

**DETERMINANTS OF SUCCESSFUL LOAN REPAYMENT
PERFORMANCE OF PRIVATE BORROWERS IN
DEVELOPMENT BANK OF ETHIOPIA, NORTH REGION**



BY: KIBROM TADESSE GEBREMEDHIN

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ADVISOR: HAILAY GEBRETINSAE; PhD

CO-ADVISOR: GOITOM ABERA; MA

**MEKELLE UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF MANAGEMENT**

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Declaration

This is to certify that this thesis entitled “**Determinants of successful loan repayment performance of private borrowers in Development Bank of Ethiopia North Region** ” submitted in partial fulfillment of the requirements for the award of the degree of MA in Development Study to the College of Business and Economics, Mekelle University, through the Department of Management, done by **Mr. Kibrom Tadesse** is an authentic work carried out by him under my guidance. The matter embodied in this project work has not been submitted earlier for award of any degree or diploma to the best of my knowledge and belief.

Name of the student: Kibrom Tadesse Signature & date_____

Name of the supervisor: Hailay Gebretinsae (PhD) Signature & date_____

Name of the co-supervisor: Goitom Abera (MA) Signature & date_____

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Acronyms

BOM- Board of Management

CLRM - Classical Linear Regression Model

CV-Compensating Variation

DBE - Development Bank of Ethiopia

L/C - Letter of Credit

LPM- Linear Probability Model

LRT - Likelihood Ratio Test.

OCSSCO- Oromia Credit and Savings Share Company

ONRS - Oromia National Regional State

PEFA – Public Financial Enterprises Supervising Agency

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Kibrom Tadesse

kibromtadesse12@yahoo.com

Abstract

In this paper, attempts are made to identify borrower's characteristics, project characteristics and loan characteristics that determine successful loan repayment performance of the borrowers in Development Bank of Ethiopia North Region. To identify the factors behind successful loan repayment performance of the borrowers a probit model is used. The data used in the study is gathered through survey on 100 respondents that are carried out in two branches.

The probit model describes that educational level of the borrowers, repayment period of the loan, availability of other source of income, sector, purpose of the loan and type of labour determine successful loan repayment performance of the borrowers positively and significantly. Other variables such as, gender and household size have positive sign, but are not statistically significant. Moreover, variables such as age, loan diversion, other source of credit show negative sign but not statistically significant. The variable experience is statistically significant but show negative sign.

CHAPTER ONE

INTRODUCTION

1.1 General Background

The provision of loan has increasingly been regarded as an important tool for raising the incomes of urban as well as the rural populations, mainly by mobilizing resources to more productive uses. As development takes place, one question that arises is the extent to which loan can be offered to the private sector to facilitate their taking advantage of the developing entrepreneurial activities.

(Fasika and Daniel, 1997) In Ethiopia during the Derge period (1974-1991), there was no entry and exit into the formal financial system. Credit policies were set in favor of the socialized sectors (state farms, public enterprises, cooperatives) while the private sector was discriminated against. There was a fixed asset ceiling on investment made by the private sector; the ratio of security to loan amount was 2:1 for private sector as opposed to free of collateral for the favored sectors. Moreover, properties of those private citizens whose capital exceed some specified fixed asset ceiling were nationalized. This implies that the private sector during the period was not only marginalized in credit access but also was restricted to be at small-scale level.

The change of government in 1991 was followed by the introduction and implementation of the Economic reform program in 1992. The framework of the measures taken under the reform program includes;

- Devaluation of the Birr
- Introduction of foreign exchange auction
- Restructuring and recapitalization of state owned banks and insurance companies
- Issuing of proclamation No. 83/1994 on the licensing and supervision of banking and insurance business, which allowed the establishment of private financial institutions.

- Banks are allowed to set lending rates freely.
- Issuing of the proclamation for the licensing and supervision of micro financing business.
(zena 2009)

For the last 100 years, eight development banks predecessors have appeared in Ethiopia. Each generation of the Bank has taken different names at different period, with slight changes of its operational emphasis, without much divergence from its major and consistent objective of contributing to the development efforts of the country.

The recent focus of Development Bank of Ethiopia is to provide medium and long-term loans for investment projects, which are engaged in agriculture, agro processing and manufacturing industries preferably export focused. (<http://www.dbe.com.et>)

Though credit operation of Development Bank Ethiopia North Region shows a dramatic increase in loan approval and disbursal there are non-performing loans, which resulted from clients' default, which in turn come about from lack of follow-up, market problems, environmental problems, credit policy of the Bank, and so forth (Derege 2010). This raises a question on how can Development Bank of Ethiopia North Region increase the repayment performance of its borrowers. This in turn entails a question on what are the factors that determine successful loan repayment performance of borrowers.

It is thus important to investigate and provide empirical evidence on factors that determine successful loan repayment performance of borrowers in Development Bank of Ethiopia North Region. So that we can understand the reasons behind successful loan repayment performance and hence provide some guide lines to increase probability of successful loan repayment. Towards this end, we investigate determinants of successful loan repayment performance of borrowers in Development Bank of Ethiopia North Region.

1.2 Statement of the problem

Today the role of the private sector in economic development of the country is highly understood. Under the current government, the previous credit restrictions and discrimination were lifted together with the permission of the entry of private banks in the financial market (Abraham 2002) Taking the above fact in to consideration, Development Bank of Ethiopia diverted its attention towards the private sector. The role played by the bank in availing the much thought after medium and long-term credit to viable projects is in particular considered indispensable, given the dearth of private capital and the obvious current weakness of the national financial industry. In view of this, the bank has taken a number of actions in the past years in the areas of capacity building, resource mobilization and credit operations (Zena 2009/10).

The measures on credit operation are taken because the success/failure of its development financing as well as its financial position relies on its loan recovery performance, which again depend on various factors that determine loan repayment performance (Zena 2009/10).

According to various researches factors that determine loan repayment performance include; borrowers perceived need, that is borrowers have to be given an opportunity to borrow for their perceived needs, competence, that is the borrowers past personal and profit record, past prosperity, etc. Borrowers personal character which are related with personal qualities of the borrower including age, sex, educational level, house hold size, management capacity, loan utilization, availability of other sources of income, bank experience etc.... Factors which are related with the bank such as structure of the bank, change in the lending policy, way of appraising the project, responsibility and accountability of the staff members of the bank and external factors related with the macroeconomic condition of the country, government policy and natural factors.

Hence provision of loan to the private borrowers require a careful examination of the above determinants to make loan repayment successful, which otherwise will lead to poor allocation of credit which results in poor investment projects, raises costs to the successful borrowers, erodes the fund that would be available for future investment, reduce banks flexibility in redirecting

financial resource towards alternative activities, reduce the lending capacity of the financial institution. Hence, the study focuses on identifying the factors that determine successful loan repayment performance of borrowers from three broad perspectives. These are; borrower's characteristics, project characteristics and loan characteristics.

1.3 Research Questions

Do borrower's characteristics such as educational level, household size, business experience, age, and sex, availability of other source of income, and other source of credit, affect loan repayment performance of the borrowers?

Do project characteristics such as type of the project or activity, and type of labour employed in the project affect the loan repayment performance of the borrowers?

Do loan characteristics such as purpose of the loan, repayment period of the loan and loan diversion affect the loan repayment performance of the borrowers?

1.4 Objective of the study

1.4.1 General objective

The over all objective of the study is to better identify the factors that determine successful loan repayment performance of private borrowers in Development Bank of Ethiopia Northern Region.

1.4.2 Specific objectives

- To examine borrower's characteristics that contributes to successful loan repayment performance of credit financed by the regional bank.

- To examine project characteristics that determines the loan repayment performance of the borrowers in the regional bank.
- To identify the loan characteristics that contributes to successful loan repayment performance of the borrowers.
- To assess performance of Development Bank of Ethiopia Northern Region.

1.5 Hypothesis of the study

To examine the above-specified objectives the following hypothesis will be tested.

- Borrowers characteristics such as, gender higher educational level, small household size, higher business experiences, availability of other source of income, project characteristics such as type of the project like engaging in the service giving sector, using hired labour, and loan characteristics such as using the loan for fixed investment, medium repayment period contribute to successful loan repayment performance of borrowers.

1.6 Significance of the study

As output of the analysis, identifying factors that contribute to successful loan repayment will help policy makers to formulate successful credit policies and programs that will again help in allocating financial resources effectively and efficiently. The study will have positive impact in promoting private investment and making it effective by creating smooth relationship between the borrower and the lender through its recommendations. Lesson will be drawn to loan defaulters in the regional bank. Other researchers will make use of the research out come because it will help them to identify the factors behind successful loan repayment and also will help them to make research on similar issues.

1.7 Scope of the study

The study on identifying the factors that determine successful loan repayment performance of the borrowers will be useful in creating a smooth relationship between all borrowers and all branches of Development Bank of Ethiopia. However, the study is delimited to the identification of factors that determine successful loan repayment performance of borrowers in Development Bank of Ethiopia Northern Region. It does not include borrowers of Development Bank of Ethiopia in other regions and branches and borrowers in the region but financed by the Head office of the Bank.

1.8 Organization of the Study

Chapter two of this paper deals with Review of Theoretical and Empirical literature. Chapter three of this paper deals with background of the organization. Chapter four of the paper describes the materials and methodology part of the paper. In Chapter five empirical results and discussion is presented. Moreover, the last chapter constitutes the conclusion and recommendation part of the paper.

CHAPTER TWO

LITERATURE REVIEW

2. Theoretical Review

2.1 Guiding Principles of Loan Repayment

The repayment period of loans is determined on the basis of the liquidity position of each borrower and the economic life of the investment. Repayment schedules must be made flexible so that it should be adjusted to borrower's cash flow pattern.

In addition to this credit policy instruments, some relevant lending principles are used by banks as their guiding principles (Zena 2009). These include; borrowers perceived need, competence or repayment capacity and personal character.

(a) Borrower's Perceived Need

Borrowers have to be given an opportunity to borrow for their perceived needs because loans are more valuable when they meet borrower's need. The credit delivery system can focus on the needy part of households through establishing clear criteria for eligibility.

(b) Competence

Borrower's competence refers to the repayment capacity which largely depends on the profitability of the use of credit. This is most helpful tool for estimating the potential credit worthiness of borrowers. In order to assess the borrower's capability in terms of repayment capacity, lenders will assess the borrower's past personal and profit record, past prosperity, etc.

(c) Borrower's Personal Character

Lenders need to know personal reputation of the borrower and his attitude to the financial obligations. Lenders should always relate credit with good personal qualities of the borrower including;

- a) Integrity
- b) Honesty
- c) Responsibility
- d) Dependability
- e) Sincerity of the borrower.

2.2 Criteria for Successful Loan Repayment

According to William (2007), there are certain criteria that most lenders require the business owner to meet in order to successfully acquire the funds needed for the business. These hurdles or requirements are generally categorized as: Good Credit, Equity, Experience, Business Plan, and Collateral.

These five guidelines of successful borrowing are reviewed as follows;

1. Good Credit – this deals with the requirement that one must have a credit history which is not only good, but more to the outstanding side of the scale. The reason for this lender requirement according to the writer is that, every day any are coming to banks and lenders applying for loans for a variety of reasons. The funds do not belong to the loan officer, but rather they belong to the institution's depositors and investors. The loan officer and the lending institution's management have an obligation to manage these monetary assets to the positive benefit of the owners, namely the depositors and investors of the bank. Therefore, loans must be made only to those who present the least risk of failure to repay. Past repayment history (i.e. good credit) is the first and probably the most important requirement for a successful loan.

2. Equity- Equity in borrowing can be thought of as similar to a down payment. The lender wants the borrower to have a financial commitment to the venture for which the loan is

requested. The writer says that the borrower has to have some “skin” in this business “game” to insure his or her best efforts toward success and timely repayment of the borrowed funds.

This is to say, that even if all the other four criteria for successful borrowing; credit, experience, business plan, and collateral are met; the bank usually will not lend 100 percent of the funds requested. The numeric value often placed on required *Equity* is in the range of 10 to 20 percent of the needed funds.

3. Experience-According to William (2007), no rational lender wants to or will turn over monies to a borrower to manage and expend in a business or venture in which the person has no or very limited experience.

This criterion for successful borrowing should be easy to see from both the lender and borrower’s point of view. Lenders need to be more certain that the person or persons borrowing the funds have the experience and expertise to manage the money and that day to day the business is conducted in a prudent manner. This is needed to insure positive results from the business and further insure that the lender will be repaid with interest and in a timely manner.

Here again the question relates to risk. The more experience and talent the borrower has shown in the past, the lower the risk in lending from the bank’s point of view.

The minimum numeric value often expected here is that the borrower should have at least three years of experience in the management of the type of business in whose name he or she is borrowing the funds. This experience can be as an owner and/or management experience. It could also be experience as an employee in a similar type business.

4. Business Plan- The fourth requirement of the bank or lender is a well thought out, researched and constructed business plan. This is a document that:

- a) Will introduce the business in a clear and complete manner;

- b) Describes the business ,the potential market for the goods and service to be offered , the existing competition ,states who will be employed ,who will lead and manage and how the borrowed funds will be expended;
- c) The good business plan will have pro-forma (estimated) financial documents. These are the cash flow statement, income statement, and balance sheet.

Cash Flow shows the cash revenue coming into the business and the funds sent out in paid expenses as the business operates from period to period. The net result is either negative or positive on a month to month basis. Here the lender is looking for positive cash flows at least enough to make the loan repayment.

The **Income Statement** is a listing of the total revenue of the business over the past year and a summarized listing of all the expenses of the business. These two values, one positive and one negative, when combined give the net income of the business operations for the period being reported.

The **Balance Sheet** can be thought of as an instant photograph of the financial “health” of the business at an instant in time, normally at the end of the year. The balance sheet displays the assets (positive values of the things that the business owns) and the liabilities (the negative obligations that the business owes and is obligated to pay in the short or long run). Liabilities combined with the owner’s or shareholder’s equity (value of the ownership) will equal (balance) the value of the assets.

Finally, the good business plan has to have a section of **Supporting Documents**. These will add validity to all that has been included in the previous sections. This section should include such documents as the Resume(s) Credit Report, Net-Worth Statement of the borrower(s), and any other reasonable support to verify the facts and estimates on which the plan is based.

The well constructed, thought out and documented Business Plan is essential to successful business borrowing. It is also used as a guide of the business progress or lack of it to the owner(s).It can also be used as an aid in soliciting partners and or other investors in the business.

5. Collateral- Finally according to the writer, after a borrower have shown good credit, put in equity cash or goods, shown he/she have experience in the business and produced a positive cash flow business plan. The lender would be willing to open the vaults and ask the borrower to come in and select all the cash he/she desire. However, there is one last hurdle that the borrower must clear to reach loan success. This final criterion is collateral.

Collateral according to William (2007) is any asset of value that can be pledged by the borrower(s) as security that the loan will be re-paid in full and with interest. Collateral requirements in the process of borrowing for a business can range up to and above 100 percent of the loan principal. This percentage depends again on the amount of risk that the lender calculates that his institution is exposed from this particular loan and the accumulation of all loans currently in process.

Collateral assets can be in the form of real property owned, inventory of the business, cash savings or deposits, stocks /bonds equity in home equipment and like assets both tangible and non-tangible. The value to be placed on a collateral asset in the securing of a business loan is usually estimated or appraised by the lending institute.

2.3 Repayment Capacity of Borrowers

Van (2002) explains that, capacity refers to the ability of the borrower to repay the loan. Investment credit which will yield sufficient profit will enable the borrower to repay the loan. $\text{Net income} - \text{family living expenses} = \text{Surplus}$. The surplus is used to repay the credit. Most borrowers can easily repay the principal and interest. However, some of them find it hard to repay the principal. Cash flow budgeting technique is used to assess repayment capacity. Good financial management improves repayment capacity and the profitable use of credit. The following will help borrowers to improve their repayment capacity.

- (i) Extending repayment time-long repayment period
- (ii) Planning repayments to coincide with income

- (iii) Planning and running to minimize overhead costs
- (iv) Stressing enterprises with higher and quicker income-related to this is maximum use of self-liquidating loans.

2.4 Means of Strengthening Repayment Capacity

Lyne and Ortmann (1992) identify some factors that strengthen the repayment capacity of farmer borrowers. These include;

- a) Building more owners equity or net worth
- b) Use more of self-liquidating loans
- c) Organize or operate farm business for more income select enterprises capable of increasing income.
- d) Planning the repayment schedule for farmers – harvest time and repayment of loans should be linked.

2.5 Reasons for loan Delinquency

Loan delinquency refers to failure of borrowers to repay their debts on time or to repay them at all. Loan delinquency is a serious problem of rural credit programs because it results in a waste of manpower, high administration costs and slow turnover of resources. The main reasons for loan delinquency are;

- a) Failure to use borrowed funds for productive purposes.
- b) Crop failure, natural disasters of various kinds and changes in economic conditions followed by a drop in farm prices.
- c) Unrealistic project appraisal studies
- d) Willful default or refusal to repay -which is not good character (Okorie 2004).

2.6 Repayment Plan

According to Vogel (1998) there are various kinds of repayment plans, these include;

- a) Lump sum payment plan – pay at the maturity at one time.
- b) Amortized even payment plan – equal installments paid by stage.
- c) Amortized decreasing payment plan- installment is decreasing from time to time because income is higher at the beginning.
- d) Quasi-variable payment plan – the installment payments are variable depending on the variability of income.
- e) Reserve payment plan - the borrower is allowed to pay over and above the given installment. The payment will be adjusted in such a way that the remaining balance will be brought to the next time.
- f) Flexible payment plan - there is no restriction to pay a specified amount within a limited time until the loan is due-any time until the due date.

2.7 Empirical Literature Review

Roslan and Zaini (2009) investigates 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 through out 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.

Several African studies of loan repayment performance have estimated the determinants of loan performance with a binary loan outcome – defining borrowers as either current on their loan repayments or in default. Loan repayment was positively related to factors such as timeliness of loan disbursement, enterprise profitability, the number of supervisory visits by credit officers, having additional sources of income, established previous loan history, and lower client debt-asset ratios (Kamajou & Baker 1980)

Kuhn & Darroch (1999) studied rural medium-term loan repayment performance in KwaZulu-Natal using multiple loan repayment categories (current, in arrears, and default) and found that first-time borrowers, and clients that have modest loans, smaller own direct equity contributions, and who manage contract ploughing and broiler ventures, tended to default on loan repayments.

Aguilera-Alfred & Gonzalez-Vega (1993) used a multinomial logit model to analyse the repayment performance of loans disbursed by a typical developing-country specialized lender in the Dominican Republic. They concluded that borrower characteristics (land tenure status and credit rating by the bank), loan characteristics (restriction on use of borrowed funds) and regulatory instruments (bank's own funds and international targeted funds) most affect client loan repayment.

Rose, (2007) Define successful loan repayment as the ability to repay the loan as per the loan agreement and loan defaulting as the inability to repay the loan by either failing to complete the loan as per the loan agreement or neglect to service the loan. On her study on the causes of default in government micro credit programs in Kenya, she found a strong relationship between major sources of income, diversion of funds, domestic problems and loan defaulting.

Reza and Mansoori, (2008) investigated the factors influencing on repayment behavior of farmers 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 filling questionnaires for 175 farmers in rural regions of Khorasan-Razavi province of Iran.

The independent variables include, age of respondent, farm land hectares, experience of respondent, income of respondent, interest rate of received loan, time laps between loan application and disbursement. Whether respondent used loan for investment activity (yes=1, no=0), total application costs, whether respondent owned farm machinery (yes=1, no=0), 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 the

identified independent variables. The signs of the coefficient of independent variables and significance of the variables were used determining largely the impact of each variable on the probability of dependent variable that is the repayment performance of the borrowers. 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.

Ethiopian case Empirical Literature

Jemal, (2003) make a research on Microfinance and loan repayment performance, which was a case study of the Oromia Credit and Savings Share Company (OCSSCO) in kuyu, the study area, Kuyu is found in Oromia National Regional State (ONRS).

In his research methodology, he employed a logit model to find the factors influencing on loan repayment performance in the micro finance institution. The sample size is 203, which is 9.3 percent of the total beneficiaries of the micro finance institution.

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, while loan diversion and loan size are found to significantly increase loan default. In addition, female borrowers were found better in terms of loan repayment.

Abraham, (2002) make a research on factors behind loan defaulters which was a case study of private borrowers financed by Development Bank of Ethiopia Zway Branch.

In his research methodology, he employed a logit model to find the factors behind loan defaulters. A sample of 102 borrowers, in which 34 are credit worthy borrowers and the rest 68-sample borrowers are defaulters are interviewed.

The independent variables include, age of borrowers (years), educational level of borrowers, loan diversion, sex of borrower, ratio of equity to total investment, ratio of value of collateral to loan amount, repayment period (years), availability of other source of income, household size (number), experience in related economic activity (in years), Sector.

The estimation result reveals that having other source of income, education, work experience in related economic activity before the loan and engaging on economic activities other than agriculture are enhancing while loan diversion, being male borrower and giving extended loan repayment period are undermining factors of the loan repayment performance of projects.

The above Empirical researches on loan repayment performance in Ethiopia mainly focuses on micro and small enterprises as well as on micro finance institutions in Oromia region, in which most of the borrowers are engaged in the industrial and agricultural sector. The research by Abraham 2003 is conducted in Development Bank of Ethiopia, however it is limited to small scale enterprises in Zway in which again most of the borrowers are in the agricultural sector, besides, two of them are conducted based on data before ten years.

Now a day there are many changes regarding the bank as well as the general macroeconomic condition of the country, for instance, Development Bank of Ethiopia stops providing loans to micro and small-scale enterprises.

Hence, this research will fill the gap by focusing on analyzing the determinants of successful loan repayment performance on the case of private borrowers whose capital is above five hundred thousand, (500,000) mean large-scale enterprises in Development Bank of Ethiopia

Northern Region. In which no research is conducted and most of the borrowers are engaged in the industrial and service giving sectors.

CHAPTER THREE

BACK GROUND OF THE ORGANIZATION

3. An Over View of Development Bank of Ethiopia

3.1 Background of the Organization

Development Bank of Ethiopia North Region is one of the financial institutions engaged in providing short, medium and long term development credit like other regional offices of the DBE. It was called as DBE Mekelle Main branch before the implementation of Business Process Re-engineering (BPR) in DBE at national level (Before July 15, 2009). Its distinguishing feature from commercial banks and other financial institution is its “project” based lending tradition. This means projects to be financed by the bank are carefully selected and prepared, thoroughly appraised and systematically evaluated.

Since its establishment in 1984 E.C the bank has been playing a significant role in promoting overall economic development of the region in particular & the country in general.

The bank organizational set-up comprises supervisory authority, a management board, president, process managers(regional managers), branch manager, and the necessary staff pursuant to the public enterprise proclamation No. 25/1992. The bank has sub-branch office in Shire-Endesillasie, which shows that it is strategically distributed through the region. In order to facilitate the service rendered to its customers, the DBE has recently given the regional offices the authority to appraise, approve, and disburse loans on their own up to Birr 15 million.

In its long years of existence, the bank has established recognition at national and international levels. Nationally, it is the sole in long-term project financing, internationally, it is reignited as an important on – lending channel for development fund programs financed by bilateral and/ or multilateral sources. The recent focus of the government in relation to the bank is to provide

financial assistance to projects, which are solely engaged in priority area, projects such as agro-processing, manufacturing, commercial farming & export-oriented projects. With regard to this, the economic sub-sectors for which the loanable financial resource will be available are leather and leather products, textile and garment, manufacturing industries, cotton farming, live animal export and meat processing industries as well as production of horticultural crops including flower and high valuable vegetable crops and other projects exclusively targeted for foreign market. In line with this, the bank takes appropriate measure by way of revising its credit delivery mechanism. This includes among others the amendment of some of its existing credit policies and operational guidelines.

3.2 Development Bank of Ethiopia North Region Business Mission

The business mission of the bank is to accelerate economic development through provision of medium, long term as well as short-term development credits to those projects, which have high contribution to the economy in the area of agriculture, industry and other sectors with the aim of:

- Maintaining financial viability and functional opportunity at the organizational level.
- Generating foreign exchange and employment opportunities
- Contributing towards all rounded development of the country (region)

3.3 Objective of Establishment

Among the purposes for which the DBE North Region is established are:

- To provide investment credit and short term loans to viable projects that will contribute to the country's economic development
- To manage funds entrusted to it
- To participate in equity investment
- To provide technical and managerial services.
- To engage in such other activities as are customarily carried out by development banks.

3.4 Values of the Bank

- Satisfying of customer's needs and expectations,
- Sustainability through profitability
- Continuous development of its human resources,
- Integrity and loyalty to the general public and its customers,
- Developing and practicing teamwork spirit and cooperation for achieving the stated vision, mission, and values.

3.5 Capital

The authorized capital of the development bank of Ethiopia (DBE) is Birr 3,000,000,000 of which birr 1.8 billion is paid up capital. However, the exact capital budget for Development Bank of Ethiopia North Region is not known.

3.6 Service

The bank extends loan services to applicants after undertaking feasibility studies in reliable methods to ascertain the viability of the proposed projects. Moreover, the bank provides counseling and technical services to new applicants and its clients.

3.7 Banking Service

(Annual Report 2009) Banking services of the Development bank of Ethiopia is essentially targeted as its clients and it was initiated with the prime objective of facilitating the business activities of the customers and lending services. Accordingly, the bank provides different allied services in both the local and foreign banking spheres. In the area of international banking operations, the service provided to its clients include import and export L/C, and settlement of invisible items, such as consultancy, installation and commissioning services.

On the other hand, the domestic banking wing in addition to serving employees of the bank provides current account and inter-bank check clearance in Addis Ababa city to its clients. Domestic banking also facilitates and supports the disbursement and loan collection activities of the bank in general but deposit mobilization is not eagerly pursued, as the bank is not mandated in retail banking.

3.8 Loan Types Extended by the Bank

The Development Bank of Ethiopia has been giving term loans in three time horizons.

Short-term Loan

This is a loan advanced for the purpose of working capital, and is payable within a year.

Medium-term Loan

This is loan given for the purpose of building construction, machinery, equipment, furniture and vehicles. It is paid back within one to five years.

Long-term Loan

The purposes of this type of loans are for construction of factory building and acquisition of machinery, for irrigation agriculture and plantation crops, for transportation vehicles and communication equipment and for any other infrastructure related with the project to be financed. The loan is payable within five to fifteen years.

3.9 Major projects financed by DBE

(Zena Lemat Bank October 2009) Development Bank of Ethiopia was instrumental in the full or partial financing of most of the major investment projects in the country. The types of projects financed by the bank are also from sectors as diverse as the agricultural, industrial and service sectors. Few of the projects financed in Tigray region are below as an example;

- Almeda Textile Mills
- Kebire Garment Factory
- Messebo Cement factory

3.10 Governance Structure in Development Bank of Ethiopia

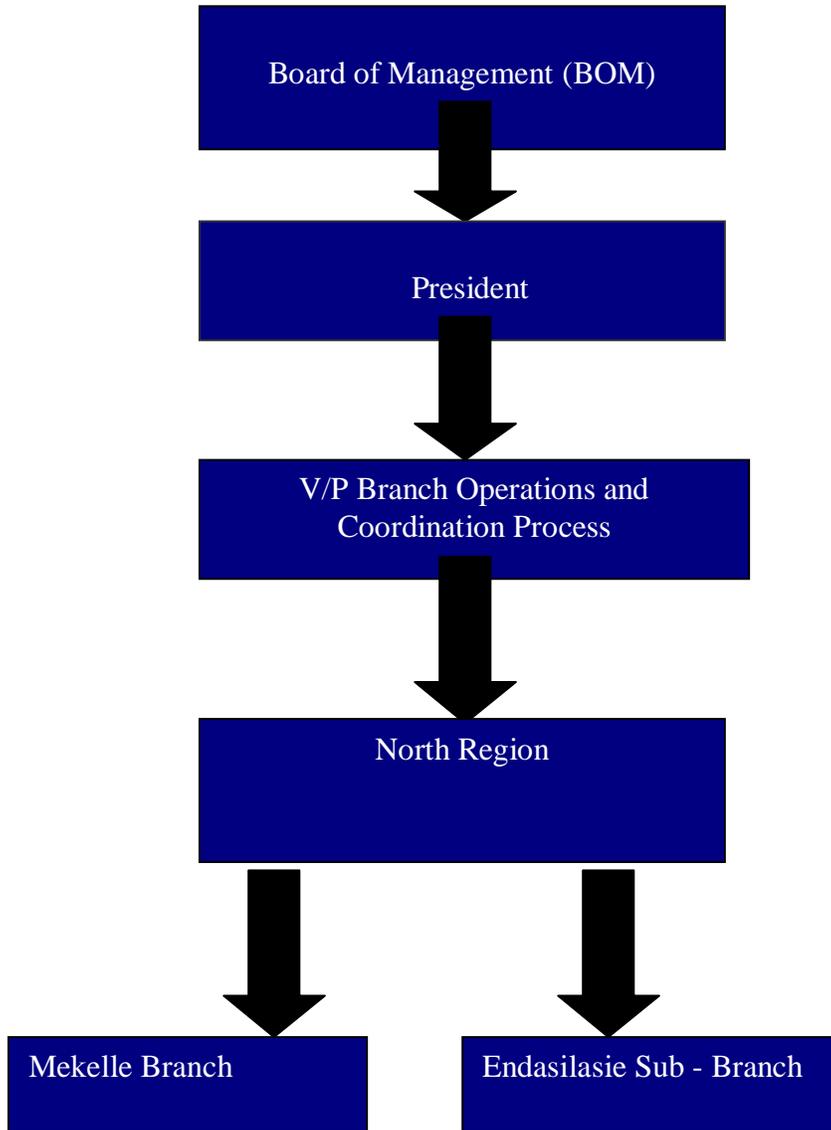
(News letter 2010) Development bank of Ethiopia is a fully government owned enterprise. As such the bank is supervised by the public financial enterprises supervising Agency (PFEA), which is a directorate under the prime minister office. A board management comprised of five

senior government officials and two employee representatives administers the bank. The president of the bank attends the regular meetings of the Board of Management (BOM) as a non-executive and non-voting member. These two apex bodies are, among others responsible for issuing major policies of the bank, approval of its strategic and operational plan as well as the close and regular monitoring of the banks operation.

The operation of the bank are the direct responsibility of the top management group or the executive management committee, which is comprised of four senior management members including the president, who chairs the meeting and act as the official representative of the bank. A management committee comprised of eighteen members is on the other hand responsible for the day-to-day management of operational activities.

Loan approval at the head office, which handles a significant proportion of the approvals made at bank level, is the jurisdiction of the loan approval committee, with the president attending to appeals by customers. Loan approval at branch office is similarly handled as the loan approval committees of eight main branches, while the remaining branches are limited to the appraisal of loan requests from their catchments areas and submit their loan proposals to their respective main branches for final approval.

3.11 Organizational Structure of the Bank



Source; *Banks Document*

CHAPTER FOUR

MATERIALS AND METHODOLOGY

4.1 Data Type and Source

In the study mainly a primary data is used and other relevant document in the regional as well as head office is also used. The primary data includes opinions, attitudes, perceptions and beliefs of the banks clients. And the documents include annual reports, publications and other kind of records that are obtained from documents in Development Bank of Ethiopia Northern Region. In order to investigate the loan repayment performance of the borrowers in the bank, closed and open-ended questionnaire is prepared and distributed to the borrowers.

4.2 Sample Design

The sample selection was based on stratified random sampling where borrowers are selected in such a way that it comprises their loan status. As of march, 2010 the total number of borrowers listed on the banks chart in both Mekelle and Endaselasie branches was 300. Out of these 300 borrowers, 240 of them were successful borrowers and the rest 60 borrowers were defaulters. A sample of 100 borrowers interviewed, out of which 83 are successful and 17 of them are defaulters.

4.3 Questionnaire Development

In designing and conducting the questionnaire, attempt was made to minimize biases such as strategic, hypothetical and compliance biases, which may arise from compensating Variation (CV) survey.

For instance to minimize strategic bias the following statement was read to all respondents before interviewing began.

This survey is going to be undertaken by a student of Mekelle University, College of Business and Economics in the Department of Management as a partial fulfillment for the award of MA in Development Study. This questionnaire is designed to obtain information on borrowers characteristics, project characteristics and loan characteristics. The information collected is purely for academic purpose and will be kept confidential. And your personal information will never be linked with your responses. Hence, you are requested to participate in this discussion as truthfully as you can.

Hypothetical bias is unlikely to occur because borrowers of the bank are familiar with the questions. In order to reduce compliance bias, the survey was developed carefully.

The draft questionnaire was pre-tested on 5 randomly selected borrowers. This pre testing helped the researcher to formulate final survey questionnaire.

The final version of the survey questionnaire designed for this study has nine sections, these include; questions on borrower's characteristics, questions on the project characteristics, questions on management and employment situation, questions on loan utilization, questions on project implementation, questions on technical situations, questions on market and financial situations, questions on supervision and loan and loan repayment. However all the questions on the 9 sections revolve on the main 3 issues, these are borrower's characteristics, project characteristics and loan characteristics.

The final version of the questionnaire was translated into Tigrinya language. In translating the questioner, great care was taken to eliminate the nuances in the wording particularly to those questions related to project and loan characteristics.

4.4 List of Independent Variables

4.4.1 Borrower's Characteristics

Age; age of borrower in years. It is a continuous variable in which the younger the age the higher may be his/her productivity, knowledge and the higher or the older the age the lower may be his/her productivity and this leads to successful loan repayment and default respectively.

On the other way round, the older person may have a lot of experience on business, which may lead to successful loan repayment, and the younger one may have limited experience attributed to his age and this may lead to unsuccessful loan repayment. Hence, age contribution to successful loan repayment performance of the private borrowers cannot be predetermined.

Education; this is a dummy variable, taking 0 if the borrowers are illiterate, are in primary educational level, secondary educational level and 1 if the borrowers are in the tertiary educational level. This factor is expected to have a positive impact in successful loan repayment performance, because higher educational levels enable borrowers to comprehend more complex information, keep business records, conduct basic cash flow analysis, and make the right business decision. Hence, borrowers with higher level of education may have higher repayment rates.

Gender; is a dummy variable taking, 0 for male and 1 for female. It is argued that lending to women can lead to their economic empowerment and inculcate them a culture of hard work and financial discipline, which can lead to high loan repayment rates, thus women borrowers may have high loan repayment performance.

Availability of Other Source of Income; it is a dummy variable taking 0 for borrowers that do not have other source of income and 1 for borrowers that do have other source of income. If the borrowers have other source of income, it is expected that he/she will cover his/ her other expenses from that income which is out of the project and it is assumed that this will result in higher deposit of money from the outcome of the project, which will help the borrower to have successful loan repayment performance.

Household Size; it is a continuous variable and it is assumed that the larger the house hold size the negative impact will have on successful loan repayment performance which is attributed to higher house hold expenses. And it is also expected that the smaller the house hold size the higher will be its probability to repay the loan successfully.

Experience; it is a continuous variable. Borrowers who have been in business longer are expected to be more successful with their enterprise. They have more stable sales and cash flows than those who have just started. Thus, those who are more experienced will have high repayment rates. Hence, it is expected that experience will have a positive impact on successful loan repayment performance of private borrowers.

Availability of other sources of credit: this is a dummy variable taking 0 for borrowers that have other source of credit and 1 for borrowers that do not have other source of credit. If borrowers have other sources of credit, they may use these sources to be able to settle their loan obligation in case they want to continue borrowing from the same source. Therefore, we expect a positive sign. On the other hand, borrowers may feel careless in repaying their loan if they decide they no more want to borrow from the same source because they can get loan from the alternative sources. In such cases, it may take a negative sign. Hence, the sign for this variable cannot be predetermined.

4.4.2 Project Characteristics

Sector; it is a dummy variable taking 0 for sectors such as agriculture, industry and agro industry and 1 for service giving sectors. It is argued that different types of projects have different level of risks hence profitability. Thus, borrowers with different types of projects may have different repayment rates. However it is expected that borrowers who engage in service giving sectors are expected to have successful loan repayment performance, this is because now a days the demand for service giving sectors is highly increasing.

Type of Labour; it is a dummy variable, which take 0 for family labour, and both family and hired labour and 1 for hired labour. It is expected that if the borrowers have a family labor, then

the loan repayment performance of the borrowers will be low. This is because mostly family labour are not employed on their qualifications rather on family basis and this will directly decrease the productivity of the project which again decrease the loan repayment performance of the borrower, hence negative sign is expected. However if the borrower hires labour without considering family relations then it is expected to have a positive sign.

4.4.3 Loan Characteristics

Loan Diversion; this is a dummy variable taking 0 if the project is diverted and 1 if the project is not diverted. Diverting loans to more productive projects will have positive impact on successful loan repayment while if the loan is diverted to less feasible projects then it will have a negative impact on repaying the loan successfully. Hence, the sign of diverting loans to another purpose cannot be predetermined.

Repayment Period; it is the period of time during which the entire loan must be repaid. It is a dummy variable, taking 0 for short and long term repayment periods and 1 for medium term repayment period. Short repayment period might cause the borrower not to have enough revenue to make loan repayments. On the other hand, long repayment period are detrimental to borrowers if they cannot access future loans until the existing loans is paid back. Hence both short and long-term repayment period can have negative effect on successful loan repayment, however if the repayment period is medium it is expected that the borrower will have an opportunity to repay his/her loan successfully.

Purpose of the Loan; it is a dummy variable taking 0 for loans used for working capital and both working capital and fixed investment and 1 for loans used for fixed investment only. It is argued that loans used for fixed investment rather than working capital will have a positive impact on successful loan repayment performance of the borrowers' because loans for working capital are more exposed to misallocation of the loan taken.

4.5 Method of Analysis

After data collection, the data is systematically analyzed using an Econometric analysis to determine the factors behind successful loan repayment.

In the above hypothesis, successful loan repayment is expected to depend on characteristics of the private borrowers, characteristics of the specific project, and characteristics of the loan. The identification of the factors in which successful loan repayment depend on is made based on similar studies conducted on the issue.

The econometric model that is used to empirically identify the factors behind successful loan repayment of private borrowers is **Probit Model**; this model is selected because successful loan repayment performance, which is the dependent variable is binary, taking the value 0 and 1 for defaulting and successful loan repayment respectively.

The probit model is chosen from other similar models such as linear probability and logit models. Linear Probability Model (LPM) is plagued by several problems such as non-normality and heteroscedasticity of the error term, possibility of the dependent variable lying outside the 0-1 range most importantly it assumes that the mean value of the dependent variable is linearly related with the explanatory variable. That is the marginal effect of the explanatory variable is remaining constant through out, which seems patently unrealistic (Gujarati, 1995).

To specify the likelihood equation, define P as the probability of observing whatever value of successful loan repayment.

$SLR = \Pr (SLR_i = 1/X_i) \text{ if } SLR_i = 0 \text{ defaulter.}$

1- $\Pr (SLR_i = 1/X_i) \text{ if } SLR_i = 1 \text{ successful.}$

The likelihood equation as presented by Long (1997) is

$$L(\beta / SLR, X_i) = \prod_{SLR_i=1} \Pr(SLR_i = 1/X_i) \prod_{SLR_i=0} [1 - \Pr(SLR_i = 1/X_i)]$$

SLR= 0

SLR= 1

Where the index of multiplication indicates that the product is taken over only for those cases

Where SLR=0 and SLR=1 respectively.

The model is thus specified as;

$$SLR_i = \beta X_i + U_i$$

Where SLR_i = Vector of Successful Loan Repayment Rate

X_i = Vector of explanatory Variables.

β = Vector of Unknown parameters.

U_i = Disturbance or Error term, that represent all factors that affect successful loan repayment but those which are not taken in to account explicitly.

The model being estimated is then specified as;

$$SLR = \beta_0 + \beta_1 AGE + \beta_2 EDUC + \beta_3 LOD + \beta_4 GENDR + \beta_5 REP.PER + \beta_6 OS.INC + \beta_7 HHS + \beta_8 EXP + \beta_9 SEC + \beta_{10} OTH.SCR + \beta_{11} PUR.LO + \beta_{12} TY.LAB + U_{ri}$$

Where

SLR = Successful loan repayment

AGE = Age of borrowers

EDUC = Educational level of borrowers (years)

LOD = Loan diversion

GENDER = Sex of borrowers

REPPER = Repayment period

OSINC = Availability of other source of income

HHS = house hold size

EXP = past experience on business

SEC = Sector

OTHSCR = availability of other sources of credit

PURLO = purpose of the loan

TYLAB = type of labour

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1 Descriptive Analysis

In the first part of this section borrower's characteristics, projects characteristics and loan characteristics are described. Following the above section, the relationship between borrower's characteristics, project characteristics, loan characteristics and successful loan repayment performance of borrowers are described. Additionally mean comparison between borrowers who repay their loan successfully and defaulters is conducted. In the final part of this section, performance of development bank of Ethiopia northern region in terms of credit operation of the bank is described.

5.1.1 Borrowers Characteristics Vs Successful Loan Repayment

Age

Age is one of the independent variables related with borrower's characteristics and expected to determine successful loan repayment performance of the borrowers. It is a continuous variable, hence the minimum age of the sample successful borrowers as depicted on table 5.2 is 25, and the maximum age is 62, which is similar with the minimum and maximum age of the total sample borrowers in table 5.1. In addition, the mean age of the sample successful borrowers is 41.91.

Household Size

Regarding the household size of the borrower's characteristics, out of the 100 sample borrowers, as depicted on table 5.2, the minimum household size of the successful borrowers is 2 and the maximum household size of the successful borrowers is 12, which is similar with the minimum

and maximum house hold size of the total sample borrowers depicted on table 5.1. The mean household size of the successful borrowers is 6.2.

Table 5.1 Borrower’s characteristics of sample borrowers

Description	Variable	Mean	Stan. Dev.	Minimum	Maximum
Age of the sample borrowers	Age	42.16	9.334113	25	62
Household size of the borrowers	Hhs	6.32	2.403197	2	12
Experience on similar business of the borrowers	Exp	9.77	3.692348	1	16

Source; *computed based on own survey, 2010*

Experience

Regarding the experience of the borrowers on similar business as expressed on table 5.2, the minimum year of experience for successful borrowers is 1 year and the maximum is 16 years, which is similar with the minimum and maximum year of experience for the whole sample expressed on table 5.1.

The mean year of experience on similar business for the borrowers who repay their loan successfully is 9.722892. In addition, the mean year of experience for the whole sample is 9.77 years (table 5.1).

Education

The survey on the educational characteristics of the borrowers shows that 37% of the borrowers are in the level of education that ranges from illiterate up to secondary level of education , and the rest 63% of the borrowers falls in the level of education above secondary school or tertiary level as shown in table 5.2.

The loan repayment performance of the borrowers relative to their educational level as shown on table 5.2, shows that, among the 37 % of the borrowers whose educational level is below tertiary, 67.57 % of them repay their loan successfully and among the 63 % of the borrowers whose educational level is above tertiary 92.06 % of them repay their loan successfully. Besides, the mean value of successful borrowers whose educational level is below tertiary is 0.6756. In addition, the mean value of the successful borrowers whose educational level is above tertiary is 0.9206.

Gender

Out of the total 100 sample respondents, 14% are female borrowers and the rest 86% are male borrowers as shown on table 5.2. Accordingly, 85.71% of female borrowers repay their loan successfully and out of the male borrowers, 82.56% of them repay their loan successfully. Regarding the mean of successful loan repayment performance, the mean for female and male successful borrowers is 0.8571429 and 0.8255814 respectively.

Availability of Other Source of Income

According to the survey result shown on table 5.2, borrowers with other source of income out of the project are 45% of the total sample borrowers and 55% of them are, borrowers who have no other source of income other than the project.

Regarding their repayment performance, 93.33 % of sample borrowers who have other source of income repay their loan successfully and among the borrowers who have no other source of income 74.55 % of them repay their loan successfully.

Other Source of Credit

Among the sample 100 borrowers, as shown on table 5.2, 21% of them have the availability of other source of credit and the rest 79% borrowers do not have the availability of other source of credit.

And the loan repayment performance for these borrowers as listed on table 5.2 shows that 57.14 % of the borrowers who have the availability of other source of credit repay their loan successfully and among the borrowers who do not have other source of credit 89.87 % of them repay their loan successfully.

Table 5.2 Borrower's characteristics Vs successful loan repayment

Variable	Number (%)	% of successful borrowers	Successful Loan Repayment			
			Mean	Stan.Dev	Minimum	Maximum
Age	83	83	41.61566	9.548598	25	62
Education						
Illiterate-secondary	37	65.57	.6756757	.474579		
Tertiary	63	92.06	.9206349	.2724789		
Gender						
Male	86	82.56	.8255814	.3816947		
Female	14	85.71	.8571429	.3631365		
Other source of income						
Have no	55	74.55	.7454545	.4396203		
Have	45	93.33	.9333333	.2522625		
Household size	83	83	6.265	2.38943	2	12
Experience	83	83	9.722892	3.633561	1	16
Other source of credit						
Have	21	57.14	.5714286	.5070926		
Have no	79	89.87	.8987342	.3036081		

Source; computed based on own survey, 2010

5.1.2 Project Characteristics Vs Successful Loan Repayment

Sector

As shown on table 5.3, the percentage of sample borrowers who invest in agriculture, industry and agro processing sectors is 73% and the percentage of sample borrowers who invest in the service giving sectors is 27%. In addition, the loan repayment performance of the borrowers shows that 66.67 % of the borrowers who invest in the agricultural, industrial and agro processing sectors repay their loan successfully and among the sample borrowers who invest in the service giving sectors 89 % of them repay their loan successfully.

As shown on similar table 5.3 the mean of successful borrowers engaged in the agricultural, industrial, and agro-processing sectors is 0.6666667. Moreover, the mean of successful borrowers in the service-giving sector is 0.890411.

Type of Labour

The type of labour employed in the projects as shown on table 5.3 shows that 28% of the borrowers employ or use family labour and the combination of family labour and hired labour, and the rest 72% borrowers use or employ hired labour. Moreover, regarding their loan repayment performance 57.14 % of the borrowers who use or employ family labour and the combination of both family labour and hired labour repay their loan successfully. In addition, among the borrowers who use or employ hired labour 93.06 % of them repay their loan successfully.

Table 5.3 Project characteristics Vs successful loan repayment

Variable	Number	% of successful borrowers	Successful Loan Repayment			
			Mean	Stan.Dev	Minimum	Maximum
sector						
Agriculture, industry and agro-processing	73	66.67	.6666667	.4803845		
Service	27	89.04	.890411	.3145386		
Type of labour						
Family, both family and hired labour	28	57.14	.5714286	.5039526		
Hired labour	72	93.06	.9305556	.2559923		

Source; *computed based on own survey, 2010*

5.1.3 Loan Characteristics Vs Successful Loan Repayment

Loan Diversion

Among the 100 sample borrowers, 26% of them divert their loans partially or fully from the intended projects due to many reasons, which mostly are related with the technical and marketing problems related with the project, and the rest 74% sample borrowers invest their loan on the intended and appraised projects as shown on table 5.4.

The successful loan repayment performance of the borrowers in relation with loan diversion as expressed on table 5.4 shows that, 84.62 % of the sample borrowers who divert their project due to various reasons repay their loan successfully. And among the sample borrowers who did not divert their loan, 82.43 % of them repay their loan successfully.

Repayment Period

The survey as indicated on table 5.4 shows that 30% of sample projects are with short repayment period (up to 1 year) and long repayment period (between 5-10 years). Moreover, 70% of the projects are with medium repayment period (between 1-5 years). As shown on similar table 5.4, out of the projects with short and long repayment period 56.67 % of them repay their loan successfully, and out of the projects with medium repayment period 94.29 % of them repay their loan successfully. The mean for projects with short and long period of repayment and that show successful loan repayment performance is 0.5666667 and the mean for projects with medium repayment period and that show successful repayment performance is 0.942857.

Purpose of the Loan

As depicted on table 5.4, out of the 100 sample borrowers, 31% of them use the loan for working capital and for both working capital and for fixed investment and the rest 69% of the borrowers use the loan for fixed investment. Moreover, their loan repayment performance as shown on table 5.4 reveals that, 64.52 % of the borrowers who use their loan for working capital and for both working capital and fixed investment repay their loan successfully and among the borrowers who use the loan for fixed investment 91.30 % of them repay their loan successfully. In addition, the mean of successful loan repayment performance shows 0.6451613 for borrowers who use the loan for working capital and for both working capital and fixed investment and 0.9130435 for borrowers who use the loan for fixed investment.

Table 5.4 Loan characteristics Vs successful loan repayment

Variable	Number	% of successful borrowers	Successful Loan Repayment			
			Mean	Stan.Dev	Minimum	Maximum
Loan diversion						
Diverted	26	84.62	.8461538	.3679465		
Not diverted	74	82.43	.8243243	.3831416		
Repayment period						
Short and long	30	56.67	.5666667	.5040069		
Medium	70	94.29	.9428571	.2337913		
Purpose of the loan						
For working capital and for both working and fixed investment	31	64.52	.6451613	.4863735		
For fixed investment	69	91.30	.9130435	.2838356		

Source; computed based on own survey, 2010

5.1.4 Mean Comparison of Successful and Defaulter Borrowers.

As indicated on various parts of the paper the number of sample borrowers who repay their loan successfully is 83 which is 83 % of the sample 100 borrowers, and the number of borrowers who fail to repay their loan successfully is 17, which represent 17 % of the sample borrowers.

Table 5.5 Mean comparison for successful and defaulter borrowers

Variable	Successful Borrower	Defaulters
Age	41.91566	43.35294
Educ	.6987952	.2941176
Lod	.7349398	.7647059
Gender	.1445783	.1176471
Repper	.7951807	.2352941
Osinc	.8235294	.4939759
Hhs	6.26506	6.588235
Exp	9.722892	10
Sec	.7831325	.4705882
Purplo	.7590361	.3529412
Othscr	.8554217	.4705882
Tylab	.8072289	.2941176

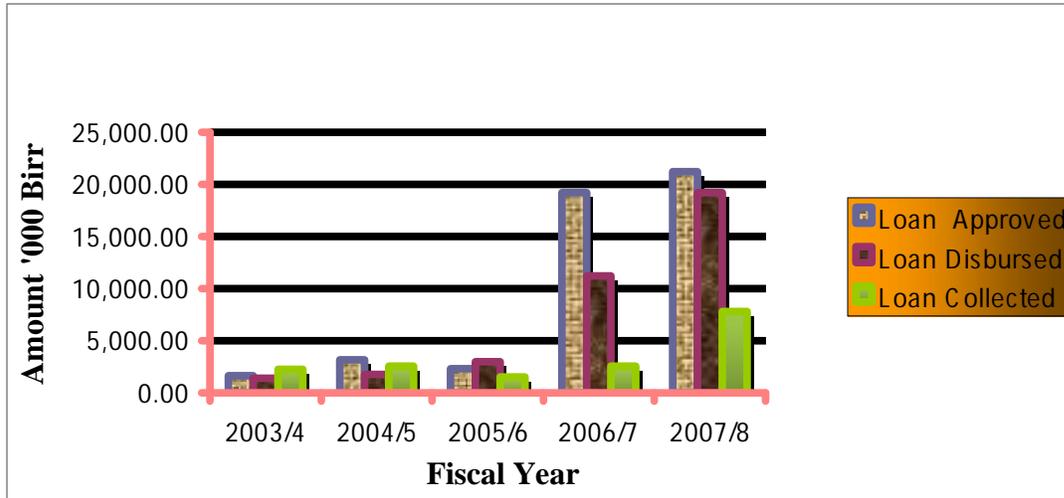
Source; *computed based on own survey, 2010*

As indicated on table 5.5 the mean age for successful borrowers is 41.91 years and the mean age for defaulters is 43.35 years. 69.8 % of the successful borrowers are in tertiary educational level and only 29.4 % of the defaulter borrowers are in tertiary educational level. The mean of loan diversion for successful borrowers is 0.73 and the mean of loan diversion for defaulters is 0.764. The mean of repayment period for successful borrowers is 0.79 and the mean of repayment period for defaulters is 0.23. The mean of the availability of other source of income for successful borrowers is 0.82 and the mean of this independent variable for defaulters is 0.493. The mean household size for successful borrowers is 6.265 and the mean household size for defaulters is 6.58.

5.2 Performance of Development Bank of Ethiopia North Region

The credit operation of the bank shows how much the bank is performing in terms of disbursing and collecting loans from period to period.

Figure 5.1 Credit operations of DBE north region



Source; *credit operation of DBE Northern Region 2009*

From Figure 5.1, it can be inferred that before 2005/6 fiscal year there were stagnancy in loans approval and disbursal, as a result loan collection was also in similar trend. However, starting from 2005/6 fiscal year there was radical change in both loans approval and disbursal. Furthermore, the figure shows there is change in loan collection. As per interview conducted with the branch manager of the bank, the reasons for radical change for both loan approved and loan disbursed starting from the year 2005/6 were:

- Increments in the loan sanction limit from 1.5 million to 15 million.
- The introduction of the KYC (Know Your Customer) concept.
- The implementation of proper check and balance system among credit, appraisal, and approval teams of the bank.
- The implementation of new rehabilitation programs like additional loan, debt rescheduling, loan transfer, and others for the identified sick projects.

However, for loan collection the manager mentioned that there are non-performing loans, which resulted from clients' default, which in turn come about from lack of follow-up, market problems, environmental problems, credit policy of the bank, and so forth.

What can be concluded here is that, though the loan disbursement in the bank is increasing from time to time, there are borrowers who do not repay their loan successfully. This is attributed to the above factors expressed by the manager and other specific factors related with the borrowers, the project and the loan, that affect successful loan repayment performance of the borrowers negatively.

5.2.1 Basic Requirements for Credit Decisions

The DBE has uniform basic requirements which applicants are expected to present and become eligible for loan. Thus, credit decisions of the bank are based on the fulfillment of these requirements as mentioned below.

- Feasibility study: the location of the project, the product or service that the project intends to offer, the category of the project i.e., those projects classified as priority area like agro industry, manufacturing, and floriculture are given due attention by the government and others take less attention to be financed by the bank.
- Way of land owned: leased and own plan
- 30% of the total initial project cost should be contributed by the client in cash.
- Marriage certificate if engaged in marriage
- Proof of tax payer

- Acceptance letter showing that the project has no impact on the environment
- I.D. Card of kebele, its photo copy
- And others (*Please refer to Annex-2*)

To be qualified for credit, every applicant should fulfill the previously mentioned requirements. If the borrowers full fill the requirements set by the bank on the checklist, the client will be eligible for the loan.

In the lending process, the bank prefers the project type and applicant creditworthiness as first way out and collateral is the second way out as basis for lending. However, the bank prefers collateral base of lending because of the following main reasons:

- The economic level of the country: the living standard of the society, poverty, etc.
- The culture of the society in lending is at its infant stage.
- The educational level of the society.
- Limited resources of the bank (this is to minimize the shortage of finance).
- It is a common practice that most of commercial and development banks are experiencing the common practices.
- It is believed to be the safest way of lending in minimizing credit risk.
- The bank gives long-term loan and huge amount of money.
- Others

According to the response of the branch manager, the bank did not so far encountered problems related to seizing of collateral. This is because the bank commonly requires fixed assets like land and building.

What can be inferred here is that the main measure taken by the bank to increase successful loan repayment performance of the borrowers is the type of the collateral. Other factors that affect successful loan repayment performance of the borrowers are not considered specifically though it is expected that they are included to some extent in the feasibility study.

5.2.2 Assessment of Applicant Creditworthiness

Once a customer requests a loan, bank officers analyze all available information to determine whether the loan meets the bank's risk-return objectives. Credit analysis is essentially default risk

analysis, in which a loan officer attempts to evaluate a borrower's ability and willingness to repay.

The bank assesses the creditworthiness of a loan applicant mostly by gathering detail information with regard to:

a. The Applicant

- Whether the applicant is customer of any other bank. This is done to check whether the applicant has any loan arrear with other bank. This will be checked by the help of NBE.
- The exposure of the applicant to credit.
- The educational level and experience of the applicant.

b. The Project

- The location of the project in terms of risk.
- The feasibility of the project from the financial and technical point of view.
- The availability of utilities such as electricity, telecommunications, water, road supplies, and others which are pertinent to the project type.
- The availability of substitute products for the project.
- The evaluation of market risk for the project.
- The cost structure(Fixed Cost vs. Variable Cost) of the project

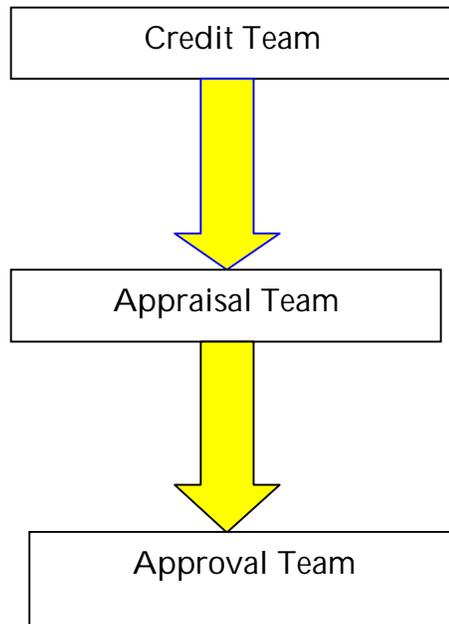
c. Collateral

- Credit policy of the bank, for any collateral it is 125%. This is the minimum requirement from any applicant having collateral.

But, sometimes the bank uses all the five C's of credit that include Character, Capacity, Capital, Collateral, and Conditions.

Once the bank assessed the creditworthiness of the applicant, the credit decision flow is depicted below in fig 5.2

Figure 5.2 Credit decision followed by the bank



But, the bank is charging different interest rates to its customers based on the type of the projects to be financed. Accordingly, for priority area projects such as agro industry, manufacturing and floriculture the interest rate is 7.5%, while for non-priority area projects like service it is 8.5%.

This is due to the government policy that these priority area projects have the potential to contribute to the economic development of the country. What can be concluded here is that, though the information regarding the applicant, project and collateral is expected to contribute to successful loan repayment performance of the borrowers, selection of projects to be financed based on government priority rather than repayment performance of the sectors is expected to have negative effect on successful loan repayment performance of the borrowers.

5.3 Economic Results and Discussions

In this section, various kinds of model tests and econometric analysis to identify borrower's characteristics, project characteristics and loan characteristics that determine successful loan repayment performance of borrowers will be described quantitatively.

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. $N\sim(0, 1)$).

To get the residuals normally distributed first we have to make sure that each variables 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.

Multicollinearity

We say that there is multicollinearity problem in an equation when there is correlation between variables employed in the regression model (when the assumption that $cov(x_1, x_2) = 0$ is violated). That is the existence of a ``perfect`` or exact linear relationship among some or all explanatory variables of a regression model (Gujarati, 1995). The intercorrelation between the two variables can be measured by the partial correlation coefficient between one variable with another variable. As a rule of thumb, if the correlation coefficient between the two variables is greater than 0.8, one can conclude that there is a serious problem of multicollinearity. Accordingly, the test result shows that the correlation coefficient between all variables under

consideration is less than 0.8 (*please refer Annex-6*) implying that the explanatory variables can separately contribute to the variation in the dependent variable.

Heteroscedasticity

An important assumption of the CLRM is that the disturbances U_i appearing in the regression function is homoscedastic. That is they have the same variance ($E(U_i^2) = s^2$ where $i= 1, 2 \dots n$).

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

Likelihood Ratio Test for Probit Model

The likelihood ratio test (LRT) is a test against the null hypotheses that all the slopes coefficients are equal to zero (Johnson, J. & Dinardo, 1997,) this test is given by:

$$LRT = 2 [L(\beta_0, \beta_i) - L(\beta_0, 0)]$$

Where $L(\beta_0, \beta_i)$ is the maximized value of the log likelihood of the model being estimated, $L(\beta_0, 0)$ is the value of the likelihood estimated only with constant term, $\beta_0, 0$ is regression constant and β_i the slope coefficients. The null hypothesis of all slopes are equal to zero will be rejected if $LRT \geq$ critical X^2 value. In our model, the maximized log likelihood value is -14.33095 and the value of log likelihood with only constant term is -45.588621. Therefore the likelihood ratio test is:

$$\begin{aligned} LRT &= 2 (-14.33095 - (-45.588621)) \\ &= 62.515342 \end{aligned}$$

At 5 % level of significance the critical value $X^2(12)$ is 32.13. Thus, the null hypothesis that all the slope coefficients are equal to zero is rejected. Thus, the model has some explanatory power.

Measures of Goodness of Fit

The use of conventional R^2 for goodness of fit when the dependent variable takes either 1 or 0 is not appropriate. A summary measure used similar to the conventional R^2 that have been suggested for models with qualitative dependent variable is calculated based on likelihood ratio as follows:

$$1 - \frac{L(\beta_0, \beta_i)}{L(\beta_0, 0)}$$

Where $L(\beta_0, \beta_i)$ is the maximized value of the log likelihood of the model being estimated, $L(\beta_0, 0)$ 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:

$$1 - \frac{(-14.33095)}{(-45.588621)} \\ = 0.6856$$

This result indicates that our Probit model explains about 68.56% of the variation.

5.3.2 Estimation Results

Probit Model Estimation Results

The Probit result obtained using Stata version 10 is given in table 5.6 and the Marginal effect result after Probit is given in Table 5.7.

Table 5.6 Probit model estimates of the determinants of successful loan repayment performance

Independent Variables	Coefficient	Robust Std.Err	P-Value
age	-0.141067	.0492526	0.775
educ	3.382586	.9703764	0.000*
lod	-.3200945	.6852778	0.640
gender	.9062921	.6518818	0.164
repper	3.64083	.9455915	0.000*
osinc	2.784671	.7484804	0.000*
hhs	.055177	.0982431	0.574
exp	-.1921887	.0833016	0.021**
sec	2.366138	.6866802	0.001*
purplo	2.149314	.8006117	0.007*
othscr	-.1068543	.4905091	0.828
tylab	1.824495	.668601	0.006*
-cons	-1.793754	2.059743	0.384
Pseudo R2	0.6856		
Log pseudo likelihood	-14.33095		
Wald chi2(12)	32.13		
Prob > chi2	0.0013		
Number of obs	100		

Source; *computed based on own survey, 2010*

* Significant at 1% ** significant at 5%

Education

The variable education (educ) has a positive sign as expected and is statistically highly significant at 1% as shown on table 5.6. The result indicates that as the borrower reaches in tertiary level of education, his/her capacity to repay his/her loan successfully will increase. The marginal effect (table 5.7) indicates that, if a borrower is in tertiary educational level, other things remaining constant his/her probability to repay his/her loan successfully will increase by 76%. This result is similar with the results by (Jemal, 2003) and (Abraham 2002) in Oromia Region.

Repayment period

The variable repayment period (repper) has a positive sign as expected and it is statistically highly significant at 1% as expressed on table 5.6. This indicates that as the borrower takes a loan that will be repaid within the medium term of repayment, his/her capacity to repay his/her loan successfully will increase. The marginal effect (table 5.7) indicates that as the borrower takes a loan to be repaid within the medium repayment period, his/her probability to repay his/her loan will increase by 15%. (Roslan and Zaini 2009) also came up with similar results in their study on micro credit schemes of Malaysia.

Other source of Income

The variable other source of income (osinc) has a positive sign as expected and is statistically highly significant at 1%. The result shows that as the borrower have other source of income his/her capacity to repay his loan successfully will increase. The marginal effect result (table 5.7) indicates that as the borrower's availability to other sources of income increases, other things remaining constant his/her probability to repay his/her loan will increase by 1%. The studies made by (Kamajou and Baker1980) in African countries and (Abraham 2002) in Ethiopia supports this result.

Table 5.7 Marginal effects after probit

Variable	dy/dx	Std.Err
age	-9.96e-06	.00004
educ	0.764881	
lod	-0.0001804	.00055
gender	0.0002911	.00076
repper	.1558774	.8046
osinc	.0105267	.01474
hhs	.0000389	.00011
exp	-.0001356	.00034
sec	.0333997	.03741
purplo	.0188845	.02156
othscr	-.0000679	.00028
tylab	.0123131	.02211

Source; *computed based on own survey, 2010*

Sector

The variable sector has a positive sign as expected and is statistically significant at 1%. The result indicates that borrowers who engage in the service-giving sector have high probability of repaying their loan successfully relative to borrowers who engage in industry, agriculture and agro processing sectors. The marginal effect (table 5.7) indicates that, as the borrower engage in service giving sectors, his/her probability to repay his/her loan successfully will increase by 33%.

Purpose of the loan

The variable purpose of the loan (purplo) has a positive sign as expected and is statistically significant at 1%. The result shows that the probability of repaying loans successfully is higher for borrowers who use the loan for fixed investment rather than the borrowers who use the loan for working capital and for both fixed investment and working capital. The marginal effect shows

that if a borrower uses the loan for fixed investment his/her probability of repaying his/her loan other things remaining constant will increase by 18%.

Type of labour

The variable type of labour (tylab) has a positive sign as expected and is significant at 1%. The result indicates that as the borrower hires a labour his/her probability to repay his/her loan successfully is high, relative to borrowers who use family labour and the combination of family labour and hired labour. The marginal effect indicates that, other things remaining constant as the borrower use hired labour his/her probability to repay his/her loan successfully will increase by 12%.

Other variables such as, gender and household size have positive sign, but are not statistically significant. Moreover, variables such as age, loan diversion, other source of credit show negative sign but not statistically significant. The variable experience is statistically significant but show negative sign.

Comparing the elasticity of the significant variables described in the marginal effect table 5.7, it is indicated that, education is the most important factor in determining successful loan repayment performance of the borrowers. Sector, purpose of the loan, repayment period, type of labour and other source of income are the next factors that determine successful loan repayment performance of the borrowers respectively.

CHAPTER SIX

CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Conclusion

In the study the determinants of successful loan repayment performance of the borrowers and performance of Development Bank of Ethiopia North Region is analyzed using primary and secondary data respectively. The primary data is collected from 100 borrowers in Development Bank of Ethiopia North Region and projects that are financed by the regional branch only. The sample borrowers were asked three kinds of questions. These questions are related to the borrower's characteristics such as age of the borrower, educational background of the borrower, gender of the borrower, household size of the borrower, availability of other source of income and credit by the borrower. The second types of questions are related with the project, which include the sector in which the borrower is engaged and the type of labour employed in the project. The last types of questions refer to the loan characteristics, which include purpose of the loan, repayment period of the loan and loan diversion.

The survey results were analyzed by descriptive analysis and empirically by applying econometric model.

The survey result reveals that age of the borrowers ranges from 25-62 years. The household size of the borrowers ranges from 2-12. The experience of the borrowers on similar business ranges from 1-16 years. The educational background of the borrowers reveals that 63% of them are in the tertiary educational level and the rest 37% are below tertiary level. Among the sample borrowers 86% of them are males and the rest 14% are females. Regarding the availability of other source of income some of them, respond that they have other source of income and majority of them respond that they do not have other source of income. Regarding the availability of other source of credit, the larger proportions of the borrowers do not have other source of credit and small proportions of the borrowers have other source of credit. Regarding the sectors

in which the borrowers engaged majority of them are in agriculture, industry, and agro processing sectors and the rest are in service giving sectors. Among the borrowers, the overwhelming majority use hired labour in their projects and small proportion of them use family labour and the combination of both family labour and hired labour. Regarding loan diversion, the overwhelming majority of the borrowers do not divert their project. Regarding the loan characteristics majority of the borrowers take a loan to be paid within five years and small proportion of the borrowers take loan to be paid with in short and long repayment period. In addition, majority of the borrowers use the loan for fixed investment and small portion of the borrowers use the loan for working capital and for the combination of both working capital and fixed investment.

To identify the determinants of successful loan repayment performance of borrowers a probit model is estimated. The probit model describes that educational level of the borrowers, repayment period of the loan, availability of other source of income, sector, purpose of the loan and type of labour determine successful loan repayment performance of the borrowers positively and significantly. Other variables such as, gender and household size have positive sign, but are not statistically significant. Moreover, variables such as age, loan diversion, other source of credit show negative sign but not statistically significant. The variable experience is statistically significant but show negative sign.

6.2 Recommendation and Policy implication

Based on the research findings the following recommendations and policy implications can be drawn.

An important policy implication from the strong relationship between education and successful loan repayment performance is that there is a need to consider the educational level of borrowers or their managers in the credit policy of the bank and it should be given high emphasis before the loan is disbursed. Additionally, for the borrowers who already take loans from the bank, provision of entrepreneurship trainings during follow up or with in some arranged time will help the borrowers to repay their loan successfully.

Projects with medium repayment period are relatively found to repay their loan successfully, while projects with short and longer repayment period are found to be high defaulters relative to that of medium repayment period, which are reflected by the positive and significant relationship between medium repayment period and successful loan repayment performance. This leads to suggest that repayment period should be set in a way that consider the financial viability of the project, loan size and market situation and the repayment period.

The significant relationship between service giving sectors and successful loan repayment performance of the borrowers implies that Development Bank of Ethiopia Northern Region should critically appraise the feasibility of the agricultural and industrial projects before disbursal and strong follow up is required for these projects. Additionally the credit policy of the bank should also consider service-giving projects as priority projects.

An important policy implication from the strong relationship between the type of labour employed and successful loan repayment performance of the borrowers is that, the regional bank need to make a strong follow up and study on the type and qualification of the labour employed on the projects. In addition, qualification of labour to be employed in the project should be considered on the credit policy of the bank as a basic requirement for loan provision.

References

Abraham Gebeyehu (2002) loan repayment and its determinants in small-scale enterprise financing in Ethiopia, Addis Ababa, University Ethiopia.

Aguilera-Alfred n & Gonzalez-Vega C (1993). A multinomial logit analysis of loan targeting and repayment at the Agricultural Development Bank of the Dominican Republic. *Agricultural Finance Review* 53:55-64.

A.H.Roslan and Mohd Zaini Abd Karim (2009) Department of Economics, Collage of Arts and Sciences University Utara, Malaysia,

Derege Worku (2010) Evaluation of credit management with reference to DBE North Region, Mekelle University, Ethiopia.

Development Bank of Ethiopia (2009) News Letter no 1

Development Bank of Ethiopia North Region (2009) ,Annual Report.

Fasika Damtie and Daniel Ayalew, □ Financing Micro and Small Scale Enterprises: An Empirical Survey in Urban Ethiopia □, *Ethiopian Journal of Economics*, Vol. VI, No.1, 1997, pp.37-52.

Gujirati D. (1995). Basic Econometrics, 2nd edition. New York McGraw Hill international edition, economics series.

Johnson, J and Dinardo (1997) p .422 commis J.B (1988) p. 53

Jemal Abafita (2003) micro finance and loan repayment performance, case study of the Oromia Credit and Savings Share Company (OCSSCO) in Kuyu

Kamajou f & Baker CB (1980). Reforming Cameroon's government credit project: Effects of liquidity management of small farm borrowers. *American Journal of Agricultural Economics* 62(4):709-718.

Kuhn ME & Darroch Mag (1999). *Factors affecting rural medium-term loan repayment: Evidence from a South African development finance institution*. In: Peters G & Von Braun J (eds), *Food security, diversification and resource management: Refocusing the role of agriculture?* International Association of Agricultural Economists (IAAE). Occasional Paper No. 8. Ashgate Publishing Co. Ltd, Aldershot, UK, 1998, pp 322-328.

Long J. Scott(1997), *Regression Models for Categorical and Limited Dependent Variable*.

Lyne MC & Ortmann GF (1992). *Evaluation of the KwaZulu Farmer Support Programme*. Second Interim Report. Unpublished report, Evaluation Programme, Centre for Policy Analysis, Development Bank of Southern Africa, Halfway House.

Mohammad Reza Kohansan and Hooman Mansoori (2009) University of Hamburg.

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.

Rose A.B. Wakuloba 2007 Ministry of State for Youth Affairs, KENYA

Vogel R (1998). Rural finance market performance: Implications of low delinquency rates. *American Journal of Agricultural Economics* 63(1):58-65.

Van Den Heever R (2002). Portfolio Manager: Agribusiness, Ithala Bank. *Personal Communication*. Durban, South Africa.

William C. (Bill) Deegan, Sr. Richards (2007) Collage of Business, state University of West Georgia.

Zena Lemat Bank (2009) no 45

Zena Lemat Bank (2008) no 44

<http://www.dbe.com.et>

Annex-1: Questionnaire for Borrowers

Mekelle University
Faculty of Business and Economics
Department of Management
Graduate Program (MA.) in Development Studies

Questionnaire

Dear Sir/Madam

Subject: Survey Questioner for assessing the determinants of successful loan repayment of private borrowers in Development Bank of Ethiopia Mekelle Main Branch.

I am undertaking a research project on determinants of successful loan repayment, Knowing the determinants of successful loan repayment will have a paramount important to the bank, to borrowers, to government and others. More over the result of this study will be used as additional reference for those who want to conduct detailed research on the area.

To this end, I have prepared a self – administered questioner to help me gather the pertinent information from the selected private borrowers. The quality of the result of this research is based on the accuracy of the information you provided. Eventually, I promise you, the information you will provide me is going to be reported and communicated in aggregate and utmost care will be taken for its confidentiality.

Thank you for your cooperation,

Borrower’s characteristics

1. Age -----

1.2. Sex

a) Female b) male

1.3. Marital Status

a) Single b) married

c) Divorced d) widowed

1.4. Education

a) Illiterate b) primary education (1-8)

c) Secondary education (9-12) d) tertiary educations (above grade 12)

e) Others (please specify) -----

1.5. Household Size (Number of dependents in the household) -----

II. THE PROJECT

2.1. Name -----

2.2. Type of Activity -----

2.3. Location-----

Woreda ----- sub city-----

III. MANAGEMENT AND EMPLOYMENT SITUATION

3.1. Are you the manager of the enterprise?

a) Yes b) No

3.2. If your answer to Q. 3.1. Is no, what is the educational level of the manager?

a) Illiterate b) primary education (1-8)

c) Secondary education (9-12) d) tertiary education (> 12)

e) Others (please specify) -----

3.3.How many years of experience the manager or you have (if you are the manager) in running such enterprise? -----

3.4. What type of labour do you employ?

a) Family labour b) hired labour

c) Both d) others (please specify) _____

IV. LOAN UTILIZATION

4.1. What was the purpose of the loan?

- a) For working capital
- b) For fixed investment

4.2. Was the loan released in cash or in kind?

- a) In cash b) in kind c) both

4.3. Did you use the entire loan for the intended purpose?

- a) Yes b) No

4.4. If your answer to Q 4.3 is No, how much of it did you spend for other purpose?

- a) Nearly ¼ of it. b) Nearly ½ of it c) Nearly ¾ of it d) > ¾ of it.

4.5. If your answer to Q. 4.3 is No, what is your reason for loan diversion?

- a) The loan released is not enough for the intended purpose
- b) It was your initial intention
- c) The project faced market problem.
- d) Others (please specify) -----

4.6. Did you get the loan at the right time?

- a) Yes b) No

4.7. If your answer to Q. 4.6 is no, what is the reason for delay?

- a) Lengthy period of time the bank took in processing
- b) Failures to timely provide the necessary documents by you.
- c) Failure of you to timely fulfill the preconditions stipulated on the loan contract
- d) Delay in settlement of the previous loan
- e) Others (please specify) _____

V. PROJECT IMPLEMENTATION

5.1. Was the project fully implemented with in the intended period?

- a) Yes b) No

5.2. If your answer to Q 5.1 is No, what mechanism do you use to solve the problem? -----

VI. TECHNICAL SITUATION

6.1. Is the project situated at the intended site?

a) Yes b) No

6.2. If your answer to Q 6.1 Is yes, is the site area enough for the operation of the enterprise?

a) Yes b) No

6.3. If your answer to Q 6.1 is no, what is the reason for shifting its place?

a) in search of better market

b) Routine bureaucracy regarding the land.

c) To be near to raw material.

d) Others (please specify) -----

VII. MARKET AND FINANCIAL SITUATION

7.1. Do you have other source of income?

a) Yes b) No

7.2. If your answer to Q. 7.1. Is Yes, from which did you pay your loan?

a) Project income only

b) Other income sources

c) From both project and other source of income.

7.3 Do you have other source of credit ?

a) Yes b) No

VIII. SUPERVISION VISITS

8.1. Did the bank visit the project site before approval of the loan?

a) Yes b) No

8.2. When the bank visits the project after it started operation?

a) Regularly according to the bank policy

b) Occasionally according to the need of the bank.

c) According to the need of the project.

d) According to your request.

b) Others (please specify) _____

8.3. Have you ever gone to the bank after you took the loan?

a) Yes b) No

8.4. If your answer to Q. 8.3 is Yes, how many times in a year did you visit the bank? If No, why?

8.5. If your answer to Q.8.3. is Yes, what benefit did you get from your visit?-----

8.6. Were you well briefed about the loan contract before you sign it?

a) Yes b) No

IX. LOAN AND LOAN REPAYMENT

9.1. How many times did you take loan from DBE? -----

9.2. Was the loan you took recently (i.e. this active loan) enough for the intended Purpose? a) Enough b) Medium c) Not enough

9.3. What was the amount o the loan you requested? -----

9.4. Which of the following is the most important one in motivating you to repay your loan on time?

a) Fear of losing collateral

b) To keep social status

c) In expectation of getting another loan

d) Knowing that paying bank loan is your obligation

e) Others (specify) _____

9.5 Have you ever failed in repaying your loan according to the repayment period your for more than two times ?

a) Yes b) No

9.6. Is the repayment period scheduled enough?

a) Enough b) Medium c) Not enough

9.7. If your answer to Q 9.5 is Medium or Not enough, what do you think is the suitable repayment period? -----

9.8. How do you get the method of disbursement of the loan?

a) Suitable b) medium b) not suitable

9.9. If your answer to Q 9.7 is not suitable, what do you think is the suitable form of disbursement? -----

9.10. If your answer is not suitable how are you solving the problem? -----

9.11 What is the repayment period of the loan that you take from Development bank of Ethiopia North region?

a) Short b) medium b) long

Annex-2: Requirement Checklist

Legal Requirement Checklist

Ser. No.	List of Documents	Content of the Document to be checked
1	Principal registration certificate	<ul style="list-style-type: none"> - Name of the promoter - Dated and numbered - Signed and sealed by issuing authority
2	Summery Registration	<ul style="list-style-type: none"> - Name of the promoter - Dated and numbered - Signed and sealed by issuing authority - Validity term
3	Work permit (Temporary/Permanent)	<ul style="list-style-type: none"> - Name of the person requesting the permit - Issued in the name of the person requesting the permit - Signed and sealed by the licensing authority
4	Investment certificate	<ul style="list-style-type: none"> - Name of the promoter - Investment sector vs the purpose of the loan - Dated and numbered - Renewal (if required) - Signed and sealed by issuing authority
5	Business license	<ul style="list-style-type: none"> - Name of the promoter

		<ul style="list-style-type: none"> - Scope of the business - Dated and numbered - Renewal - Signed and sealed by issuing authority
6	Tax payer Identification Number (TIN)	<ul style="list-style-type: none"> - Name of the promoter - Dated and numbered - Signed and sealed by issuing authority
7	Value Added Tax Registration Certificate (VAT)	<ul style="list-style-type: none"> - Name of the promoter - Dated and numbered - Signed and sealed by issuing authority
8	Land holding Documents	
8.1	Lease holding Title deed and the supportive documents	<ul style="list-style-type: none"> - Name of the promoter - Lease term - Lease payment conditions - Signed and sealed and numbered by issuing authority
8.2	ἄλλο ἔδαφος	<ul style="list-style-type: none"> - Name of the promoter - Signed and sealed and numbered by issuing authority
8.3	Land Rent	<ul style="list-style-type: none"> - Name of the promoter - Rent term - Signed by the promoter and

		<p>the lesser</p> <ul style="list-style-type: none"> - Authentication and registration by the concerned Public Notary Office, approved by Regional Investment Office.
9	Memorandum of Association	<ul style="list-style-type: none"> - authentication and registration - Business objectives - Power of the general manager specially: <ul style="list-style-type: none"> - to borrow money - to mortgage/pledge moveable/immoveable properties - To delegate his power and duties
10	Article of the company	<ul style="list-style-type: none"> - authentication and registration - Business objectives - Power of the general manager specially: <ul style="list-style-type: none"> - to borrow money - to mortgage/pledge moveable/immoveable properties - To delegate his power and duties
11	Minute Share holder of the company	<ul style="list-style-type: none"> - conformity with the provisions of 9 and 10 - signatories - authentication and registration

		<p>by notary office</p> <ul style="list-style-type: none"> - entered in to commercial registry
12	Power of Attorney	<ul style="list-style-type: none"> - authentication and registration by public notary - scope-due attention to execute the loan and related powers/duties - if document is authenticated before a public Notary abroad should be verified by ministry of foreign affairs of Ethiopia and be authenticated and registered by documents authentication and registration office.
13	Title deed of vehicles /Libra/	<ul style="list-style-type: none"> - authentication - registration - owner - Plate no. - chassis no - Motor no.
14	Marriage Certificate, Written document of not married	<ul style="list-style-type: none"> - signed and sealed by the issuing authority - dated and numbered - bears the name of the spouses (if the promoter is married)

		- bear the photograph of the spouses (if the promoter is married)
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Annex-3: Credit Operation of DBE North Region

Credit Operations of DBE North Region (2003/4-2007/8) in '000 Birr

S.No	Item	Fiscal Year				
		2003/4	2004/5	2005/6	2006/7	2007/8
1.	Loan Approved	1,635.5	3,196.94	2,321.46	19,237.66	21,209.4
2.	Loan Disbursed	1,387.24	1,779.71	3,015.21	11,196.35	19,196.71
3.	Loan Collected	2,251.15	2,589.14	1,517.16	2,579.26	7,776.45

Source: Annual Report of DBE North Region

Annex-4: Result of Robust Probit Model

Probit regression

Log pseudo likelihood = -14.33095
 Number of obs = 100
 Wald chi2(12) = 32.13
 Prob > chi2 = 0.0013
 Pseudo R2 = 0.6856

slr	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
age	-.0141067	.0492526	-0.29	0.775	-.11064	.0824266
educ	3.382586	.9703764	3.49	0.000	1.480683	5.284488
lod	-.3200945	.6852778	-0.47	0.640	-1.663214	1.023025
gender	.9062921	.6518818	1.39	0.164	-.3713729	2.183957
repper	3.64083	.9455915	3.85	0.000	1.787505	5.494156
osinc	-2.784671	.7484804	-3.72	0.000	-4.251666	-1.317677
hhs	.055177	.0982431	0.56	0.574	-.137376	.24773
exp	-.1921887	.0833016	-2.31	0.021	-.3554569	-.0289206
sec	2.366138	.6866802	3.45	0.001	1.02027	3.712007
purplo	2.149314	.8006117	2.68	0.007	.5801438	3.718484
othscr	-.1068543	.4905091	-0.22	0.828	-1.068234	.8545259
tylab	1.824495	.668601	2.73	0.006	.514061	3.134929
_cons	-1.793754	2.059743	-0.87	0.384	-5.830777	2.243268

Annex-5 : Result of Marginal Effect after Probit

Marginal effects after probit

y = Pr(slr) (predict)
 = .99981466

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
age	-9.96e-06	.00004	-0.27	0.785	-.000081 .000061	42.16
educ*	.076488163
lod*	-.0001804	.00055	-0.33	0.745	-.001268 .000907	.74
gender*	.0002911	.00076	0.38	0.703	-.001208 .00179	.14
repper*	.1558774	.08046	1.94	0.053	-.001815 .31357	.7
osinc*	-.0105267	.01474	-0.71	0.475	-.03942 .018367	.55
hhs	.0000389	.00011	0.37	0.714	-.000169 .000247	6.32
exp	-.0001356	.00034	-0.40	0.687	-.000795 .000524	9.77
sec*	.0333997	.03741	0.89	0.372	-.039927 .106727	.73
purplo*	.0188845	.02156	0.88	0.381	-.023374 .061143	.69
othscr*	-.0000679	.00028	-0.24	0.809	-.000618 .000482	.79
tylab*	.0123131	.02211	0.56	0.578	-.031025 .055651	.72

	age	educ	lod	gender	repper	osinc	hhs	exp	sec	purplo	othscr	tylab
age	1.0000											
educ	-0.1251	1.0000										
lod	-0.0045	-0.0293	1.0000									
gender	0.1668	0.0107	0.1735	1.0000								
repper	-0.1461	0.1763	0.0597	-0.1132	1.0000							
osinc	-0.0320	-0.0687	-0.1237	-0.1564	-0.1097	1.0000						
hhs	0.3043	-0.0360	-0.0065	-0.0299	-0.0493	-0.0219	1.0000					
exp	-0.2820	0.0761	-0.1178	-0.2258	0.1372	0.2498	-0.0690	1.0000				
sec	-0.0259	0.0005	-0.1037	-0.0143	0.1917	0.0838	0.0060	0.0294	1.0000			
purplo	0.1047	0.2477	-0.2494	-0.0411	0.1274	0.0456	-0.0007	0.2405	0.2255	1.0000		
othscr	-0.0572	0.1643	0.0862	-0.0042	0.2518	-0.2196	0.0485	-0.0857	0.1289	0.2384	1.0000	
tylab	0.0611	0.2140	-0.1158	-0.1335	0.1750	0.0179	-0.0283	0.0034	0.1726	0.2080	0.1159	1.0000