effective adoption of modem agricultural techniques.

Improvements in rural credit enable economic development in at least five ways. First, the rural financial markets provided by Banks enable a greater mobility and flexibility in exchanges in rural areas. Farmers are able to make payments from distant locations without having to meet in person. Second, rural savings and loans enable improved resource allocation. This occurs when they mobilize excess cash from farmers with few, low return investment opportunities and lend it to the farmers with higher return investment prospects. Third, loans allow farmers to better manage the inheriting risks associated to the nature of the agricultural production (high variation in weather conditions and prices). Fourth, loans enable farmers to take on large investments. And fifth, loans ameliorate life-cycle problems, in which the young need to acquire farm and household assets--often by borrowing from community members whom have accumulated savings.

Rural financial Intermediation affects the saving investment process in four general ways. First, it facilitates the investment decision from saving decision. Second, intermediations encourage saving by diversification of assets available to lenders, diversified according to risk, yield and liquidity. Third, financial intermediation encourage investment by providing a variety of available sources of funds that differ in regard to majority of loans, interest charges, repayment provision and so on. Fourth, and of great importance, use of intermediaries reduce risk of intermediaries of default to lenders and also assures borrowers that funds are generally available, whereas availability from individual might be difficult to ascertain. Both of those are cost reducing functions that mean lenders receive higher net of return and borrowers pay less for funds in the presence of intermediaries. Specialization of activities increases productivity of labor and other resources involved in activities of production ,consumption and distribution intermediaries contribute to real productivity of the economy and to improving the standard of living because on large amount of internal financing such venture require a viable group of diverse financial institutions. Those financial institutions may have a special importance for economic growth.

The Financial theorists argue 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 (Mensa, 1999).

According to Stieglitz, (1993) better financial market may contribute to economic efficiency but the extent to which they so require careful scrutinizing. Important in secondary market not necessarily enhance the ability of economy either to mobilize saving or to allocate capital. How financial markets will perform the other functions (e.g. selecting Screening and monitoring process) may affect not only the extent to which they can mobilize saving but more broadly, by overall efficiency and rate of growth of the economy.

A credit market differs from standard market (for goods and services) in two important aspects. First standard markets, which are the focus of classical competitive theory, involve a number of agents who are buying and selling a homogenous commodity. Second in standard markets, the delivery of commodity by a seller and payments for the commodity by buyer occur simultaneously. In contrast credit received today by an individual or firm in exchange for promise are frequently broken. Thus, the in applicability

of the standard demand and supply model for credit market give rise to credit rationing and direct credit program (for industry and agriculture).

The arguments in terms of government role to be played in the financial market and financial institutions with regard especially to developing country still an unclosed subject around economists. Stieglitz (1993), argued that the reasons in some cases that private financial markets (institutions) has not provided a particular of financial service or loans is because defaults rate are high enough to cover these defaults the market's simply not viable often failure may be attributable to lack of entrepreneurship, to lack of creativity and unwillingness to bear risks, or to the fact that private returns to the institutions may be markedly less than social returns. Therefore, he argued that a government has a role to enhance the role of financial market and their healthy developments.

On the other hand, Stieglitz (1993), warned that despite the financial intermediary expected to allocated resource efficiently they are also source of misallocation .The problem arises from misplaced Government policy, adverse selection, moral hazard problem in asymmetric −information. Further, Piscke (1991), as cited by Mulugeta, (2010) admitted that even though finance is a catalyst for investment; it is also a catalyst for poor investment, political patronage, corruption and other type of opportunism may have significant negative contribution on the role of financial sectors.

2.1.3 Credit Management Policies

In the past decades there have been major advances in theoretical understanding of the workings of credit markets. These advances have evolved from a paradigm that emphasis the problems of imperfect information and imperfect enforcement (Hoff and Stieglitz, 1999). They pointed out that borrowers and lenders may have differential access to information concerning a projects risk, they may form different appraisal of the risk. What is clearly observed in credit market is asymmetric information where the borrower knows the expected return and risk of his project, whereas the lender knows only the expected return and risk of the average project in the economy. Lending institutions are faced with four major problems in the course of undertaking credit activity: a) to ascertain what kind of risk the potential borrower is (adverse selection), b) to make sure the borrower will utilize the loan properly once made, 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) (Ghatak and Guinnane, 1999).

These problems of imperfect information and enforcement lead to inefficiency of credit market which in turn leads to default. Thorough credit assessment that takes into account the borrowers character, collateral, capacity, capital and condition (what is normally referred to in the Banking circles as the 5C`s) should be conducted if they are to minimize credit risk. Mensah (1999), stressed the importance of credit management as follows: credit management process deserves special emphasis because proper credit management greatly influences the success or failure of financial institutions.

An understanding of a Bank's credit risk management process provides a leading indicator of the quality of Bank's loan portfolio. The key elements of effective credit management, therefore, are well developed credit policies and procedures; strong portfolio management 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.

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

(Vigano, 1993). 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 these two aspects through the information it has and to control credit risk specific contractual conditions. Vigano (1993), summarized factors affecting credit risk as follows: the customer's ability and willingness to pay, presence of favorable external conditions, quality of information and Bank's ability to ensure the customers willingness to pay portfolio management.

2.2 An overview of Ethiopian Financial Sector

2 2.1 Policy Regime, Structure, and Credit Flows

2.2.1.1 The Imperial Era (Pre 1974)

During this period lending policy was mainly oriented to financing foreign enterprises and wealthy clients in the country while domestic small borrowers were rationed out and forced to seek credit from informal finance (Mulugeta, 2002). A great part of the Banks' credit was channeled to financing international trade (Mauri, 1997). Branch concentration during the period was in few urban centers. For instance, Addis Ababa alone accounted for 64%. The collateral requirements were up to 200%. The agricultural sector, which received not more than 10% of the total Bank credit by 1974, was almost neglected because financial institutions considered agricultural activity as risky investment venture (Itana, 1994).

2.2.1.2 The Derg Era (1975 –1991)

With the downfall of the imperial era, new government came to picture in Ethiopia which locally known as Derg (The Military Government). The Derg has followed a socialist ideology where all private property including land was nationalized. These changes in general social political and economic policies that were followed contributed in changing the practice of the Banks fundamentally. All privately owned financial institutions were nationalized. From 1975 to 1990, the Banking system was composed of three State owned Banks, and one Insurance institution and one Pension financial institution. All were owned by state participation in the capital (Geda, 2005). This resulted in a less competitive Banking system.

With nationalization of the Banks the credit planning was introduced. To facilitate this, the NBE is reorganized by the 1976 reorganization proclamation where the role of NBE (National Bank of Ethiopia) as a developmental organ is clearly emphasized by the article 6 in the proclamation, which expressed the objective of NBE to be 'to foster balanced and accelerated development (Geda, 2005). The requirement for collateral virtually absent rather the Banks was instructed to provide to the socialized sector with guarantee of the governments. Major customers became socialized sectors (Public enterprises, state farms and cooperatives) while the private sector was marginalized. With this policy in

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implementation, the sectorial loan distribution and allocation of credit immediate years before the reform (1985-91), for instance, the average outstanding loans of the CBE was the highest in the international trade sector (15% in 1989) followed by housing & construction and domestic trade (about 6%) and industry (5.5 %) (Geda, 2005). The loan to agricultural sector despite the policy changes was not exceeded from the average of 10 percent of the credit allocated to the economy (Kibru , 2010) . This implies that there was no change in absolute term from imperial times.

The loan collection was seriously damaged due to the inability of the Banks to refuse loan. This was because of the government's instruction for them to lend to Socialized sector even though the borrowers were in loan defaults. The Banks were not able to refuse to implement these instructions on the basis of commercial criteria (Harvey, 1998).Therefore there was no conflict between commercial and non-commercial criteria and the implicit guarantee of lending appeared to have been maintained (Harvey, 1998). Lending to socialized sector was not only at government direction but also that the government had repaid their debts that were in default while they were remaining profitable (Mulugeta , 2010).

In conclusion, this period can be considered to be a period where Banks started to provide credit with no regard to fixed assets as collateral. Also, banks started to provide easy access to credit even for small farmers. This approach as compared to imperial regime policy considered to be   a positive contribution in changing the western inherited credit policies that blamed mostly to be unfit for less developed country like Ethiopia.

Despite the above   positive side, it was considered to be a period where the country has begun to face occurrence of high loan arrears.   It resulted in high default rate and non-performing loans. For instance DBE owed 97 percent of all delinquent loans towards the later days of the regime (DBE, Report 1990). As it is stated in the report, loan repayments challenge had emerged at his period. It was primarily eminent on state owned socialist enterprises then it spread to rural areas where previously considered to be immune from loan default.

Regarding private sector ,though, the then government was following socialist ideology latter own specially during late 1980th introduced mixed economy policies where private sector allowed at a very stringent restricted policy . To support this action the government was followed discriminatory policy where only limited access allowed with interest rate which was 9% for private sector as opposed to 6% for public industrial enterprises and 8% for private as opposed to 6% for public enterprises in agriculture. Since July 1986 Cooperatives are required to contribute at least 15% of the total investment cost of a project as opposed to 30% for private individuals (Itana, 1994). The same holds to the stringent collateral requirements as opposed to free of collateral for the socialized sectors. The unfavorable government attitude towards the private sector remained the main obstacle to private involvements and development. For instance, during the period 1980/81 to 1990/91, where mixed economic policy introduced and put in to implementation. The share of public sector was about 27 percent in average (from commercial Bank only). While the share of the private sector ranges from 19.1% to 24.6% (Abraham, 2002).

2.2.1.3 The Present Era (1992 to Present)

Since 1992, liberalization scheme in economic policy was pursued by the incumbent Ethiopian government. With the reforms in the financial sector access to credit for private sector has been promoted and discrimination of the private sector abolished.

Banks were also given autonomy to decide by themselves with no discrimination and interference based on purely commercial criteria .In addition to permitting the establishment of private Banks and insurance companies. Currently the interest rate is fairly liberalized and the NBE has set only a floor for deposit rate, leaving all other rates to be determined by market forces. Banks are now allowed to set any rate within that range. Moreover, pursuant to the strategy of gradualism, the NBE has implemented this policy step-by step.

1990 after wards about 16 privately owned commercial Banks, and 15 privately owned insurances were created. There are three government owned Banks as of June 2014.The total formal financial institution has reached 34 as of March 2015(NBE, 2015). The Branch expansion level also has reached 2008 individual branches. With the coming and development of new privately owned commercial Banks and expansion of their branches,

the branch to people ratio has dramatically changed. In the year 2015, the ratio of total Bank branches to population ratio went down to 39,834 people per branch from 49,674.8 people per branches in the year 2013 (NBE, 2015). However, the branches of the existing Banks concentrated for about 34 .1 percent in capital city of Ethiopia Addis Ababa (NBE, 2015) .This last figure, despite the improvement in branch networks, clearly indicated the lower Banking service provided by formal Banks to rural area in general to agricultural sector in particular. There are also 31 microfinance institutions in Ethiopia. The total asset of micro enterprise finance institutions has reached 24.5 billion birr in June 2014 (NBE, 2015). It has shown uninterrupted increase each year. They provide their service more to the small holder farmer clients in the rural areas.

These Banks and financial institutions except the state-owned commercial Bank, which provides short term fertilizer loans and the development Bank of Ethiopia, which by itself, serving private commercial agriculture through providing medium and long terms agricultural loans. They are mainly targeting urban clients and mostly focus on providing short-term loans.

Concerning credit allocation sector wise; for instance, as the data available on the total loan provided as of June 2014 to the economy, 39.2 percent was provided to the industry, 19.2 percent for international trade, 19 percent for housing and construction, 11.6 for domestic trade and 9.2 percent for agriculture. The remaining was a claim for other sectors (NBE, 2014). The agriculture sector is still receiving between 4 to 10 percent in average of total loans provided to the economy (NBE report, 2014).

The government borrowing level as of June 2014 was birr 2.9 billion or 2.5 percent (NBE, 2014) of the total credit provided by the commercial Banks to the economy. The averaged share of the government borrowing was 10 percent during 1974 and reached to averaged 47% during the year 1975-90 (Abraham, 2002). At current times, although, the government borrowing showed a decreasing trend from 47 percent in the year 1990 to the 2.5 percent in the year 2014 even 0.7 percentile decrease from the year 2013, the shifting of the funds for credit provision to agricultural sector   not yet developed.

Regarding the loan collection despite the improvement in loan collection the percentage of gross non-performing loans remains high, though, has reduced dramatically from 38% and 64% in 1996/97 to 24% and 31% in 1999/2000.   It is still not showing drastic

improvements .For instance DBE non-performing loan position is 16 percent (DBE, 2015) and exceed from international standard of one digit (Mulugeta, 2010).

Generally in this period much effort has been made to alter the behavior of the Banks through changing ownership policy. Firstly, those Banks that are owned by government are allowed to work on the basis of sustainability. On the other hand, the policy favored private sector as the engine of the economy. This includes both the private financial institutions and the private borrowers. Yet loan repayments problem continued to be challenging to the Banks and also questioning the adaptability of the Banks to the private borrowers characteristics.

It is obvious when formal financial institutions flourish and provide credit to small holder farmers; it will in turn accelerate development of the agricultural sector. Such environment has never been created during the Imperial and Derg Eras. Contrary to the expectation, such situation did not yield the likely result in the present era. This problem must be central issue for policy makers.

Therefore, this study is intended to investigate factors that determine loan repayments problems associated with private commercial cotton growers. It will be helpful for Banks, policy makers and agribusiness owners. It will give directions on what characteristics of borrowers and other factors that they need to focus for future loan extension and timey loan repayments.

2.8 REVIEW OF THE COTTON SECTORE

Cotton is a natural fiber of vegetable origin like jute or hemp. It is originally thrived in the wild estimated at 3000 B.C but its commercial exploitation begins in India. Cotton is simultaneously an agricultural product and industrial raw material. Regarding technological development important developments have occurred in the crucially sensitive areas of cotton plant breeding and biotechnology. There are about hundred countries that produce cotton throughout the world. The major five producers of seed cotton in order of importance include China, the United States, Uzbekistan, India and Pakistan. (Commodity study of DBE, 2011)

With the advancement of technology, it has been possible to produce colored fiber, which avoids dyeing of cotton fiber. China for example uses transgenic cotton plants, which produce yellow, white, green, or red cotton.

Ethiopia is believed to be one of the origins of cotton, and cotton cultivation is deep-rooted in the history of the country's agriculture. Cotton is one of the major cash crops in Ethiopia and is extensively grown in the lowlands under large-scale irrigation schemes. It is also grown on small-scale farms under rain-fed agriculture. Still about 85% of the total population living in rural areas of the country, produces a significant part of its textile needs from the traditional non-industrial sector.

Ethiopia is also one of the African countries that produce and export cotton. It has an estimated area of 2,575,810 hectares that is suitable for the cultivation of cotton (Mord 2005). However, the total production area is only about 100,000 hectares. According to Sneyd (2006), also the area of land allocated for cotton in Ethiopia during 2004/05 was 113,000 hectares.

Despite its potential capacity to produce abundant cotton, Ethiopia performed weakly. Income generated from export of cotton and textile products in Ethiopia is low when compared to other commodities For instance The amount of cotton exported and the amount of revenue generated from the export is low. As MOARD (2005), indicated that the average annual export of lint cotton in Ethiopia from 1998/99 to 2004/05 was 6,055 ton.

In order to improve the situation since 2003 the government has issued a policy regime and incentive which includes but not limited to custom duty exemption, cheap land lease price, development of human resources, etc as shortly detailed in short here below.

With the implementation of the above policy regime of the government now a day's private individual has been participating in increasing number for instance until 2005 the number of private commercial cotton borrowers of DBE were 4 while at the present day they have reached to 172. This is excluding those who participate with their own finance. At the export level in the years 2013/2014, 2014/2015 it was 15 metric tons and 5 metric tons (USDA, 2015). Despite the improvement observed in the cotton production and cotton farms enterprises, the available data indicates that the country harvest covers only about 5.4 percent of its potential or 135,000 ha (USDA, 2015).

At small scale farm level, the cotton production sector is suffering from poor extension service, inadequate availability of improved varieties, poor market linkage and access to land and from access to short, medium and long term loans (Bosena et.al. 2011). Loan timely repayments from Those commercial borrowers also considered to be one of the constraints to expand the production through loan recycling. This needs investigation in order to enhance the social and economic benefits of the sector.

2.8.1 Policy Regime for Cotton Sector

These incentives are available both to foreign and domestic investors and the said Regulations doesn't discriminate between a foreign and domestic investor or between foreign investors of different nationalities. The major type of incentives that are available both to foreign and domestic investors are the following:

Customs Duty Exemption 100 percent exemption from the payment of import customs duty and other taxes levied on imports is granted to investment capital goods and construction materials necessary for the establishment of a new enterprise or for the expansion or upgrading of an existing enterprise as well as spare parts worth up to 15 percent of the value of the imported capital goods

Income Tax exemption

Any income derived from an approved new manufacturing, agro-industrial or agricultural investment is exempted from the payment of income tax ranging from 2-8 years depending up on the area of investment

Loss Carry forward

Business enterprises that suffer losses during the tax holiday period can carry forward such loses for half of the income tax exemption period, after the expiry of such period.

Remittance of Funds

Foreign investors are entitled to make the following remittances out of Ethiopia in convertible foreign currency at the prevailing rate of exchange on the date of remittance:

Investment Guarantee and Protection

In Ethiopia both the Constitution and the investment Code protect private property. s. Besides, the Country has signed bilateral investment promotion and protection treaties with a number of Countries and is also in the process of signing such treaties with a number other countries.

Cost of land

In Ethiopia, land is public property. It is available for investment on leasehold basis. Leaseholders have the right to use land for up to 80 years depending upon its location. Lease right over land can be transferred, mortgaged or sub-leased together with on build facilities. The rental value and the lease period of rural land are determined and fixed by land use regulations of each regional state. The average costs of land in industrial zones and rural areas in four regional states and in Dire Dawa are shown below.

Table 1 Indicative land lease/Rate Rural lease

Region	price
Oromia	$4.4.02-7.71/ha/year
Amhara	$6.34-28.45/ha/year
Tigray	$1.71-2.29/ha/year
Benishangul Gumuz	$3.42-4/ha/year
SNNPR	$2.17-6.68/ha/year

Source investment office,2014

2.5 An Overview Of Development Banking

In the previous section, we are reviewed the Ethiopian financial sectors, general policies at different periods and the total performance with no regard to their specific nature ,policies, and internal working environment .In this section ,however, to get better understanding, we deal with the development Banks unique nature and the constrains they have been facing due to their unique feature and its relation with loan repayment. Following this analysis we give brief overview of the Ethiopia development Bank's past and present credit policies and its credit performance in general.

2.5.1 Development Banking Concept and Constraints

Development Banks are the financial institutions which integrated part of the system necessary to support economic development. In original form of and its broadest definition ,it is a types of financial intermediation to help the country reach a higher and sustainable level of development on the wider context ,the desired level of development includes the whole spectrum of socio-economic progress , development Banking therefore can also be defined as a form of financial intermediation that provide financing to high priority investments projects in developing economy (ADFIAP, 2003). Both definitions imply that the purpose of development Banking is to bring the country to higher level of development. Development Bank fills a gap left by undeveloped capital markets and the reluctance of commercial Banks to offer long –term financing (ADFIAP, 2003).

Most development Banks created with the purpose of (industry or agriculture) and specific type of development project. A latter has supposed to have high social returns but they

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need to be financial viable .Given this characteristic of individual project, these Banks face a conflict of purpose. Kane (1975), explain that the conflict emerge because as development institute, the Bank should lend with those project with the highest rate on development impacts scale .As a Banking institution, it should finance those project with the highest in the financial (interest rate scale).In deciding which development project to finance, the development Banks are influenced by government goals and policies.

They work under limited number of Branches (ADFIAP, 2003 and Araido 1972). They don't accept checking and saving deposit and not provide other Banking service such as Money transfer. Therefore, the only sources of funds are, loan recovery, domestic borrowing from central Banks and external borrowing. They are mostly characterized by high cost ,depending on the clients they serve ,low collection due to various reason including the structural design and external influence such as agricultural risks, and interference by government in the screening process etc. In some   cases they serve as conduit for government which is criticized because it had led on one side the government to inject the uninterrupted subsidy to achieve some target ,on the other hand, it will endangered the sustainability of the development Banks (Kibru, 2010,carlos 1985).

Generally as the above discussion of global characteristics of development Banks indicated the development Bank intends to operate as Banks with the limit imposed by political constrains and institutional constrains. They are concerned about earning, while fulfilling development goals. Here, as difference to commercial Banks, profit per se is not motive in development banking (ADFIAP, 2003 and Carlos, 1985). They are evaluated more on such results such as the social benefit that are related with bearing the risk of introducing new sector, introducing new technologies. Improving the managerial and entrepreneurships capacities and the development of new similar projects etc. Other impacts for assessment developments include the consequent increase in employment, foreign currency earning (Kibru, 2010 and ADFIP, 2003).

However, in the present era, with the introduction of the structural changes, the policy direction emphasizes the financial sustainability of the development Banks. This has been introduced at all developing countries, including Ethiopia. Financial sustainability is the capacity of financial institution to generate enough profit to be economically viable. At the same time loan repayment performance become important criteria in assessing credit

programmers. Further, with the change in policy regime the gradual shift from specialization to universal Banking and product diversification is also introduced (Mulugeta, 2010).

However, despite the change in policies, the issues of getting sustainability, at the same time enforcing the development Banks to attain other social benefits, with the low interest rate that fixed to provide access to capital for agriculture, for the sake of the development, remained as constraint. In addition they provide loans that have a loan repayments period extended up to twenty years .This long repayment period, which plagued with so many credit risks, considered as one of the major difficulty for sustainability of the development Banks.

To sum –up as the above discussion implies assessing the development Banks repayment determinants is not an easy task .Despite these complications, it needs to be challenged because loan repayment is one of the sources of the development Bank assets. Loan repayment is also an asset that affects the mobilization of either external or domestic borrowing. It is also an asset which is affected by level of the external resource, subsidies and domestic borrowing level.

2.5.2 Development Bank of Ethiopia and Its Credit Operation

In Ethiopia, despite agriculture considered to be the priority sector in all regimes that exited including the current government, no specialized agricultural Bank so far established to deal with the sector, based on its special characteristic and its various challenges. Only this exiting Bank that is the now named development Bank of Ethiopia has served medium and long terms loans for the industrial, service and agricultural sector. Because of this structural organization of the Bank, the focus toward agricultural or industrial sector thought to be influenced in many aspects including in the judicious allocation of capital to each sector.

Development Bank of Ethiopia (DBE) has been one of government owned financial institution engaged in financing short (less than one year), medium (1-5 years) and long (greater than 5years) term credit to small, medium and large scale investment projects. It is also financing short-term loans to micro enterprises, the source of finance being International Development Association (IDA). The country's first development Bank was founded in 1909. Later Agricultural and Industrial Development Bank was set up in 1970,

taking over two earlier development Banks, namely then named development Bank of Ethiopia and the Ethiopian Investment Corporation which had been established as the Investment Bank of Ethiopia (Harvey,1998). In 1994 it was restructured to do universal Banking operation and it was renamed as DBE. Initially it was established as Agricultural Bank of Ethiopia in 1945 and renamed as Agricultural and Commercial Bank of Ethiopia before it came out as DBE in 1951.

Like other financial institutions, its lending policy has been affected by the kind of political system and development perspective prevailed at global as well as country level .During imperial regime and up to 1976 the Bank was engaged in financing private commercial agriculture and industries with the credit policies that favored more land lords ,foreigners and the then emerged well educated Ethiopian entrepreneur, During that time it was financing mostly of large-scale investment projects while small-scale enterprises were marginalized. A high collateral requirement of 200% of the value of the loans had discouraged most small scale potential borrowers from using the Bank's credit services (Itana, 1994).

During the Derg period, DBE (the then AID Bank) became the government's principal instrument for mobilizing and extending credit to the socialized sectors of the economy. It was restricted to meet the credit demand of state farms, cooperatives (for small holder' farmers) and public enterprises. During this period the Bank doesn't require collateral from cooperatives and state farms as opposed to at least 125% requirement for private borrowers. The Bank's project evaluation criteria and requirements were usually applicable only to private borrowers and industrial establishments (Assefa, 1987). The same holds to the discrimination in interest rate as described in the previous section. The overall credit policy adopted during the period was to serve as strategic arms of the then exiting government and were primarily used as an instrument to encourage and strengthen the socialized sector. Access to loan especially for agricultural sector was provided with integration of input, extension and marketing arrangement, loan collection mechanism especially from small holders was interlinked with the agricultural marketing. During this period what makes the Bank still exceptional was its provision of investments loans such as loans for dairy caws etc for small holder farmers.

During this period the focus on loan collection especially from state owned industry and commercial agricultural constrained by state interference. Loan collection provided less regard especially from state owned enterprises. Lending policies have not always been dictated by commercial considerations. For example, as of June 1992 the Bank had extended about 90% of its agricultural loan portfolio in unsecured loans to state farms and cooperatives. At the same time, state farms and cooperatives owed 97% of all delinquent loans (DBE Report 1990) .The liquidation of borrower cooperative due to the then emerged political instability and lack of power to enforce the liquidated cooperative to repay the loans was the main reason for presence of delinquent loans during 1990s in small farmers . In case of financing state farmers the interference of the governments was high. As a result, to cover the financial cash flows shortage that resulted due to non-repayments of loans by stated owned enterprises the Bank were maintained its cash flows with financial assistance of National Bank . Meeting objective of such as employment generation, export earnings and maintaining lose making enterprise through provision of uninterrupted financial assistance was the rule of the day for judgments of its impacts. This type of approach was continued under and up to the 1993, before the reforms introduced by the government (Mulugeta, 2010).

After 1990/91 onwards, like other financial institutions, it diverted its attention towards the private sector. In agricultural sector, for example, DBE has totally withdrawn itself from financing of cooperatives (except those in coffee growing areas) and state farms. Loan disbursed to the private sector that was never exceeded 11% during 1990/91 ,reached 37% in 1993/94, 51% in 1995/96 and further to 77% in 2000/01 and by now covers almost total loans (DBE Annual Reports, 1990/91-2000/01, 2014/2015).

Loan approval for private loans was centralized at the head office until the end of 1992. One major requirement for private borrowers to have access to Bank loan is collateral. The Bank requires minimum collateral value of 100% and 125% including the project. This being the minimum, both the collateral requirement as well as the equity contribution varies depending up on the background of the promoter and the viability of the project according to the Bank's assessment. The repayment period of the investment loans is determined based on cash flow projection but does not exceed 20 years, this maximum period of loan repayment has shown improvement from previous policy of 15 year.

According to the recent report, the Bank has 35 branches. The loan ceiling of private loans for branches also changed to birr 25 million from maximum lending amount of birr 1 million that was used in the late 1990 depending on the grade of branches.

The recent trend in various credit operations of the Bank shows that its performance in provision of credit to private sector highly improving. The performance of the Bank for the last twenty years indicated as the Bank approved a total of birr 38.8 billion, disbursed birr 24 billion and has collected birr 13 billion from private sector (the data are attached in the annex part)

However ,despite the Bank's better engagement in the private loan provision, the problems still observed in getting loan repayment as anticipated .The non-performing loan position of 16 percent of the current total loan substantiate the need to study the factor that determine loan repayment specially at sect oral and sub sector level before its further distortion observed in the financial positions and the continuation of the Bank in sustainable manners Otherwise, the loan may face the same fate as those of most of the loans previously released to the socialized sectors of the economy and written –off at the cost of the economy, Bank's image, and to sustainable provision of credit etc

2.5.3 DBE's Credit Experience in Cotton Enterprise Industry

With regarded to cotton producing enterprises DBE has been financing about 172 major private commercial cotton farms projects operating in the country. DBE has approved birr 3, 624,328,056and disbursed a total loan amount of Birr 1,500,545,848.5.as of March 2015.

Loan collection is one of the core operational activities of the Bank. To maintain financial sustainability of the Bank it was necessary to engage on collection of loan that was granted to the borrowers.

However, the performance of the Bank regarding loan collection from matured loans was poor when compared to the demand of collection of Birr 150 million. The total collection level as of March 31, 2015 covers only 5.8 percent of the interest demand. The Bank could have collected Birr 150 million from borrowers in the past years .The total number of defaulted (Those that delayed loan repayments) borrowers has reached 42 while those non defaulted borrowers reported to be 26. The remaining 102 borrowers of the Bank reported to be under implementation and under grace period.. For cotton producer, the Bank provide

a grace period for irrigated cotton project one year when the project established in developed area and two years when the project established in under developed area (DBE Credit policy, 2006). Regarding the projects that passed the grace period the Bank has taken continuous and massive rescheduling actions so as to help farmers to adopt to the market with less strain because of this the real picture is not totally reflected.

2.6 Theoretical Arguments on Loan Default Problem

Credit markets may be either of formal or informal ones. The informal financial system (IFS) consists of all the other institutions that are virtually outside the control of the established legal framework, including the money-lenders and the rotating savings and credit associations (Obamuyi, 2007) and of course, cooperative groups.

When we think of agricultural businesses in LDCs, the major source of finance so far are Banks and informal sector mostly money lender. The probability of default of credit from informal market specially money lender is low, because informal financial markets (Money lender) are much closer to their clients and potential clients, and through gossip and daily contact they are much more aware of their activities than a formal Banker would ever be., This information enables them to select, screen, finance, monitor and enforce the loan contracts in effective way with knowledge of potential borrowers' risks they are exposed to. They are specially more efficient in enforcing loan repayment beyond legal enforcement with different mechanisms including imposing social sanctions, controlling the output market of the borrowers, and up to   eradicating borrowers from land in case of specially money lender.

The informal financial sector especially money lender has also advantages in rating the credit worthiness of borrowers through the information they accumulate through generations. Through time, and with increase theoretical knowledge of the role of credit for development and the credit function of our informal lender, that is the selection ,screening, monitoring, allocating , risk pooling and generally as Stlitgize (1993), stated information and risk functions of specially of our money lender, formal institutionalized credit theoretically argued to be instituted. This theatrical argument promoted the policy recommendation for the intervention in rural credit market from different perspective.

However, with few exceptions formal credit program have fallen substantially short of expectations. The loan defaults from formal financial institutions found to be serious as compared to that of informal financial institutions (Von Pischke *et al*. 1983; Yaron, 1994).The empirical studies made by Daumont, et al (2004) ,also found that the credit program that were implemented resulted in nonperforming loan level estimated to reaches 50 percent of the loan in Benin and other countries. The cost of the above non – performing loans estimated to reach 17 percent of GDP of the Benin.

In similar manner, the recent theoretical and empirical work in economics has established that credit markets in developing countries, like Ethiopia, work inefficiently due to a number of market imperfections. The literature cites a number of market imperfections which lead to loan default. These imperfections include:

1) Interest rate ceilings usually imposed by the government

3) Large transaction costs incurred by borrowers in applying for loans

4) Moral Hazards.

Thus, despite the policy recommendations, the observed failures of the formal credit institutions to effectively do the money lenders functions, especially in case of loan repayments has pave the way for different arguments.

Several factors have been attributed to loan defaults in agriculture. Some argued from the characteristics of the farmers, other argued from the characteristic of the projects while other argued from the institutional side including governance, transparency, and existence of condition for legal enforcement. Other argues from the socio–economic characteristic and the geographical settlement of farmers in developing countries. Some of the argument presented here below.

Copisarow (2000), argued that defaults generally arise from poor program design or implementation, not from any essential problems with the borrowers. Derban et al. (2005), argued that the causes of non-repayment could be grouped into three main areas: the inherent characteristics of borrowers and their businesses that make it unlikely that the loan would be repaid. Second, are the characteristics of lending institution and suitability of the loan product to the borrower, which make it unlikely that the loan would be repaid? Third, is systematic risk from the external factors such as the economic, political and business environment in which the borrower operates.

Udoh (2008), argued that with respect to the borrowers, when they failed to make repayment of borrowed money; it might be as a result of their inability or outright unwillingness to repay. This had underscored the distinction between two identified possible reasons for loan default, namely, strategic default, associated with a borrower's willful decision to default, even when the benefiting business enterprise had yielded enough revenue to effect repayment. Tedeschi (2008), Argued that default on loan repayment comes due to a negative economic shock, which was often unavoidable. Awoke (2004), argued that the high rate of default arise from poor management procedures, loan diversion and unwillingness to repay loans.

Oke et. al. (2007), argued that firm's profit significantly influenced loan repayment. Tedeschi (2008), argued that loan recovery problems would be observed owing to overly long grace periods, bureaucratic complications, indiscriminate lending, and lack of attention to deposit mobilization effort justified by its great public value and for reasons of market failure.

Morris (1985) as cited by Fry,(1995), found out that the primary causes of high arrears in India, for example, is the rapid expansion of lending in response to government pressures to achieve mandated credit disbursement targets. He listed the following as causes of loan default: a) failure to tie lending to productive investment b) Neglect of marketing and linking credit recovery to the sale of the product; c) defective loan policies, delayed loan disbursement, too much or too little credit and unrealistic repayment schedules; d) misapplication of loans; e) ineffective supervision; f) indifference of Bank management with respect to recovering loans and g) lack of responsibility and discipline on the part of borrower.

Roslan and Mohd Zaini (2009), argued that borrowers that did not have any training in relation to their business have a higher probability to default.

Different authors recommend tackling the problems raised on the side of borrowers, lending institutions and governments as solution to the default problem attributed to agricultural sector   enterprises in developing countries (Roslan & Mohd Zaini, 2009); Tedeschi, (2008); Awoke(2004), Kitchen (1989); Fry (1995); Chirwa, (1997).

2.7 Empirical Studies on the Determinants of Agricultural Loan Repayment Performance

In this section some works on the agricultural and microfinance credit performance have been reviewed The review of the studies on agricultural credit repayment performance determinant studies serves the purpose of providing background that will be guide the process of choosing variables for a loan repayment study in a major predominantly agricultural economy Accordingly a number of factors have been raised as systematically influencing loan repayment by different authors indifferent developing countries. Hence, the review covers only few and important literature for the purpose of grasping what the empirical studies offer on over all subjects to be studied.

2.7.1 Empirical studies in other countries

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.

Hunt(1996), examined the credit rationing technology of lenders and the repayment behavior of borrowers at a rural financial institution based on 504 sample observations. Loan rationing equation and loan repayment equations estimated employing Tobit model using survey data at Guyana Cooperative Agricultural and Industrial Development Bank revealed that only 33% of the criteria utilized identified credit worthy borrowers implying that the screening technology was not efficient and needed to be repaired. The results also

indicated that tightening the loan contract terms by reducing the grace period on loans and rejecting applications which had long processing times enhanced the pool of credit worthy borrowers. Female borrowers were also not rationed differently than male borrowers, nor were they worse payers than male borrowers (i.e. the variable sex was insignificant in both equations), but wealthy borrowers were bad credit risks as their repayment performance was poor. In general, the study showed that only four out of twelve explanatory variables (fishing, males in food crops and livestock, credit experience and sugar cane) enhance creditworthiness, while other variables especially grace period, delays, and joint borrowers contribute significantly to the default problem.

EZe and Ibekwe (2007), used ordering least square and multiple regression to identify factors that determine the loan repayment performance under indigenous financial system in south Nigeria .They found the amount of loan received, age of beneficiaries, house hold size, year of formal education and occupation were important determinant socio -economic factors for loan repayments in the communities they have selected for study .On the other hand level of many years exposure to the farming business though positively correlated with 50% significance, the coefficient farming experience was not statistically significant.

Wongnaa and Unyo Vitr (2013) used descriptive and statistical analysis such as frequency of percentage to describe the socio- economic characteristic of the respondents, while prohibit model was used to analyze factor affecting loan repayment performance among yam farmers in the Sene district (Ghana). They found that education, experience, profit, age, supervision and off farm income have positive effect on loan repayment performance. Conversely, gender, and marriage have negative effects on loan repayment performance. The effects of house hold size found to be ambiguous.

Important determinates economic factors loan repayment in the communities they had selected for study, on the other hand ,indicated that level of many years exposure to farming business ,though ,positively correlated with 50% significance ,the co-efficient farming experience was not statistically significant.

Chirwa (1997), estimated the probability of agricultural credit repayment utilizing data from five Agricultural Development Divisions in Malawi. using a profit analysis on 1237 sample farmer club members, he showed that the availability of resources from crop sales and income transfers, the size of the club, the degree of diversification and the quality of

information determined the probability of repayment. In contrast, other factors such as amount of loan, sex of household's head, size of household and club experience was not statistically significant. Crop sales, income transfers, degree of diversification and quality of information are positively while size of club is negatively related with the probability of repayment.

Ibtissem (2013), used binary logistic regression model to identify factors that offered default among borrowers of Tunisian micro finance Bank. The result showed that the borrower's socio-demographic characteristics, past participation in micro credit loans and past credit history have significant impacts as special feature on their default rate.

Douglas and Cameron (2000), used main –covariance structured analysis in modeling group repayment behavior, they found that willingness to pay rather than ability to pay a major role in modeling of group repayment performance. Based on this finding, they conclude that the most obstacles to group repayment were domino effect. Means, as more of the group experienced repayment problems; it became difficult to other to continue covering their repayment. They found that the coefficient of leadership and training were strongly positive and significant but negative effect on repayment was the loan cycle because it associates with domino effect.

Manojit (2013), used double hurdle model to model loan repayment behavior in developing countries, he found that loan repayment performance of formal loans positively related with interest rate in the informal sector. He conclude that in addition to recalling a positive and significant impact of the informal sectors interest on the repayment of formal loans, empirical analysis reveals a plausible negative impact of expectation regarding a loan waiver as well as the moral problem faced by formal lending agencies. On the other hand ,he found that formal sector negatively correlated with its interest rate.

Onyenucheya and Oukoha (2007) had studied loan repayment and credit worthiness of farmers under the Nigerian agricultural cooperative and rural development Bank. They used semi-log regression model to determine socio-economic factors that affect loan repayment among farmers.

They found that, amount of loan borrowed, annual income and distance between home and loan sources were key determinants of loan repayments. However, discriminate function

analysis showed that farming experience, total expenditure, income ratio, farm size, level of education and age of farmers made positive contribution to credit worthiness.

Bhatt and Shui-Yantan (2002), conducted a study on the determinants of loan repayment for four micro credit program in America, they used logic model and the descriptive analysis statistical methods. The independent variables of all the micro- credit programs were gender, business license and proximity. The individual level of socio economic variables used to determine factors that affect loan repayments were, gender, educational level, household income, formality of business, years in business, and proximity of borrowers to lending agencies.

Other contextual variable used to assess the loan repayment performance were transaction cost faced by borrowers, homogeneity of borrowers group and social sanction. The result indicated that when barrowers incurred low cost for transaction, they tend to have higher repayment rate. The probability of loan repayment also increased with social sanction. In addition higher educational level of borrowers and proximity to financial institution increase borrowers' chance of repayment. The borrower's gender resulted with no effect on the loan repayment performance. They found also that lending to communities with higher social capital and to borrowers engaged income generating activities .may also increase the chance of loan repayments but they warned not to replicate social capital as a guarantee in U.S.A. Because unlike the third world, the U.S.A, lack social capital to use it as mechanism for loan delivery without securities. To deliver and provide unsecured loan, to entrepreneurs, for getting some social and economic development, they warned it will generate greater risks in USA.

Manohr and Manferd (1997), applied the Tobit model to identify factors that determine the loan repayment performance in grouped based credit program in Bangladesh.

Specific research were performed in the following social economic variables that were hypothesize to determinant: group size; size of loans, degree of loan rationing , enterprise mix within groups, demographic characters, social ties and statues, occurrence of Idiosyncratic shocks. They concluded that if basic principles 'of prudential Banking and adhered to repayment rate can be good even in poor and remote communities.

The important things for financial institutions are to tailor services such that it becomes worthwhile for the poor to establish a profitable long term association. The depend variable used in this study was delinquency rate defined as the proportion of total loan in arrears at date when complete repayment was promised The results of the study factors such as asset and enterprise diversity within groups significantly affect repayment rates. Delinquency rate found to be increase with the loan size.

Manfred (1996), also used theTobit model to identify factors that affect the dependent variable loan repayment. The result indicated that the communities' level of materialization and its access to input dealers results in the significant increase in the repayment rate. The access to output and input market is an important feature for a functioning credit market. Further groups that located in communities with high risk exposure had significantly lower repayment rate. Regional characteristic don't have any influence on the loan repayment. They also found that the average transport cost from the village rural service sectors seems not to influence the repayment rate. program that provides saving service to the member had significant loan repayment.

Roslan and Zaini (2009) investigated the effect of borrowers' characteristics, project characteristics and loan characteristics on loan repayment of agro Bank micro credit scheme. The characteristics of the borrowers are (i) gender, (ii) marital status, (iii) race, (iv) level of education,(v) age, (vi) occupation, (vii) number of dependents, experience, membership in business society and training. The characteristics of the project are ownership structure of the project, type of the project, distance of the project to nearest agro Bank office, and revenue from project. The loan characteristics are amount of loan and length of repayment period. The data used in the study is a primary data, which is gathered through a survey carried out among agro-Bank micro credit scheme borrowers in 86 branches of agro Bank throughout Malaysia. Self-explanatory questionnaire were provided to the respondents, where 2630 borrowers were chosen for the analysis by a simple random sampling. In order to determine the effect of borrowers characteristics on the probability of default, an econometric approach that relies on both probit and Logit models were employed. The result of the study shows the variable gender is positive and significant. This implies that the probability to default is higher for male than for female borrowers. The coefficient for the variable type of the project is negative and significant.

This implies that the probability to default is lower for borrowers that involve in service/support activities as compared to those in production activities.

The coefficient for the variable training is also negative and significant. This result suggests that borrowers that did not have any training in relation to their business/project activity has a higher probability to default compared to those borrowers who had some training. The coefficient for amount variable is also negative and significant which suggests in terms of amount of loan the higher the loan amount the lower the probability for default. The coefficient for the variable period of repayment is positive and significant this gives an indication that the probability to default is higher the longer the repayment period.

In general the estimated result of the research from both probit and Logit models suggests that the probability to default is not influenced by race, education, age ,previous occupation, number of dependency, experience, membership in business society, the distance of the business/project to the nearest agro Bank office and revenue from the business or project.

Reza and Mansoori (2008), investigated the factors influencing on repayment behavior of farm who received loan from agricultural Bank in Khorasan-Razavi province, Iran In 2008.In their research methodology, they use a Logit model to find the factors influencing on loan repayment performance. Dependent variable is defined as whether farmers had delayed repayment of loan installments to Bank. Hence, If farmer had not any delayed repayment, value of dependent variable will be one and otherwise zero. The Study was done by collecting data through a survey and questionnaires for 175 farmers in rural regions of Khorasan-Razavi Province of Iran. . The independent variables include, age, farm land hectares, experience of and income of respondent, interest rate of received loan, time laps between loan application and disbursement. Whether respondent used loan for investment activity, total application costs, whether respondent owned farm machinery, loan size, collateral value, Number of installments for which the loan is due for repayment. The Logit model limits probabilities for each values of dependent variable between 0 and 1. The Logit model seeks to explain the probability of loan on time repayment as a result of any of the16 identified independent variable. The signs of the coefficient of independent variables and Significance of the variables were used in determining largely the impact of

each variable on the Probability of dependent variable. The Results showed that farmer's experience, income, received; loan size and collateral value have positive effect while loan interest rate, total application costs and number of installment have a negative effect on repayment performance of recipients. Comparing the elasticity of the significant variables, it is indicated that loan interest rate is the most important factor in their model, farming experience and total application costs are the next factors respectively.

Koopahi and Bakhshi (2002) used a discriminate analysis to identifying defaulter farmers from non-defaulters of agricultural Bank recipients in Iran. Results showed that use of machinery, length of repayment period, Bank supervision on the use of loan had significant and positive effect on the agricultural credit repayment performance. In the other hand, incidence of natural disasters, higher level of education of the loan recipient and length of waiting time for loan reception had a significant and negative effect on dependent variable.

2.7.2   Empirical Studies in Ethiopia

There are few studies on agricultural credit repayment performance in Ethiopia .The existing literature except few focus on small holder formers repayment determinants for a loans of micro finance institutions and NGOs in the different region of the country .The few studies were done for individual financial institutions borrowers included here to draw lesson from them.

Mulugeta (2010), in his study on determinant of agricultural loan repayment performance of development Bank of Ethiopia used Tobit model and concluded that age of borrowers, monitoring (follow upping made by the Bank) ,loan issuing time, marital status of borrows , managerial experience of project manager and educational levels of borrowers were statistical significant factors affecting repayment of agricultural loan .

Abraham (2002), in his study on determinants of loan repayment for small scale enterprise around Zeway (Ethiopia) also used the Tobit model and concluded that having other sources of income, production level, work experience, engagement in economic activities other than agriculture enhance loan repayment while loan diversion being made and giving extended loan repayment period are undermining factors of the loan repayment performance of project.

With regard to loan rationing mechanism of the development Bank of Ethiopia he conclude that borrowers who secured high value of collateral and those with relatively longer repayment period were favored although they found to be more risky while those with higher equity share and extensive experience with related activity were discouraged .

Million (2012), studied the determinants of loan repayment performance of smallholder farmers in Eastern Hararge zone in Ethiopia, using 16 socio economic explanatory variable for descriptive statistics and two limit Tobit models identified that three of the explanatory variable that is age, climatic zone ,off farm activity ,and frequency of connections with extension agents positively and significantly influencing loan repayment, while production loss, informal credit, social ceremonies, and loan income ratio ,negatively influenced loan repayment performance of small holder farmers in the area.

Abebe (2011), studied the determinants of credit repayment and fertilizer utilization among member of co-operative in Ada district in Ethiopia. He used inferential statistic to describe the socio -economic characteristics of borrowers while Topit model employed to identify factors that influence loan repayment results indicated that family Size, livestock ownership, on farm income, non-farm income and saving habit were the statistically significant factors influencing positively timely loan repayment performance.

Kassa and Muleta (2004), studied two regions using the probit and Logit model and concluded that loan repayment performance is positive affected by off farm activities, food grain production level, proportion of yield loss due to natural factors, timelines of supply of agricultural inputs, and relative large amount of loans, poor infrastructure, long procedures and decision process for getting timely supply of inputs found to affect negatively the loan repayments of farmers.

Jemal (2003), studied loan repayment performance of the Oromia Credit and Savings Share Company (OCSSCO) in Kuyu. The independent variables used on the research includes, age of borrower, sex of borrower, Educational level of borrower, loan size in Birr, timeliness of loan release, loan diversion rate(Ratio of loan diverted to total loan receive, income from activities financed by loan (annual), annual income from other activities (not financed by the loan), value of livestock in Birr, suitability of repayment period, use of financial records, adequacy of supervision visits made to a borrower, location of residence of borrower, number of dependents number of times borrowed

The estimation results of the descriptive statistics and the Tobit model show that education income, loan supervision, suitability of repayment period, availability of other credit sources and livestock are important and significant factors that enhance the loan repayment performance,

Muluken (2014), carried out on an assessment on factors that influence loan repayment performance of DBE's floriculture credit borrowers and estimated the relative importance of factors in improving loan repayment performance among floriculture credit borrowers. He used secondary Data collected from the individual files of fifty four floriculture credit borrowers of DBE. The study shows that 28 (52%) of the floriculture credit borrowers were defaulters, whereas the rest 26 (48%) were non defaulters. Probit model was used to identify variables which determine loan repayment performance. Follow-ups made by the Bank, educational status, and sustainable floriculture certification status and farming experience of floriculture credit borrowers were statistically significant factors affecting repayment of floriculture loan of DBE. The analysis of partial marginal effect shows that sustainable floriculture certification is the most important factor among the others.

CHAPTER THREE:

RESEARCH METHODOLOGY METHOD AND DATA SOURCES

3.1 Research approach and design

This study dominantly adopted a quantitative approach to estimate the determinants of loan repayment performance of private cotton farms financed by the Development Bank of Ethiopia. To achieve the general objective of the study, the study used a causal research design.

3.2 Target population and sampling

The target population for this study is all cotton production enterprise that borrowed from the Development Bank of Ethiopia. The total population 172 is private commercial cotton farms. Out of the total population 68 private commercial borrowers are reported to be fully operational while the rest are under-grace period and thus are not obliged for loan repayments.

The study intended to include in the sample all those private commercial cotton borrowers that were fully operational and obliged to repay their loans. However, despite all the efforts that have been done to collect information from all the 68 operational projects the response obtained was from 48 borrowers, of which twenty two were defaulters and the remaining had successfully paid their loan overdue timely during the time of the survey. The response rate covers 72%

3.3 Data Type and Source

Secondary data sources were used for this study. Secondary data were collected from different files of DBE's cotton investment credit borrowers. This includes individual borrower's file and financial reports of the Bank. The data collected includes socio-economic characteristics such as educational status, related farming experience, access to off farm income, amount of loan, information on borrowers' loan collateral coverage, loan processing time, loan disbursement installment, capital structure (equity contribution of the borrower), type of management, number of supervisory visit and other related factors that deem to influence loan repayment performance of private commercial cotton farmers.

3.4 Data analysis

Both descriptive as well as econometrics techniques were used to analyse the, data collected from DBE. Descriptive statistics such as means, percentage, frequency distribution, and standard deviations of the variables were used to describe the socio economic characteristics of the respondents. In addition, chi-square t statistics was employed to compare defaulters and non-defaulters group with respect to explanatory variables

3.4.1 Econometric analysis

To identify the determinants of loan repayment performance of DBE financed cotton producing enterprises, an econometric technique was employed. Loan repayment performance is influenced by a complex set of socio-economic, demographic, technical, and institutional factors. Conceptually, the model used to examine the causal relationship between loan repayment status and determinants of loan repayment performance involves a mixed set of qualitative and quantitative data. The response (dependent) variable is dichotomous taking on two values, 1 if the farmer settled his/her loan on time and 0 if he/she does not. Estimation of this type of causal relationship entails the use of qualitative response m such as Logit or probit. However, several estimation problems arise particularly when Ordinary Least Squares (OLS) regression and linear probability models are employed (Feder et al. 1985; Aldrich and Nelson, 1990Maddala, 1992). The OLS regression technique, when the dependent variable is binary, produces parameter estimates that are inefficient and a hetroscedastic error structure. Consequently, hypothesis testing and construction of confidence interval become inaccurate and misleading. Likewise, a linear probability model may generate predicted values outside the admissible 0-1 bound, which violate the basic tenets of probability. To alleviate these problems and produce relevant empirical outcomes, the most widely used qualitative response models are the Logit and probit models (Amemiya, 1981). Both the probit and Logit models yield similar parameter estimates and it is difficult to distinguish them statistically (Aldrich and Nelson, 1990). However, Maddala (1983) and Kmenta (1986) reported that the logistic and cumulative normal functions are very close in the mid-range, but the logistic function has slightly heavier tails than the cumulative normal function. Gujarati (1988) and Pindyck and

Rubinfeld (1981) pointed out that the logistic and probit formulations are quite comparable, the main difference being that the former has slightly flatter tails; that is, the normal curve approaches the axes more quickly than the logistic curve. The study adopted the probit model partly because of its ability to constrain the utility value of the ability to pay for loans variable to lie within 0 and 1, and its ability to resolve the problem of heteroskedasticity. The other advantages of the probit model include believable error term distribution as well as realistic probabilities. Following from Madala (2005) and Asante et al (2011), the probit model adopted for the study is specified below.

3.4.2. specification of the model

The cotton grower's ability to pay for his/her loan at the right time is dichotomized, involving two mutually exclusive alternatives. The cotton grower is either able to pay for his/her loan at the right time or not. This yields a binary dependent variable, yi which takes cotton   grower able to pay for his/her loan (Non defaulter) and those who defaulted. Non-defaulters are credit worthy borrowers who settled the debt amount on the due date signed on the contract. Defaulters are non credit worthy borrowers who breach their loan contract and have repayment problem on the due date.

The probability of observing a value of one is:

$$Pi(Y = \frac{1}{BiXi} = 1 - F(-XiBi - - - - - - - - - - - - - - - - - 1$$

Where F is a cumulative   distribution function. It is a continuous, strictly increasing function that takes a real value and returns a value which ranges from 0 to 1.

Then, it follows that the probability of observing a value of zero is:

$$Pi(Yi = \frac{0}{XiBi} = F(-XiBi) ------------- ---2$$

Given such a specification, the parameters for estimating this model is estimated using the maximum likelihood approach. The dependent variable is an unobserved latent variable that is linearly related to yi by the equation:

Yî=BîXî+Uî--3

Where u_i stand for a random disturbance term. The observed dependent variable is determined by whether y_i exceeds a threshold value or otherwise:

$$Yî=\begin{Bmatrix} 1 \ if \ Y^* > 1 \\ 0 \ if \ Y^* \geq 0 \end{Bmatrix}$$-------------- ---4

Where yi^* is the threshold value for $y_{¡i}$ and is assumed to be normally distributed. Common models for estimating such parameters include probit (standard normal), Logit (logistic) and Tobit (extreme value) (Madala, 2005; Asante et al, 2011).

Following Madala (2005) and Asante et al (2011), the probit model adopted for the study is specified as

P_i= P (Y*<Yî)

$$= P(Y *< B0 + Bi + Bi + BiXJi = F(Yi)$$--5

$$P_i=F(Yî)=\frac{1}{\sqrt{2}} \int_{-\infty}^{Zi} e^{\frac{s^2}{2}} dS$$

where *Pi* is the probability that an individual will make a certain choice (ability to pay for loans collected at the right time or otherwise); *s* is a random variable normally distributed with mean zero and unit variance; y_i is the dependent variable (ability to pay for loans collected at the right time or otherwise); y_i^* is the threshold value of the dependent variable. To obtain an estimate of the index Z_i, the inverse of the cumulative normal function is used as follow;

$Y_i = F^{-1}(P_i) = B0 + B_iX_i + U_i$---6

The parameters $\beta_0, \beta_1, \beta_2, \beta_3, \ldots\ldots, \beta_\infty$ of the probit model do not provide direct information about the effect of the changes in the explanatory variables on the probability of a cotton grower's being able to pay his/her loan alone. The relative effect of each explanatory variable on the likelihood that a borrower will be able to repay his or her loan (marginal effect) is given by:

$\frac{\partial Pi}{\partial Xij} = Bijf(zi)$--7

Where Pi is the mean dependent variable whose value is given in the probit results as:

$f(Zi) = F^{-1}(Pi)$---8

$Zi = Bo + B1X1 + B2X2 + B3X1 + \ldots\ldots\ldots.BkXk - - - - - - - - - - ---9$

$f(Zi) = $ Density function of the standard normal variable and is given by:

$f(Zi) = \frac{1}{\sqrt{2\pi}} e^{-1/2z}$ ---10

The empirical model is specified as:

Where ATPi (Ability to pay) is the explained variable, $\beta0$ is constant, βiXi's are explanatory variables and ui is the error term.

ATPi= $\beta0$ + $\beta1$busif +$\beta2$ sex +$\beta3$gen +B4MARS+$\beta5$edu + $\beta6$MAG + $\beta7$EXMGT + $\beta8$OTHRSH+$\beta9$CRE+$\beta10$+Reltio+$B11$TOL+B12DISB+B13EQU+B14COLACOV+B15T

IME+B16FOLL +B16GRA+ui

3.4.2.2 definition of Variables and Hypotheses

a) Dependent variable

a. Dependent variable (ATP): all borrowers of the Bank that have repaid their loans when due or within thirty days from the due date were classified as non-defaulters and taking a value of 1. Those who repaid within ninety days after due date, one hundred eighty day from due date and three hundred sixty five days from due date were all categorized as defaulters and taking a value of0. Based on the literature reviewed and discussion held with stakeholders, the explanatory variables selected for this study were broadly categorized under socioeconomic, institutional and borrowers factors. In what follows, a brief explanation of the explanatory variables selected for this study and their likely influence on loan repayment performance are presented below.

Further, by using the literature on the determinants of loan repayment performance and economic theory, the following functional relationship between loan repayment performance and factors affecting it has been hypothesized.

b) Independent Variable

Business form of Organization (Busifo): it is dummy variable and defined in the way business organized in terms of ownership and management etc As practiced the sole proprietorships and plc are under different legal obligation in case of loan defaults that promote corrective measures of the Bank to redeem the loans. If the sales of collateral of the project failed to fully cover the loans, the lending Bank has the right to claim other wealth of the borrower unrelated to the project. Despite this risk, other positive incentives such as to own the project fully and not to share the profit for other may strength the sole owner incentive to be current on loan repayments. In contrast, other forms of business organizations borrowers lacks the incentives to repay the loans on time because they are not obliged personally. Therefore, the expectation is there will be positive impact on loan repayment in case of sole proprietorship form of business organization.

Age of Borrower: Age is defined as the period from the birth date of borrower to the data collection time. There is no priori economic expectation that applies readily to the age of the cotton growers in relation to loan performance. However, Vigano (1993), Mulugeta, (2004) and Onyenuchey (2007), findings supported that age contributed for positive loan

repayments. On the other hand, Roshan and Zaine (2009) argued that age of borrowers has no influence while Ali et al. (2012) argued that age has negative influence.

The younger the borrowers age the more risk loving and hence the less concern for timely loan repayment. In this case negative impact is expected in relation to timely loan repayments. On the other hand the older the age of the borrowers, the more the accumulation of wealth from activities and the better the capacity to repay timely and be current on loan repayment. Further, the older the age of the borrowers, the more the gaining of stability in life and experience in management of activities, the better capturing of knowledge both from the past failure and success in the business. Thus, they have ability and willingness to be current in loan repayment. Hence this assumption will increase in capacity to repay the loans timely. In this case therefore apositive impact is expected. Therefore, it is difficult to clearly hypothesize.

Education level (EDU): is dummy variable taking the value of 1 if the borrowers had twelve complete certificate and above and 0 otherwise. If cotton growers with relatively higher level of education are expected to use better or more readily adopted, technologies such as ginning, improved seed and to employ consultants for advice in area which they feel their own management skill deficient. as long as the expected benefit from the use of consultant and better technology are higher than the expected costs ,the growers may continue to use the technology. More educated growers will be more likely to repay their loans on time, therefore loan repayments and education is likely to be positively related. Moreover, Wonga (2013), and MittiBatt et al. (2012) argued that education level has positive influence on loan repayment. The same result is expected in this study.

Sex: in some cases there is an intention that male borrowers have better managerial ability to run an enterprise than female ones, hence may be able to repay than female. . On the other hand, female borrowers are considered as more responsible to loan repayments and their family than males. In this case the loan repayment could be in favor of females. Therefore, it is ambiguous to hypothesize the sign beforehand.

Type of Management (TYPMANG): is defined as either owner or employed who is responsible for the overall operation of the project. It is a dummy variable which takes 1 if the project is managed by the owner and 0 otherwise. It is assumed that if the project managed by the owner, he/she could take the responsibility and make correction timely

when faced different problems. This in turn has a positive impact on the dependent variable. Hence, type of management is expected to have positive sign.

Total Land Size (**TLAND)**: It refers to the total land leased and holding by the farmers. Onyenuchey and Oukkoha, (2007), Adtu et al.(2008-2010) argued that farmer with large farm size has better chance to earn more income which in turn enables him/ her to use more inputs and other technologies which in turn enable the borrower to gain economic of scales hence to reduce costs and achieve better sales revenue, cash flows and hence ability to be current on loan repayments. Hence, having larger leased land size hypothesized to contribute positively to loan repayment .Thus, positive impact on loan repayment is expected. On the other hand farmers with larger leased land holding may invest on clearing lands beyond the resources at their hand.. They may face the risk of operating out of seasonality of the farm activities, etc. which will negatively influence the ability to generate higher cash flows and will constrain their capability to be current on loan repayments than other borrowers with relatively medium or small size land. In this case therefore those relatively with medium size land will be better to be current on loan repayments than those with larger leased land. Therefore, in this case having larger leased land will expect to have negative impact on loan repayments. Therefore, the impacts of the larger land size expected to be either positive or negative

Credit Experience (CREEXP): If the borrower is taken credit from other sources, it provides him incentive to repay the loans because the possibility to delay the loan repayment in one financial institution may stand against getting sustainable credit from other financial institutions. Further, being creditor to other Banks may help the borrowers to get familiarity with the rules and regulation of the Banks. Thus, being able to get credit from other creditor may help borrowers to acquire more experience on the Banks rules and regulations, hence could efficiently utilize the loan for the intended purpose and repay on agreed time on the loan contracts . Therefore positive contribution is expected. This factor was hypothesized based on the finding of Ibtissem (2013).

Off –Farm Income (OFFINC) is defined as the amount of income generated from activities other than cotton crops productions. Many research findings including Jamal (2003), Abebe (2011) and Million (2013) noted that off-farm income contributed positively to loan repayments. These additional sources of income could help to alleviate on–farm

liquidity constrain .Cotton growers with material sources off–farm income may be able to rely less on drawing from farm to finance family expenditure and/or to supplement their limited farm income (e.g. drought) years in order to repay their loans. Consequently, having a substantive amount of off-farm income is expected to increase the probability that cotton growers not delayed the loan repayments   . It is assumed that the variable has a positive impact on loan repayments.

Experience(EXP): Defined as the number of years that the borrower has been involved in cotton farming has been involved can increase the likely hood that he /she can more readily adapt to the challenges of managing a commercial cotton farm .Cotton growers with relatively more experience, therefore, could manage their farm operation better than those with less or no farming experience. Alsharf et al.(2012) and Wonga et al.(2013) noted that farming experience of farmers has apositive impact on loan repayments. Thus, a positive sign is expected.

Institutional Factors

Grace Period (GRACP): is defined as the time given for the project to be relived from repayment of principal in order to enable the project with stand various external and internal challenges without constrain imposed on the loan repayment of principal. If large grace period is given, the project will have sufficient time for implementation so that borrowers could properly utilize the loan for the intended purpose and to generate adequate income after it starts operation. Therefore, it will not face repayment problem when the loan due later.

Loan Issuing Time (Lonist): defined as the time taken from the application of the loan to the disbursement.. If the loan is disbursed on time that is on the possible shortest time, it is likely that it will facilitates the capturing of the opportunities which promoted the borrowers to be involved in the projects. Further obtaining the loan in consistence with the seasonal nature of agriculture might contributed for successful implementation of the projects without developing negative perception later on when the loans are matured for repayments On the other hand, the prolonged appraisal and approval process leads to late disbursement of the loan. This in turn has an impact on the delaying of implementation of the project hence failure to get back the loan repayments on time. Hence, due to perceived

negative influence of long loan issuing time it is expected to have negative effect on repayment performance. The hypothesis for this variable is supported by Vigano (1993), Hunte (1996), Bankhshi and Koopahi (2002) and Bekele (2003).

Loan Amount (LONAMT): It is relation with loan repayment is depends on the amount of loan requirement to run a particular project and managerial capacity of the borrower. If it is above what is required to run the enterprise or more than the borrower's Managerial capacity, it will create an incentive to delay the loan repayment for using it for other purpose, if its low than required it will lead to poor operation of the farm operation which later on produces late loan repayments or loan defaults. These points are argued by Raza and Mansoori (2008) and Sharife et al.(2012), . Hence, it will have negative impacts on timely loan repayments. Otherwise, increasing the loan size will increase the use of large lands and other production capacity that will lead to economic scale achievements which results in reduction of per unit costs. As a result better sales revenue income will have improved liquidity level. This condition will predisposed the borrower to settle all obligation including timely loan repayments. Thus, the sign of the variable can't be predetermined.

Number of Disbursement Installment (NUDISINST): The financial institutions assume that increasing the number of disbursement installments enhances proper utilization of the loan; this in turn has apositive impact on repayments because the installments will assisted the proper loan utilization, to identifying early problems that will jeopardize the successful implementation of the project and hence in the future the loan repayments . it is assumed also that the installments will create possibilities to provide technical assistance which latter on will help the loan repayments to be effected on agreed loan repayment contracts. On the other hand, Mansoori (2009) argued that increasing the number of disbursement installment will lead to delays in the project implementation. So this has a negative impact on repayment performance. Therefore the sign of the variable is expected to be either positive or negative depending on the empirical result.

Ratio of Collateral value to Loan Amount (RATIOCALTL): Is a continuous variable and defined as the proportion of the value of collateral to the outstanding loan amount the higher the ratio the more the borrowers wants not to delay the loan repayments. In contrary the lowers the ratio the less regarded the borrower would exhibit to repay the loans timely.

Reza and Mansoori (2008) noted that the value of collateral in relation to loan amount has a positive impacts with loan repayments .If this ratio is higher; the borrower will exert his Maximum effort not to delay loan repayments. Hence it is expected to have positive impact on loan proportion and hence timely loan repayments.

Ratio of Equity to Total Investment (REQTI): is continuous variable defined as the ratio off equity that is the amount of the money invested by owners in the project to total estimated cost of the project that represented by amount of equity and DBE project). This is important factor in the quality of cotton commercial farms as borrowers and hence in getting timely loan repayments. If this ratio is higher the borrower feels a sense of ownership and will strive to recover the loan and make the whole asset his sole property. Thus, a positive contribution in loan repayment is expected..

Loan Follow-up (FOLLW): defined as the number of visits made to the cotton farmers for various reasons including the provision of technical advice, identification of problems the farm faced and promotion of early loan repayments. Many loan officers agree that number of follow–up visits has positive impacts on repayments of the loan without delay. The results of the research study made by Koophobi and Bakhschi (2002), Mulugeta (2009) and Muluken(2014), pointed out that number of   loan supervision and follow-ups as having positive influence on the loan repayments. It is argued that the more the loan supervision is made, the better the repayments of loans. Therefore, a positive contribution is expected.

CHAPTER FOUR

RESULTS AND DISSCUSSION

This section presents the results from the descriptive and econometric analyses. The descriptive analysis presents the means, percentages, standard deviations and frequency distribution of the variables considered in the thesis. In addition, chi-square and t-statistics were employed to compare defaulters and non-defaulters group with respect to explanatory variables. Econometric analysis was carried out to identify the most important factors that affect cotton grower's loan repayment performance and measure the relative importance of significant explanatory variables on loan repayment

4.1 Demographic and Socio-Economic Characteristics of Borrowers

4.1.1 Sex

In terms of gender composition 6.3% are females while the rest 93.8% are male borrowers. The the female comprises 7.7 of the no defaulters while the male represent 92 percent of the non-defaulters. The defaulter's female represent 6.3 while the male comprises 95.5 percents of the defaulters .mean loan-rationing ratio is larger for males while the mean loan recovery rate is less than female borrowers. Males the difference between the two goops is statistically insignificant (table 1)

Table 2 Gender Distribution of cotton grower borrowers of DBE

	Non-defaulters		Defaulters		Total		$X^2 - VALU$
	Number	percent	Number	percent	Number	percent	
Male	24	92.3	21	95.5	45	93.7	0.2014
Female	2	7.7	1	4.5	3	6.3	
Total	26	100	22	100	48	100	
Mean	0.0769		0.0455		0.062		
Standard deviation	0.2717		0.213		0.245		

*insignificant

Source: own computation (2015)

4.1.2 Business Form of Organization

The borrowers are organized in two private business form of organization namely under plc and sole proprietorship. Of the total number of business organization 33.3 percent are organized under sole proprietorships form of business organization while 72.7 percent are organized under plc form of business organization. Non-defaulter organized for 61.5 percent under sole proprietorship form of business organization while 38.5 percent of them are organized under plc business form organization. The defaulters are organized for 33.3 percent under plc while the remaining 66.7 percent are under sole proprietorship .The mean difference between the two groups are statistical insignificant (Table 2)

Table 3 Business form of organization of cotton grower borrowers

ownership	Non-defaulters		defaulters		Total		$X^2 VALU$
	Number	Percent	Number	Percent	Number	Percent	
Sole	16	61.5	16	73	32	77	413
Plc	10	38.5	6	27	16	33.3	
Total	26	100	22	100	48	100	
Mean	1.54		1.09		1.33		
Standard deviation	1.988		1 .33		1.901		

*insignificant .

:source :Own computation (2015)

4.1.3 Age of Grower/Manager

The cotton grower's highest age is 57, while the mean age is 42. The mean age of non –
defaulters is 45 years while the defaulters average is found to be 39 years. The proportion
of non-defaulters is highest in the age group of 43-52 consisting 26 percent while defaulters
in this group consists 22.7 percents. Both the non –defaulters and defaulters group held
69.2 percent and 68 .2 percent in the indicated that both group held the youngest age group.
The mean age of the cotton borrower's farmers is about 42 years (Table 2) this follows that
majority of the cotton growers are adults and are those in the productive age.
Group wise the mean difference between two groups is statistically insignificant

Table 4 Age distribution of cotton grower borrowers

years	Non-defaulters		defaulters'		Total		$X^2 valu$
	Number	Percent	Number	Percent	Number	Percent	
31-42	18	69.2	15	68.2	33	68.8	0.926
43-52	7	26.9	5	22.7	12	25	
>53	1	3.8	2	9.1	3	6.3	
Total	26	100	22	100	48	100	
Minimum	40		30				
Maximum	56		57				
Mean	45		39.82		42		
Standard deviation	3.92		8.33		6.85		

*insignificant

source :Own computation (2015)

4.1.4. Managerial Experience of Project Managers

Managerial experience is crucial element for the success of business project running. Similarly DBE appraises the managerial experience weather it is capable or not to manage the business successfully. According to the results of this study, the average experience of a manager weather employed or business owned was about 6 years. The minimum and maximum managerial experience was 0 and 12 Years, respectively. The mean years of experience following from the study was about 5 years (Table 4). This is an indication that most of the cotton growers (respondents) have engaged in farming activities long enough and could be assumed to have acquired skills for effective farming activities.

Group wise, the average managerial experience of the project managers was about 6 and 4 years for non-defaulters and defaulters, respectively. The difference between non-defaulters and defaulters in terms of number of years of experience was statistically insignificant

Table 5 Managerial Experience of Cotton Growers Borrowers

years	Non-defaulters		Defaulters'		Total		X^2 value
	Number	percent	Number	percent	Number	Percent	
0-4	15	58	7	31.8	22	3.02	3.51
5-8	4	15.3	8	36.4	12	25	
9-12	3	11.4	3	13.6	6	12.5	
>12	4	15.3	4	18.2	8	16.7	
Total	26	100	22	100	48	100	
Mean		6.1	4	5.02			
Standard deviation	1.9		1.95		2.26		

*Insignificant

source: Own computation (2015)

4.1.5. Education Status of Borrowers

The study result revealed that, of all the borrowers, about 35.4 percent attended elementary education while those attended secondary education covers 22.9 percent The result shows that, group wise 19.2 percent of the non-defaulters and 22.9 percent of the defaulter borrowers attended 12 grade, respectively. On the other hand, 42 percent of non-defaulters and about 39 percent of defaulters attended at least above 12 years. .The mean difference between the two is statistically insignificant at probability of 5 percent.

Table 6 Educational status of cotton grower borrowers

Value (years)	Non-defaulters		defaulters'		Total		x2valu
	number	percent	number	percent	Number	Percent	
Elementary	9	34.6	8	36.4	17	35.4	1.299
Secondary	5	19.2	6	27.3	11	22.9	
Diploma	1	3.8	0	0	1	2.1	
Bachelor & above	11	42.3	8	36.4	19	39.6	
Total	26	100	22	100	49	100	
Mean	2		1.72		1.87		
Standard deviation	1.85		1.80		1.81		

*insignificant

source : own computation (2015)

4.1.6 Type of Project Managers

The analysis shows that, about 47.6 percent of projects financed by the DBE were managed by owners whereas about 52 percent were managed by employed managers.

Table 7   Type of management of cotton grower borrowers of DBE

	Non-defaulters		defaulters'		Total		X^2 val
	Number	percent	Number	percent	Number	Percent	
Own	12	46.2	9	40.1	21	47.60	
133							
Employed	14	53.8	13	59.9	27	52.4	
Total	26	100	22	100	48	100	
Mean	0.532		0.590 9		0.565		
Standard deviation	0.5084		0.5032		0.501		

*Insignificant

Source: own computation (2015)

It was also found that, about 53.8 percent of non-defaulters and 59.9 percent of defaulters projects were managed by employed managers whereas about 46.2 percent of non-defaulters and 52.4percent of defaulters were managed by owners. The mean difference between the two found to be statistically insignificant

4.1.7. Other Source of Income

Sales of project product are the major source of income for the borrowers to repay their loan on the base of loan contractual agreement. However, borrowers engaged in different businesses that generate income, get the opportunity to repay the loan in more effective manner. According to the study results, of the total borrowers about 44 percent had no other sources of income whereas about 56 percent of the borrowers had other sources of income.

Table 8 Cotton grower borrower's distribution with others sources of income

	Non-defaulters		Defaulters'		Total		$x^2 valu$
	Number	percent	number	percent	Number	Percent	
Yes	14	54	13	59	27	56	0.277
No	12	46	9	41	21	44	
Total	26	100	22	100	48	100	
Mean	0.6923		0.6191		0.659		
Standard deviation	0.47070		0.4976		0.474		

*insignificant

 Source: Own computation (2015)

As shown in table 7, about 46percent of the non-defaulters and 44 percent of defaulters had no other source of income that supports the repayment of their loan whereas about 54 percent of non-defaulters and 56 percent of defaulters had different economic activities other than the project financed. The difference between the defaulters and non-defaulters in terms of having other sources of income was statistically insignificant (Table 7)

4.1.8. Borrowing Experience

The result of the study shows that, about 27.1 percent of the borrowers had borrowing experience with other commercial Banks, whereas about 72,9 percent didn't have any borrowing relationship with other Banks. This result clearly indicated that most of borrowers who came to the Bank were new investors that were not borrowed from other Banks.

Table 9 Proportion of cotton grower's borrowers with credit experience

	Non-defaulters		defaulters'		Total		X^2val
	Number	percent	number	percent	Number	Percent	
Yes	9	34.62	4	18.18	13	27.1	1.629 -
No	17	65.38	18	81.82	35	72.9	
Total	26	100	22	100	48	100	
Mean		0.6384		0.8181		0.729	
Standard deviation		0.4851		0.3947		0.449	

*insignificant

Source: Own computation (2015)

Group wise the result also shows that, about 34.62 percent of the non-defaulters and 18.18 percent of the defaulters had borrowing experience with other Bank whereas about 65.38 percent of non-defaulters and 81.82 percent of defaulter borrowers didn't have any borrowing experience with other Banks operating in Ethiopia. The statistical difference between defaulters and non-defaulters in terms of borrowing relations with other Banks was statistically insignificant.

4.1.9 Total Land Size

The study result shows on average each cotton growers had a farm size of 603.3 hectares. The minimum and maximum farm sizes were 200 hectare and 2000 hectares respectively. Group wise on average non-defaulters had a farm size of around 635 ha in average whereas defaulter credit borrower has a farm size of around 625. This means cotton growers with more farms are likely to repay the loans if the borrower is credit worthy. The mean difference between the defaulters and non-defaulters in terms of farm size were statistically insignificant level (Table 10).

Table 10 Distribution of cotton grower's borrowers by size of land leased

	Non-defaulters		Defaulters'		Total		$X^2va;ue$
Ha	Number	percent	number	percent	Number	Percent	
200—500	12	46.2	11	50	23	47.9	2.1435
501---1000	12	46.2	9	40.9	21	43.8	
1001---1500	1	3.8	0	0	1	2.1	
>1500	1	3.8	2	9.1	3	6.3	
Total	26	100	22	100	48	100	
Minimum	200		200				
Maximum		2000			1674		
Mean		635	625			630.81	
Standard deviation		403	413			40	

*insignificant

Source: Own computation (2015)

4. 2. Institutional factors

4.2.1. Loan issuing time

Loan issuing time is an important factor that affects the successful implementation of projects. It has a significant impact on production and revenue schedule of 48 project. This in turn affects the repayment performance of borrowers. The study result shows that, the average time from application to first disbursement was about 71.58 days with a minimum and maximum of 24 and 240 days.

Table 11 Cotton grower borrower's distribution in terms of loan issuing time

	Non-defaulters		Defaulters'		Total		x^2 value
Days	Number	percent	Number	percent	Number	Percent	
<30	6	23.1	2	9.1	8	11.4	1.629
31-60	13	50	4	18.2	15	35.4	
61-90	5	19.2	9	40.9	14	29.2	
>90	2	7.7	7	31.8	9	18.7	
Total	26	100	22	100	48	100	
Maximum	120	`	240				
Mean	54.96		91.23		71.58		
Standard deviation	28.841		54.92		1.754		

*significant

source: Own computation (2015)

The average loan processing time for the non-defaulters and defaulters was about 54 and 91days, respectively. Similarly table 9 shows that about 46 percent of loans of non – defaulters were processed in between 31-60 days whereas the defaulters covered in this categories for 35.4 percent . On the contrary the non –defaulters that took the first loan disbursement above 90 days constitute below one percent those defaulters in this categories covered highest percentage or 18 percent of the borrowers .The mean difference between non-defaulters and defaulters in terms of waiting for loan approval was statistically in significant .

4.2.2. Monitoring/ follow-ups by the DBE

The study result indicated that, on average, the Bank supervised the projects only once during the entire project life with maximum five times.

Table 12 Proportion of cotton grower borrowers follow up coverage

Number	Non-defaulters		defaulters'		Total		$X^2 val$
	Number	percent	number	percent	Number	Percent	
0-3	21	80.77	14	63.64	35	72.92	0.467
4-7	4	15.38	8	36	12	25.00	
>7	1	3.85	0	0	1	2.08	
Total	26	100	22	100	48	100	
Mean	2.69		2.5		2.64		
Standard deviation 1.97			1.89		1.92		

*in significant
Source: Own computation (2015)

As shown in table 11, on average 2.69 and 2.5 visits were made to non-defaulters and defaulters" projects by the Bank, respectively. In addition, the result shows that about 72.92 percent follow-up coverage were made for three times to both non –defaulters and defaulters borrowers .the proportion of defaulters the constituted the follow-up contacts from 4-7 visit covers 25 percent of the defaulters borrowers whereas non–defaulters visited covered 15.38 percents. The mean difference between non-defaulters and defaulters were statistical insignificant..

4.2.3. Collateral coverage

According to the study results, on average, the value of collateral covers 97 percent of the loans. The collateral coverage of non-defaulters in average were found to 103 percent of the loans whereas the defaulters projects covers 90 of the loans amounts .The minimum and maximum collateral coverage value of non-defaulters were 46 percent and 285percent, respectively while the defaulters projects covered 42and 142 percent respectively the mean difference is statistically insignificant at less than 10 percent

Table 13 Cotton grower's borrowers proportion of the projects collateral coverage

	Non-defaulters		Defaulters'		Total		$x^2\ val$
	Number	Percent	Number	Percent	Number	Percent	
30-60	4	15.4	4	19.1	8	17	1.604
61-90	1	3.8	5	23.8	6	12.8	
91-100	8	30.8	3	14.3	11	23.40	
>100	13	50	9	42.8	22	46.8	
Total	26	100	21	100	47	100	
Minimum		46	42				
Maximum		285	142				
Mean		103.8	90			97.46	
Standard deviation	43.48		26			36.47	

*insignificant
 Source :own computation (2015)

4.2.4. Equity

About 68.2   percent of non-defaulters and 84.6 percent of defaulters contributed about less and equal to 30 percent value of the project where as 31.8 percent of non –defaulter and 12.4 percent of defaulter has contributed equity that exceed 30 percent. The mean difference between defaulters and non-defaulters in terms of equity contribution was statistically in significant at 5% probability level (Table 13).

With regard to the overall percentage of equity contribution, the study result shows that, on average, a borrower equity contribution was about 22 percent of the approved loan.

Group wise, on average, a non-defaulter borrower's equity contribution was about 31 percent of the approved loan whereas a defaulter was about 15   percent. The mean difference between defaulters and non-defaulters in terms of equity contribution was statistically in significant

Table 14 Cotton grower's distribution by proportion of equity contribution.

	Non-defaulters		defaulters'		Total		x^2 value
	Number	percent	Number	percent	Number	Percent	
<=30%	18	68.2	19	84.6	37	77.1	1.0241
>30%	8	31.8	3	13.4	11	32.9	
Total	26	100	22	100	48	100	
Mean	0.31		0.154		0.229		
Standard deviation 0.477			0.368		0,425		

*in significant

 Source: Own computation (2015)

4.2.5. Loan

Loan is defined as the amount of the loan that the Bank disburses to the respective borrowers. Accordingly the study result show that, on average, the Bank was disbursed birr 14.3 million to a single borrower. Group wise, on average, a non-defaulter borrower's loan size was about birr 14.35 million whereas a defaulter was about birr 14.31 million. The

mean difference between defaulters and non-defaulters in terms of loan size was statistically insignificant.

Table 15 Loan disbursement to cotton growers

Birr	Non-defaulters		defaulters'		Total		$X^2\ val$
	Number	percent	Number	percent	Number	Percent	
2M-4M -	10	38.5	16	72.7	34	70.8	1.88
5M-6M	12	46.2	5	22.7	12	25	
>6M	4	15.4	1	4.5	2	4.2	
Total	26	100	22	100	48	100	
Mean	14.35		14.31		14.33		
Standard deviation	11.14		18.01		14.52		

*in significant
Source :own computation (2015)

Grace period:-The minimum and maximum grace period provided was o and 730 days for both defaulters and non-defaulters alike. 80.77percent of non –defaulters and 85.4 of defaulters was provided a grace period that from 0 days up to 365 days. The percentage of non-defaulters for grace period above 365 day covers 19.33 while the defaulters' grace period coverage above 365 days found to be 14 percent. The mean difference between the two groups found to be 46 days. The two groups show no statistical significance.

Table 16 Cotton grower's distribution by grace period

days	Non-defaulters		defaulters'		Total		$X^2 val$
	Number	percent	Number	percent	Number	Percent	
0---365	21	80.7	20	90.1	41	85.4	143
>365	5	19.3	2	9.9	7	14.6	
Total	26	100	22	100	48	100	
Minimum	0		0				
Maximum	730		730				
Mean	280.8		327.6		302.21		
Standard deviation 259.3			144.5		213.6		

*in significant at 5% probability
Source: Own computation (2015).

4.2.7. Disbursement installment

The study result revealed that, of the entire cotton e borrowers about 60.4 percent were taken loans between 2-4 disbursement installment and the remaining 29.2 percent were taken loans between 5-6 installment (Table 16).loan installment of cotton grower's borrowers of DBE it is significant

Table 17 Distribution of DBE cotton grower borrowers in terms of loan disbursement installment

	Number	Percent	Number	Percent	Number	Percent	x2-val
2-4	10	38 .5	19	86.5	29	60.4	
5-6	12	46	2	9	14	29.2	15.18
>6	4	15.5	1	4.5	5	10.4	
Total	26	100	22	100	48	100	
Mean	4.3		3.72		4.08		
Standard dev	20.		935		1.62		

*Significant

Source: Own computation

4.3 Determinants of cotton loan repayment performance

4.3.1. Determinants of cotton grower borrowers of DBE

As discussed in chapter 3, the probit econometric model was selected for analyzing the factors influencing the loan repayment performance of the cotton grower borrowers. Prior to running the probit regression model both the continuous and discrete explanatory variables were checked for the existence of multicollinearity and the degree of association using Variance Inflation Factor (VIF) and contingency coefficients, respectively. The VIF values for continuous variables were found to be very small (much less than 10) indicating that absence of multicollinearity between them (Table15). Likewise, the results of the computation of contingency coefficients reveal that there was no a serious problem of association among discrete variables (Table 18). For this reason, all of the explanatory variables were included in the final analysis. More specifically, eleven t continuous and five discrete explanatory variables were used to estimate the probit model. The VIF values for continuous variables and contingency value for discrete variable depicted in tables 17 and 18respectively.To determine the explanatory variables that are good predictors of the loan repayment performance among flower growers, the probit regression model was estimated using the Maximum Likelihood Estimation Method. The results of the analysis are presented in Table 17

Table 18 VIF Table

Variable	VIF	1/VIF
EDU	3.36	0.297344
MGTEXP	2.89	0.345536
LOIT	2.7	0.370976
LOAMT	2.58	0.388324
NUDINST	2.48	0.402933
GRACP	2.11	0.473152
AGE	2.11	0.474246
TOTLAND	2.07	0.483049
FOLLW	1.62	0.616646
RCALTL	1.39	0.717004
REQTI	1.37	0.729852
Mean VIF	2.21	

When the variables to be calculated are discrete in nature, Contingency coefficient (CC) is used. Contingency coefficients can be calculated as:

$$Cc = \sqrt{\frac{X^2}{N+X^2}}$$

Where, CC= Contingency coefficient, $\chi 2$ = Chi-square random variable and N=total sample size.

Table 19 Contingency coefficient for discrete variables (X_i)

	sex	credexp	Typmangt	Off-incm
Busform	0.1925	-0.4947	0.2548	0.4227
sex		-0.1504	-0.2139	0.1939
credexp			-0.194	0.774
Typmagnt				-.04200

Source: Own computation

5.3.1 Model Tests

Normality

One of the basic assumptions of the classical linear regression model (CLRM) is the Stochastic/disturbance term is normally distributed. To make sure that this assumption is valid or not, the residuals generated out of the regression model is plotted against the fitted values of the

Dependent variables. If this curve is like bell shaped distribution it can be concluded that the Disturbance term is normally distributed with mean zero and constant variance one (i.e. N~(0, 1)).

To get the residuals normally distributed first we have to make sure that each variable employed are found to be normally distributed. In this case, most of the variables are found to be normally distributed, the variables that are not normally distributed were transformed to logarithmic form, and the disturbance term becomes normally distributed.

Heteroscedasticity

An important assumption of the CLRM is that the disturbances Ui appearing in the regression

Function is homoscedastic. That is they have the same variance (E (Ui2) = s2 where i= 1, 2… n.

All the equations estimated in this paper are found to face heteroscedasticity problem. How ever, since the successful loan repayment equation is estimated using probit model, running robust Estimation using STATA software easily solves its problem.

Measures of Goodness of Fit

The use of conventional R2 for goodness of fit when the dependent variable takes either 1 or 0 is not appropriate. A summary measure used similar to the conventional R2 that have been Suggested for models with qualitative dependent variable is calculated based on likelihood ratio as follows:

1 - L (β0, βi)

L (β0,0)

Where L (β0, βi) is the maximized value of the log likelihood of the model being estimated, L (β0,0) is the value of the likelihood estimated only with constant term. This measure has value 0, when the entire slope coefficients are zero, and value 1 when the model is perfect predictor. In our Probit model this summary measure is:

1- (-14.33095)-

(--29.55962)   this result indicates that our Probit model explains about 52.59% of the variation.

Estimation results of probit model

To determine the explanatory variables that are good predictors of the loan repayment performance of DBE‟s agricultural credit borrowers, the probit regression model was estimated using the Maximum Likelihood Estimation Method. The results of the analysis are presented in Table 19

The results of the probit analysis are presented as follows.

Probit regression

Number of obs   =   48

LR chi2(16)   =   31.88

Prob> chi2   =   0.010 Log likelihood = -14.374456   Pseudo R2   =   0.5259

Table 20 Likely hood result of probit model

rpt	Coef.	Std. Err.	Z	P>z	[95% Conf. Interval]	
BUSFO	0.996433	0.66197	1.51	0.132	-0.30101	2.29387
AGE	0.072481	0.0717	1.01	0.312	-0.06805	0.213015
LONAMT	-1.46E-07	1.14E-07	-1.28	0.199	-3.69E-07	7.70E-08
INUDINST	0.384432	0.41339	0.93	0.352	-0.4258	1.194668
LONIT	-0.04417	0.02112	-2.09	0.037**	-0.08556	-0.00277
CREEXPR	-3.9558	1.86022	-2.13	0.033**	-7.60177	-0.30983
RCALTLR	0.126358	0.06565	1.92	0.054*	-0.00231	0.255031
TYPEMANG	1.625117	1.19024	1.37	0.172	-0.70772	3.957951
MGTEXP	-0.09486	0.10855	-0.87	0.382	-0.3076	0.117883
fOLLW	-0.03564	0.09686	-0.37	0.713	-0.22548	0.154206
OFF INCM	1.692023	1.0249	1.65	0.099**	-0.31674	3.700783
GRACP	0.001352	0.00123	1.1	0.273	-0.00107	0.003769
REQTI	-4.82419	2.44153	-1.98	0.048**	-9.6095	-0.03887
EDU	-0.44574	0.35764	-1.25	0.213	-1.1467	0.255216
GEN	4.811435	3.04796	1.58	0.114	-1.16245	10.78532
TOTLAND	-0.00571	0.00545	-1.05	0.295	-0.0164	0.004979
_cons	-7.49294	6.87592	-1.09	0.276	-20.9695	5.983604

**Significant at 5% and *significant at 10%

From the results in table 19 above, a likelihood ratio (LR) statistic of 31.88 with a chi kelihood ratio test statistic exceeds the Chi-square critical value with 15 degrees of freedom. The result is significant at less than 5% probability level indicating that the hypothesis that all the coefficients except the intercept are equal to zero is not tenable. Likewise, the log likelihood value was significant at 1% probability level.

The model results show that the probit egression model correctly predicted about 52.59 percent of the total borrowers. As discussed in the bodies of the report finding the loan repayment determinants in case of development Banks is difficult.

Out of the sixteen variables hypothesized to influence the loan repayment performance of borrowers, five were found to be statistically significant. The maximum likelihood estimates of the probit model shows that timing lag from application to loan disbursement ,having credit experience ,collateral value's ability to cover the out −standing loans ,having other sources of income ,Ration of equity to loan amount are statistically significant at 5 percent probability . The variable age ,business form of organization ,amount of loan disbursed, number of installment ,type of management ,grace period ,educational level of borrowers ,sex of borrowers ,total land leased are less power full for explaining the commercial cotton loan borrowers of DBE .

The result of the probit model shows that the lag in time from loan application to the first loan disbursement has significant and positive effect in loan repayments. It might be because of the fact that, as the time of loan processing increases beyond the planned/scheduled time in the project. it could bring disruption of all activities planned This might introduces negative final results in smooth operation of the project which latter on might influence the loan repayments timely. The lag in time between the two activities might also exposed owners to the missing of various opportunities that has promoted them to be involved in the project. As a result of the above negative impacts the borrowers might also contributed to development of a negative perception towards loan repayments As a result borrowers who have got the loan in longer delay failed the repayment of loan according to the contractual agreement.   The decrease in one day in loan issuing time will have probability of 4 percent getting loan repayment in time ,while the increase in one day in loan issuing time have probability of delaying loan repayment by 3 percent. The results is in agreement with the finding of Vigano (1993), Hunte (1996), Bankhshi and Koopahi (2002) and Bekele (2003).

Credit experience of the borrowers is one of the factors which significantly and positively determine the loan repayment performance of agricultural credit borrowers of DBE at 5percent probability level. The econometric model results revealed that, other things being constant the odd ratio in favor of being non-defaulters increase by 3 percent while having

experience in credit will have an impact in decreasing the probability of defaults by 95 percent. This might be to the fact that borrowers who has credit relation prior to getting access to DBE loans might have experience and knowledge of the police ,rules of the Banks .They might also have experience in running profitable business and effective management of Bank loan . Other facts might be the fear that the defaults in one Banks might lead them to lack of finance from other Banks .Thus clear understanding this problems which might jeopardize other business under their management might give them the incentive to repay the loans timely. The analysis also resulted that increase in onetime credit experience will have probability to   reduce loan default by 95.5 percent while lack of credit experience increase the probability of loan repayment defaults by 3.7 percents. This finding is consistent with the finding of Ibtissem(2013).

The results of the probit model show that the value of collateral matters much. The level of collateral coverage against loan out-standing has significant and positive effect on loan repayment performance of DBE‟s borrower. Other things being constants those owners with the value of the project that exceeds the loan amount has an incentive to retain the project and remain in cotton growing. They gain nothing by delaying the repayments rather they have an incentive to repay timely as it will help them getting others financial support from other Banks. On the other hand those with value of collateral that is much below the loan amount has no incentive for repayments because they might loss less in case of defaults. They might assume that the Bank will provide them loan waving as practiced by the Bank .The result of probit model also shows that in one increase in collateral value results in 12.6 increase in loan repayments while one percent decrease in value of collateral results in increase of 5.4 percent in loan defaults rate. This imply DBE Financed project need the consideration of the collateral value and the consideration of the measures in terms of return from specially land value which so far constrained by many problems .This result is in agreements with the results of Reza and Mansoori (2008).

The results of the probit model also shows that having other sources of income has positive and significant impact in loan repayment of cotton growers of DBE at 5 percent probability .This might be due to the fact that those borrowers that have other sources income have financial capability to with stand the shocks in cash flows of the cotton farms..The expectation that farm might yield them better returns in the future might give them the

incentive to meet loan repayments without delay. On the other hand, those with no other income source might lacks the ability to withstand shock in cash flows during drought and other risks therefore dependency in one project as sources of income might jeopardize the capability to be current in loan repayments . . The probit model also shows that the probability of getting loan repayments on time increase by 69 percent if borrowers have other sources of income .The probability of loan defaults increase by 9.9 percent if the borrowers lack other sources of income. This imply that the DBE financed cotton loan borrowers require better environment to get profitability and the need for serious consideration in having others sources of income by borrowers during financing This finding is in agreement with the finding of Jamal, (2003) Abebe, (2011) and Million, (2013).

The result of the probit model also shows that the level equity contribution has positive and significant influence at 5 percent probability level. Those with the higher debt equity repay their loans in time this might be due that facts that as the level of equity increase the feeling of ownership increase thus positively contributing to loan repayments .On the other hand other things constants those with the lesser level of equity might constrained with negative incentive to repay the loan timely .This facts might contribute to delay in loan repayments. They might assumes that profitability of the farm might be in question, therefore they might delay repayments .The expectation that the Bank might wave the loans might be other reason not to inject more . The lesser equity level might also develop the perception that the Bank has no power to influence them therefore less regard to be current in loan repayments .Further they might expect more loans because they assume that the Bank demands no other collateral expect the project for mass project rehabilitation as practiced in the country in past and provide them loans to fill the short fall in equity .Those with expectation that the project yields better returns might increase their equity either during loan granting process or thereafter .In contrast those borrowers with constrain in equity contribution level acts contrary to those who have better equity against the loan level. The probit model also shows the probability of loan defaults decrease by 82 percent as equity level increase by one percents while the probability of loan defaults increase by 4.8 percent as equity decrease by one percent .These imply that DBE financed project require stricter regard for level of equity of the borrowers along with presence of factors that promote

equity contribution by cotton growers in order to attain sustainable development in cotton sector in general and successful current loan repayments by DBE in particular .This finding is in agreement with finding of Chirwa (1997) as stated by Abraham (2002).

4.3.2 Marginal Effect of Significant Variable

All significant explanatory variables do not have the same level of impact on loan repayment performance of borrowers. In order to determine the relative importance of each explanatory variable on repayment performance of borrowers, it needs calculation of marginal effect of each explanatory variable and the result after the probit model estimation is presented as follow:

As the result of the estimation in table 18 indicated, the marginal effect of ration of equity to investment is 87.4 percent it means with an increase in one percent of equity the borrowers not to be defaulters increase by 87.4 percent. Citrus paribus the ration of equity to total investments is the highest when compared it to other significant explanatory variable. Next to equity ratio is credit experience of the borrowers other things constants the probability of not to be loan repayment defaulter increase by 71.6 percent if the borrowers has credit experience. Having off farm income also found to be one of the most important criteria for decreasing loan defaults .Other thing constant the borrowers who has other sources of income will increase the probability not to be defaulter by 30.7 percent as compared to others with no other sources of income . The collateral value of the project and the time of loan processing will have probability of not be defaulters by 2.2 percent and 0,8 percent respectively.

Table 21 Marginal effect of significant variables

rpt	Coef.	Std. Err.	Z	P>z	[95% Conf. Interval]	
BUSFO	0.996433	0.66197	1.51	0.132	-0.30101	2.29387
AGE	0.072481	0.0717	1.01	0.312	-0.06805	0.21302
LONAMT	-1.46E-07	1.14E-07	-1.28	0.199	-3.69E-07	7.70E-08
INUDINST	0.384432	0.41339	0.93	0.352	-0.4258	1.19467
LONIT	-0.04417	0.02112	-2.09	0.037**	-0.08556	-0.0028
CREEXPR	-3.9558	1.86022	-2.13	0.033**	-7.60177	-0.3098
RCALTLR	0.126358	0.06565	1.92	0.054**	-0.00231	0.25503
TYPEMANG	1.625117	1.19024	1.37	0.172	-0.70772	3.95795
MGTEXP	-0.09486	0.10855	-0.87	0.382	-0.3076	0.11788
FOLLW	-0.03564	0.09686	-0.37	0.713	-0.22548	0.15421
OFF INCM	1.692023	1.0249	1.65	0.099*	-0.31674	3.70078
GRACP	0.001352	0.00123	1.1	0.273	-0.00107	0.00377
REQTI	-4.82419	2.44153	-1.98	0.048*	-9.6095	-0.0389
EDU	-0.44574	0.35764	-1.25	0.213	-1.1467	0.25522
GEN	4.811435	3.04796	1.58	0.114	-1.16245	10.7853
TOTLAND	-0.00571	0.00545	-1.05	0.295	-0.0164	0.00498
_cons	-7.49294	6.87592	-1.09	0.276	-20.9695	5.9836

** significant at 5% and * significant at 10%

5. SUMMARY, CONCLUSION AND POLICY IMPLICATION

5.1. Summary and Conclusion

Since 1990th the governments has designed a new development program that aimed in exploiting the ideal resources for the economic development and hence for improving the life standard of the population. With the believe that the private sector is an engine of the development emphasis has been given to this sector along with facilitating access to credit and other resources .

DBE is one of the government financial institutions established by government to assist the developments of the private sector through availing medium and long term loans to the government priority sector without jeopardizing its responsibility to maintain itself and provide credit in sustainable manners.

Cotton sector in general and cotton production in particular is one of selected sector which are given priority by the governments. With this due emphasis given in the sector is in process of witnessing the development in commercial cotton production. The efforts might lead the country to be one of the major cotton producer's countries in the continents in the future. This futurity, however, depends much in the involvements of many individuals and small holders' farmers as well through provision of specially medium and long terms loans. Besides, in light of the need to expand the sector's development expansion in credit flows is considered an indispensible tools and strategy of the government to reach at what the country hoped to attain from the development of the sector .Toward achieving sustainable credit flows to the sector recycling of the already given loans is necessary through investigating factors that have contribute for timely loan repayments and those which contribute negatively to achieve this.   Thus, this study executed to help the policy maker in general the development Bank of Ethiopia in particular to what aspects of the borrowers and policy to focus in a future screening, financing, and maintaining the already financed project without compromising its sustainability.

The main objective of the study was to analyze which, and how much the hypothesized explanatory variables were related to the loan repayment performance of cotton grower's borrowers of DBE.

The data was collected for 48 borrowers out of 68 borrowers of cotton growers that are already in full operation and are in loan repayment obligation. Owning to this defaulters, whereas the rest 26 (56%) were non defaulters.

The analysis of explanatory variables affecting loan repayment performances shows that among sixteen explanatory variables, which were hypothesized to influence agriculture borrowers of DBE repayment performance, five were statistically significant while the remaining eleven were less powerful in explaining the variation in the independent variable.

The significant variables include loan processing time, ratio of equity to total investments of the projects, collateral value of the projects, the credit experience of borrowers, availability of off-farm income.

Loan processing time is one of the major factors that contribute positively and significantly in relation with timely loan repayments. This might be because of the fact that, as the time of loan processing increases beyond the planned/scheduled time in the project. It could bring disruption of all activities planned This might introduces negative final results in smooth operation of the project which latter on might influence the loan repayments timely. The lag in time between the two activities might also exposed owners to the missing of various opportunities that has promoted them to be involved in the project.

Equity contribution to total outstanding loan is one of the factors that have significantly related to be current in loan repayments of cotton growers. This is might be because of the difference in incentive to own the project and remain in the sector between those with high Equity level with those with lower equity level. Those with the higher equity repay their loans in time this might be due that facts that as the level of equity increase the feeling of ownership increase thus positively contributing to loan repayments .On the other hand, other things constants those with the lesser level of equity might constrained with negative incentive to repay the loan timely .This facts might contribute to delay in loan repayments. They might assume that profitability of the farm might be in question; therefore they might

delay repayments .The expectation that the Bank might wave the loans might be other reason not to inject more in the project.

 The value of collateral to the outstanding loan is one of the factors that have apositive contribution and significantly related with loan repayments.. Other things being constants those owners with the value of the project that exceeds the loan amount has an incentive to retain the project and remain in cotton growing. They gain nothing by delaying the repayments rather they have an incentive to repay timely as it will help them getting others financial support from other Banks. On the other hand those with value of collateral that is much below the loan amount has no incentive for repayments because they might loss less in case of defaults

Having other sources of is found to be one of the factors that have a positive contribution and significantly related to be current in loan repayments. This might be because those with other sources of income have the ability to with stand shocks with cash flows during hard time and repay their loan than those cotton growers who lacks other sources of income. In case of project financing like the practice of DBE which gives less emphasizes to other sources of income of the borrowers .the profitability of the project which expected to recover the loan also might faced problem. Being so compared to other business they might want to inject less.

Having credit experience found to be one of the factor that have significantly contribute to timey loan repayment .This might be because those with no exposure to formal credit lacks knowledge on the rules and regulation of formal lender which might help them to be current in loan repayment. They might also lack capability in financial management and running profitable business because being exposed to credit might help them develop capability in running to profitable business and financial management. Therefore, those borrowers with no experience in credit contribute negatively in being current in loan repayments..In contrast those with the experience in formal credit might have the incentive to repay loan timey in order not to be denied loans from other Banks .Their capability to run profitable business might be greater as compared to those with no experience. In general, as the study indicated extending multimillion birr loans to those borrowers with no experience in credit bring no benefit except to bring negative influence to be current in loan repayments.

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5.2 Policy Implications

This study has a potential to assist the Bank's policy makers to take corrective measures since it indicates the most important factors affecting the borrowers capacity to repay loan on time. The possible policy implications of this study include:

As the time of loan processing increases, the consequences are not only decreases the repayment performance of the borrowers but also changes all activities put in the project proposal, so the Bank should be give serious attention on how to shorten the prolonged time of processing a loan by making different mechanisms. Or else rejecting those loans with long processing time.

Level of equity contribution as discussed found to be detrimental in either to get sustainable loan repayments or successful continuation of the schemes of the cotton sector developments. Therefore, from the outset the Bank should give emphasis to level of the equity contribution.

Priority to access of the credit .land etc should be given to those who can able and willing to contribute more. Enhancing the loan repayment timely and setting stringent policy for loan waving need to be practiced. Besides, since the projects continuity is not judged by first injection of equity contribution factors that promote the equity level such as increasing the such as providing access to new improved technologies, training opportunities for employees etc should be facilitated by the government.

Collateral value (in case of DBE value of the project that held as collateral) be should be considered especially during further provision of loan for defaulters. Collateral outside the project be requested for defaulter borrowers

Further the owners invested to get return not only from production but from the land also. Thus, a policy measure that promotes the value of the land or the demand and reviewing the land allocation in a way that lessen large and extensive land leasing and concentrating in intensive farming ,building more social and economic infrastructure should be per sued This can help in attracting more investor. More over Strengthening the above efforts by the government will create environment for the bank to get current in loan repayments besides facilitating environment to get sustainable growth in the sector with improved flows of credit.

Credit experience should be used as screening criteria in all stage including in the Bank in giving priority including lands and other incentives of the government.

Those borrowers with other sources of substantial income should be given priority in order to reduce .

Finally creating mechanism for appealing for the causes of loan defaults cases is also recommended.

REFERENCES

AbebeMenja, (2011): Determinants of Credit Repayment and Fertilizer Use by Cooperative Members in Ada District, East Shoa Zone, Oromia Region Thesis submitted for Master's degree Haramaya University.

Abraham, (2002): Thesis prepared for M.SC on determinant of loan repayment of smallscale enterprise in Ethiopia: the case of private borrowers around Zewaye.

Adeleke Salami, Abdul B. Kamara and ZuzanaBrixiova , ; *SmallholdeAgriculture in East Africa: Trends, Constraints and Opportunities* Working Paper No. 105 African   Development Bank Group

ADFIAP (2003). Primer on Development Banking. Compiled by AFDIP secretariat. https://adfiap.org/DevelopmentBanking/

Aldrich, J.H and Nelson, F.D, (1994). Linear Probability, Logit and Probit Models: Quantitative Applications in the Social Science, Sera Miller McCun, Sage Pub. Inc; University of Minnesota and Iowa. New Delhi.

AlemayehuGeda,(2005): The Structure and Performance of Ethiopia's Financial Sector in the Pre and Post Reform Period: With Special Focus on Banking. 2005

Ali al sherf et .al, (2012), A study of Factor that determine the loan repayment performance of public agricultural credit agency in Jordan

Amemiya, T. (1981) 'Qualitative Response Model: A Survey', Journal of Economic Literature 19:1483-1536.

Arene, C.J. (1992). Loan repayment and technical assistance among smallholder maize farmers in Nigeria. *African Review of Money and Banking. A Supplement of Savings and Development Journal*, 1, 64-72.

Asante, B. O., Sefa, V. A., Sarpong, D. B, (2011). Determinants of small scale farmers' decision to join farmer based organizations in Ghana. African Journal of Agricultural Research, 6 (10), 2273-2279.

Assefa Dmassie(1987). A Study of the Factors that Affect the Use of Agricultural Credit Among Peasant Farmers in Ethiopia: The Case of Two Districts, Master's Thesis, submitted to Haramaya University 1987.

Awoke, M.U. (2004). Factors affecting loan acquisitioned repayment patterns of smallholder farmers in InlkaNorth-East of Delta State Nigeria. *Journal of Sustainable Tropical Agricultural Research*, 9, 61-64.

Monjit B., (2013):Modeling Loan Repayment Behavior in Developing Countries oxford university Applied Economic Perspectives and Policy (2013) volume 00, number 00, pp. 1–26.

Ibtsum B., (2013): Determinants of Microcredit Repayment: The Case of Tunisian Microfinance Bank African Development Review, Vol. 25, No. 3, 2013, 370–382

Bekele Hundie, KassaBelay, and MulatDemeke(2004) : Factors influencing repayment of agricultural input loans in Ethiopia: The case of two regions African reviewof money finance and banking, (2004), pp. 117-144

Besley (1999). How do Market Failures Justify Intervention in Rural Credit. *World Bank Observer*. Vol. 9 . No 1. pp. 27-47

Wongnaa1 C. A., D. Awunyo-Vitor2 (2013) : Factors Affecting Loan Repayment Performance Among YamFarmers **in the** Sene District, Ghana Agris on-line Papers in Economics and Informatics Volume V Number 2, 2013

C.C.EZ and Ibekwe (2007):Factors that determine the loan repayment performance under indigenous financial system in south Nigeria , Medwell Journal 2(2)-116-120,2007 pp 009 oxford university

Carlos, (1985): Financial policies and management in the growth of agricultural development bank .Doctoral thesis, Texas Tec University .

Chiraw ,(1997):An Economic analysis of the Determinant of agricultural credit repayment in Malasia ,100-2307/23026382 no ½ (1997)107-122 http://wwJastorsio/23026382

Cole S. A., (2008) Fixing Market Failures or Fixing Elections? Agricultural Credit in India. Working papers

D.T Bosena et.al. (2011). Factor affecting cotton supply at farm level in Ethiopia Department of Agricultural Economics Haramaya   university journal of Agriculture 13. Biotechnology and ecology 4(1) 41-551 2011

Daumonet et.al (2007). Economic Development in Africa: Reclaiming Policy Space Market End. United Nations conference on Trade and Development. New york 2007.

DBE, (2011) Commodity Study on DBE Financed cotton project ''. Strategic Planning and Development Effectiveness Process, Addis Ababa

Development Bank of Ethiopia, Loan Performance Report, 1994/95-1999/2014 and, 2014/2015 quarterly report.

Douglas et al . (2000): Modeling Group Loan Repayment Behavior: New Insights from Burkina Faso Economic Development and Cultural Change, Vol. 48, No. 3 (April 2000), pp. 639-655 Published by: The University of Chicago Press

Derban ,W.K.,Binner,J.M.,&Mullineux.(200).Loan repayment performance in community development finance in the UK.Small Business Economics,25,319-332 Ethiopian investment , commission report (2014)

Fionyenucheya et.al, (2007): Factor that determine the loan repayment and credit worthiness of farmers under Nigerian agricultural cooperative and rural development Agricultural journal l2(2) 265-270-2007

Fry Maxwell, *Money Interest and Banking in Economic Development*, Second Edition, the John Hopkins University Press, 1995.

Gebrehiwot Ageba, An Analysis of Financial Sector and Credit Policies During the Derge period and Post-Derge Reform,, *Ethiopian Journal of Economics*, Vol. VI, No.1, 1997, pp. 53-86.

Ghatak Maitreesh and Guinnane Timothy w.: The Economics of Lending with Joint Liability: Theory and Practice, *Journal of Development Economics*, Vol. 60, 1999pp.195-228.

Gujarati, D. N. (1988) Basic Econometrics. 2nd edition. New York: McGraw-Hill Book Company

Gujarati, Damodar N. (2003). Basic Econometrics Fourth Edition, McGraw-Hill Book Company, New York.

Harvey Charles and Brown bridge Martin, *Banking in Africa, the Impact of Financial Sector Reform Since Independence*, 1998

Hill L, Kau, (1981). Analysis of Purchasing Decision with Multivariate Probit.American Journal of Agricultural Economics, 53(5): 882-883.

Hunte**,** C. Kenrick, (1996). Controlling Loan Default and Improving the Lending Technology in Credit Institutions. Saving and Development Quarterly Review, 1, 45-59

Hoff Karla and Joseph E. Stiglitz, **²**Imperfect Information and Rural credit Markets:

Puzzles and Policy Perspectives**²**, *The World Bank Economic Review*, vol. 4, No.3,1990 pp.235-250.

Hoff, K., and J.E. Stiglitz.1997. Moneylenders and Bankers: Price-Increasing Subsidies in aMonopolistically Competitive Market. Journal of Development Economics 52(2):

IMF (International Monetar Fund) (2011). Financial statistic report 2011.

ItanaAyana, Credit Policy, Financial Institutions and Private Investment in Ethiopia, Proceedings of the Third Annual Conference on the Ethiopian Economy, 1994.

Jaffee M. Dwight, *Credit Rationing and the Commercial Loan Market, AnEconometricStudy of the Structure of the Commercial Loan Market*, John Wiley and Sons, Inc.U.S.A 1971.

JemalAbafita (2003): Micro finance and loan repayment performance, case study of the Oromia Credit and Savings Share Company (OCSSCO) in Kuyu .Master thesis submitted to Addis Ababa university

Johnston Jack and Di Nardo John, *Econometric Methods*, Fourth Edition, McGraw Hill International Editions, 1997.j

Joseph E.Stiglitz (1993). The Role of the state in financial markets proceedings of the World Bank Annual Conference on Development economics (Isifal 0-8213255 R2)

Juan J.Buttarie ,(1995).Subsidized credit program the theory, the Alternative the Record ,the Alternative .USAID evolution special study No 75

Kementa, J., 1986. Elements of Econometrics. Second Edition, Macmillan Pub. Co. New York.

Kibru Fonga ,(2010). The Relationship of Development Bank of Ethiopia with Multinational Financial Institution, Zena Lemat Bank No 47 SEP 2020

Kitchen Richard, Venture Capital: ²A New Approach to Financing Small and Medium Enterprise in Developing Countries², *Savings and Development*, Vol. XIII, No.3,1989, pp.287-313

Koopahi, M. and Bakhshi, M.R. 2002. Factors affecting agricultural credit repayment performance: (case study in Birjand district). Iranian journal of agricultural sciences, 33, 1, 11-19.

Long J. Scott, Regression Models for Categorical and Limited Dependent Variable, Sage Publication, 1997.

Maddala G.S., *Limited Dependent and Qualitative Variables in Econometrics*, Cambridge University Press, U.S.A., 1983.

Maddala, G. S. Introduction to Econometrics. 3rd Edition, John Wiley & Sons Ltd, The Atrium, Southern Gate, England, 2005, 318-323.

MauriArlando, :The Rise of Banking in Ethiopia, *African Review of Money, Finance and Banking*, No. 1-2, 1997, pp.39-55.

Mensah Charles, Bank Credit provision and Performance Measurement: The Experience of Rural Banking in Ghana, Masters Thesis, 1999.

Manfred Zeller (1996) Determinants of repayment performance in credit groups: the role of program design.intra-group risk pooling, and social cohesion in Madagascar FCND discussion paper no. 13 International Food Policy Research Institute of Rural Banking in Ghana, Master's Thesis, 1999. Vol. X, No.1, 1986, pp.89-98.

Meyer, Richard L., and Donald W. Larson. 1993. *Issues in Providing: Agricultural Services in Developing Countries*. Ohio State University

Miller, L.F.(1977), Agricultural Credit and Finance in Africa. The Rockefeller Foundation.

Million(2011) : factors affecting loan repayment performance of smallholder farmers in Eastern Ethiopia Published on Department of Agricultural Economics (http://agrieconomics.uonbi.ac.ke)

Mitibhatt and Shuiyan ((2002):Determinant of loan repayment for four credit program in America .world development volum 25 no 10 pp 1731-1742

Ministry of Agriculture and Rural Development (MoARD) (2005). Towards increasing benefits from cotton. PP 10-15. Managing NaturalResources Secures from Soil Erosion and Degradation (AmharicVersion Publication), Second Year, No.5. October 2005

Mohammed Reza ,(2009): Factor affecting on loan performance of farers in kholasan. Razave province of, Iran, Tropeng 2009, university of Hamburg, the paper presented on international research on food security.

Mulugeta Shiferaw,(2010). The Determinants of Agricultural Loan Repayment Performance. Unpublished Master's Thesis, Hramaya University

Muluken Tariku, (2014): Determinant of loan repayment performance of floricultural projects. The case of Development Bank of Ethiopia Borrowers .Master thesis, St. Marry University Addis Ababa

NBE (National Bank of Ethiopia), (2014), National bank of Ethiopia 2015, 2014 Annual Report. Addis Ababa,--------Asset classification and provisioning directive No SBB143/2007

Nwagbo EC, Ilebani D, Erhabor PO (1989). The role of credit in agricultural development: A case study of small-scale food production in Ondo State, Nigeria. Samaru J. Agric. Educ., 3(1 and 2): 29-35.

Obamuyi TM (2007). An exploratory study of loan delinquency among small and medium enterprises (SMEs) in Ondo State of Nigeria. Land and management in development (LMD) J., 8: 1-10.

Okorie A (2004). Major determinants of agricultural smallholder loan repayment in a developing economy: Empirical evidence from Ondo State, Nigeria. *Savings and Development* 1:89-98.

Pischke, Von J.P., 1980. Rural Credit Project Design, Implementation and Loan Collection Performance. *Saving and Development Quarterly Review,* 4(2): 81-91.

Pindyck, R. S. and Rubinfeld, D. L. (1981) Econometric Models and Economic Forecasts. 2nd Edition. New York: McGraw-Hill Book Co.

Roslan, A.H., &MohdZaini, A. K, (2009).: Determinants of microcredit repayment in Malaysia: the case of Agro bank. *Humanity & Social Sciences Journal*, 4(1), 45-52.

Salami. A and Felix Arawomo1.D 2013 ：Empirical Analysis of Agricultural Credit in Africa: Any Role for Institutional Factors African development bank working paper

Sneyd, A.(2006). Cotton and Poverty in Sub-Saharan Africa: A Review ofthe Factors. PhD Qualification Paper, Department of Political Science McMaster University, Hamilton. [http://www.socsci.mcmaster.ca/polisci/emlibrary/cottonandpovertyinSSApdf]

Swinnen J. F. M., H. R. Gown (1999); Agricultural credit, problems and policies, during the transition to a market economy in Central and Eastern Europe. Food Policy 24 (1999) 21–47

Tedeschi, G. A. (2008).: Overcoming selection bias in microcredit impact assessments: a case study in Peru. *Journal of Development Studies*, 44(4), 504-518.

Udoh EJ (2008). Estimation of loan default among beneficiaries of astate government owned agricultural loan scheme, Nigeria. J. Cent. Europ. Agric., 9(2): 343-35

USDA. Annual Cotton Report 5415 GAIN. ET 1512 Addis Ababa

Vigano`, ''A Credit Scoring Model,'' *Savings and Development* 17,No. 4 (1993): 441–82.

Von Pischke, J.D., *Finance at the Frontier: Debt Capacity and the Role of Credit in the Private Economy*, The World Bank, Washington D.C., 1991

Yaron, J. (1994). What makes rural financial markets successful? *World Bank Research Observer*, 9(1), 49-70.

APPENDIX I

Correlation analysis

	busform	age	sex	marital	edu	dispurs	install	time	relation	coverage
busform	1									
age	-0.5658	1								
sex	-0.1935	0.0185	1							
marital	-0.4947	-0.1232	0.3911	1						
edu	0.6325	-0.2407	0.1141	-0.3384	1					
dispurs	0.0017	-0.198	-0.3777	0.1963	-0.2993	1				
install	-0.1576	-0.1402	0.7657	0.2686	-0.1448	-0.0983	1			
time	-0.3278	0.3155	-0.058	0.1701	-0.0069	-0.1042	-0.1501	1		
relation	0.4947	-0.4417	0.1504	0.1077	0.4784	-0.0817	-0.0356	-0.3499	1	
coverage	-0.1555	-0.2079	0.1342	0.6148	-0.1566	0.5176	0.1562	-0.0224	0.0083	1
ratio	-0.051	0.2263	0.5423	0.0555	0.1262	-0.2535	0.5017	0.282	-0.0555	0.1835
mgt	-0.2548	0.2701	-0.2169	-0.0555	-0.3997	-0.105	-0.3267	0.0731	-0.1941	0.0341
mgtexp	-0.4156	0.116	0.9131	0.4961	-0.1771	-0.131	0.795	0.0125	-0.1459	0.2461
follw	-0.028	-0.2053	-0.1313	0.5798	-0.1065	0.5879	-0.1399	0.2224	0.0427	0.5559
source	0.4026	-0.3253	0.1935	-0.0141	0.5896	-0.3429	-0.11	-0.1348	0.7774	-0.2408
mkt	0.2193	-0.3388	0.4271	0.0625	0.2087	0.0104	0.6269	0.0402	0.2985	0.0837
grace	0.0445	-0.1826	-0.1706	0.1047	0.2539	0.4319	-0.1924	0.0768	0.1805	0.2243
totland	0.1195	-0.3082	0.1987	0.1636	0.3715	0.3838	0.0692	-0.2231	0.0792	0.5612

	ratio	mgt	mgtexp	follw	source	mkt	grace	totland	cultland	typecult
ratio	1									
mgt	0.2	1								
mgtexp	0.4998	-0.1447	1							
follw	0.022	0.11	0.0232	1						
source	-0.2548	-0.4332	-0.1475	-0.2075	1					
mkt	0.5401	-0.4209	0.3049	-0.0278	0.2513	1				
grace	-0.2034	-0.101	-0.1315	0.4127	0.1906	0.03	1			
totland	-0.0476	-0.2337	0.2243	0.316	0.0443	0.002	0.44	1		

Standard format prepared for data collection

The format is prepared to collect data's from the files of individual commercial cotton grower borrowers financed by DBE to undertake my research title:- Determinants of loan repayment performance of private commercial cotton producing farm enterprise in Ethiopia. The case of cotton farms, financed by Development Bank of Ethiopia.

I. **Back ground**

Under stated Questing concerning the age, sex, marital status and educational level applies only to sole proprietorship form of business Organization.

1. Business form of organization

    1. Sole proprietorship

    0. PLC & others

2. Age of borrower --------years
3. Sex: 1. Male---------------   2. Female
4. Marital status of borrower.   1. Married------ 2.Single------3. Widow------- 4. Divorced-----
5. Education statues of borrower:

    1. Elementary -----------   4.Secondary--------------

    2. Certificate -------------   5. Diploma---------------

    3. Bachelor Degree and above-------------

II. **Loan history**

1. Loan amount disbursed: Br.-------------------
2. Loan Issuing time (i.e. number of days taken from application to first disbursement of the loan.) ----------------------
3. Collateral coverage of the loan:----------------- %
4. Equity debt ratio ---------------------- %
5. Number of follow-up under taken by the bank after the loan disbursed-------------

6. Grace period given--------------------

7. Status of borrower repayment.

    -Non defaulter   1

    -Defaulter   0

8. Number of Disbursement installment----------------------

III.   <u>Other Information</u>

1. Does the promoter has any other source of income
   1. Yes   0. No

2. Does the promoter has credit relation with the other Banks
   1. Yes   0. No

3 Management Type

    0 Employed---------

    1 The promoter itself---------

    4 Managerial experience of the project manager in the same field----------

Years

    6 Total land leased in ha-------------------------

Problems that have been faced by the projects for not paying the loans on time agreed on loan contract.

Borrower side--

Bank side---

Thank You