



ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS

**FACTORS AFFECTING LOAN REPAYMENT PERFORMANCE OF
BORROWERS IN THE CASE OF DEVELOPMENT BANK OF ETHIOPIA,
ADDIS ABABA DISTRICT**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE DEGREE OF MBA IN FINANCIAL SERVICE**

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BY

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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Alem Hagos (PhD). All sources of materials used for the thesis have been duly acknowledged. I further confirm that this research has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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Addis Ababa University, College of Business and Economics, Addis Ababa June, 2018

ENDORSEMENT

This thesis has been submitted to Addis Ababa University, College of Business and Economics for examination with my approval as a university advisor.

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ABSTRACT

The Development Bank of Ethiopia is one of the financial institutions engaged in providing short, medium and long term development credits. To address the main objective of the study, Development Bank of Ethiopia, Addis Ababa District is selected for the study purpose. The study was aimed at identifying and analyzing factors affecting loan repayment performance of borrowers in the case of Development Bank of Ethiopia, Addis Ababa District. The study used Primary and Secondary data collected from borrowers and from the bank's source. The data used in the study is gathered through survey from 49 borrowers of which 35 (71%) were successful financed projects (non-defaulters), whereas the rest 14(29%) were non-successful ones (defaulters). The variables used in the study are educational level, loan diversion, other source of income, loan processing time, equity debt ratio, project implementation period, number of project follow-up, interest rate, managerial experience of project manager, availability of raw material, and accessibility of market. In the study, probit model was used to identify factors affecting loan repayment performance of borrowers. The findings of the study reveals that the educational level, equity-to-debt ratio, number of project supervisions/ follow-ups, and managerial experience of project manager were positively and statistically significant and the variable project implementation period is negative and statistically significant factors affecting loan repayment performance of borrowers. Other variables such as loan diversion, other source of income, raw material availability and market access shows positive sign but not statistically significant. Thus, it is recommended that Development Bank of Ethiopia should give special consideration to educational level of borrowers; increase debt to equity ratio of borrowers to make the borrowers more ethically responsible; critically analyze the project implementation period at the time of appraising projects and enhance its project implementation capacity; conduct project follow up and monitoring in order to make well-informed decisions and provide technical assistance; and build strong relationship between managerial experience of project managers and successful loan repayment performance of borrowers.

Keywords: borrowers, loan repayment, probit model

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ABBREVIATIONS & ACRONYMS

AM	Accessibility of Market
ARM	Availability of raw material
DRS	Debt rating scale
DBE	Development Bank of Ethiopia
EL	Educational level
EDR	Equity debt ratio
IR	Interest rate
LD	Loan diversion
LPT	Loan processing time
MEPM	Managerial experience of Project manager
NPF	Number of Project Follow-up
OSI	Other source of income
PIP	Project Implementation period
SLR	Successful loan repayment

CHAPTER ONE

1. INTRODUCTION

1.2 Background of the study

The development bank of Ethiopia (DBE) is one of the financial institutions engaged in Providing short, medium and long term development credits. DBE's distinguishing feature is its "project" based lending tradition. Projects financed by the Bank are carefully selected and prepared through appraised, closely supervised and systematically evaluated. Since its establishment, the bank has been playing a significant role in promoting overall economic development of the country.

The history of Development Bank of Ethiopia goes back to 1909 when the first attempts of its kind known as The Societe Narionale d' Ethiopie Pour le Development de l' agriculture et de Commerce (The Society for the promotion of Agriculture and Trade) was established in the Menelik II era. Since then the Bank has taken different names at different times although its mission and business purpose has not undergone significant changes except for occasional adjustment that were necessitated by change in economic development policies of the country.

In long years of existence, DBE has established recognition at national and international levels. Nationally, it is the sole Bank with reputable experience in long term investment financing. Internationally, it is recognized as an important on leading channel for development program financed by bilateral and/or multilateral sources. Currently DBE has Head twelve districts and one hundred seven branches (www.dbe.com.et).

Credit has recognized as one of the important financial service that contributes to the success of a business venture. This success is in turn believed to contribute towards economic development of the country. However, the existence of credit facility alone does not necessarily result in supporting economic development unless and otherwise it is accompanied by the existence of

factors conducive to the efficient utilization of credit funds. For instance, a loan has to be repaid on time, if the objective of making loan able funds available to those who want them for productive purpose on continuous base is to be met (Nelson, 2003).

Beyond extending credit and generate revenue, bank's has to develop credit policies and procedures, which stipulate the lending process. This process includes: Documentation, know your customer (KYC) and due diligence, credit appraisal, disbursements, follow up and monitoring, recovery processes, and repayments.

Credit policies and procedures should safeguard the financial credibility of the Bank while at the same time maintaining a positive resource flows to borrowers. It should also reduce the negative effects borne by borrowers implementing projects and businesses financed by the bank. Through more systematic information, it should help borrowers to better program their repayments (DBE loan manual 2014).

Currently the Development Bank of Ethiopia, Addis Ababa District has a serious problem of Nonperforming loan that is 29% of the total loan portfolio of the bank (December, 2017 quarter report). This shows very far below the accepted non performing loan directive of National Bank of Ethiopia number SBB/48/2010 which is 5%. Therefore, loan repayment of its borrowers is regarded as the most important factor affecting the liquidity and profitability of the District. Thus, the study investigates factors affecting loan repayment performance of borrowers in the case of Development bank of Ethiopia, Addis Ababa District.

1.2. Statement of the Problem

According to various researches factors that affect 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 educational level, , management capacity, loan utilization, availability of other sources of income, 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. Moreover, Credit has long been recognized as one of the important tool that supports the success of development projects which contributes towards economic development. Similarly, Development Bank of Ethiopia, Addis Ababa District provides sustainable credit facility for those engaged in manufacturing, agro processing, agriculture, tour operation, mining, and other sectors which can result in development of the country. Currently, Development Bank of Ethiopia, Addis Ababa District gives due attention to the government focused priority areas; that can generate foreign currency to the country and reduce unemployment. Hence, in order to maintain this objective the bank needs a careful examination of factors affecting loan repayment successful, which otherwise will lead to poor allocation of credit which results in poor investment projects. However, provision of credit alone does not support the economic development of the country unless it is accompanied with the efficient utilization of the fund in order to repay the loan in accordance with the agreement. This has an impact on sustainable credit facility for those who want loan for a productive purpose. The District has a serious problem of Nonperforming loan that is 29% of the total loan portfolio of the bank (December, 2017 quarter report). This shows very far below the accepted non performing loan directive of National Bank of Ethiopia number SBB/48/2010 which is 5%.. Therefore, the main purpose of this study is to analyze factors affecting loan repayment performance of borrowers and the outcome of the research could enable the District to know the key factors for loan repayment and act accordingly.

1.3 Objective of the study

This study focuses on the Development Bank of Ethiopia Addis Ababa District which grants loan to government priority area projects.

1.3.1 General objective of the study is to analyze factors affecting loan repayment performance of borrowers in the case of Development Bank of Ethiopia, Addis Ababa District.

1.3.2 Specific objectives are:

- To evaluate the factors affecting repayment performance of borrowers

- To identify critical factors in improving successful loan repayment performance of borrowers at the District.
- To recommend the likely policy implication based on the findings of the study.

1.4. Hypothesis of the study

Hypotheses are predictions about the outcome of the results to be estimated. Therefore, the study has been tested based on following hypotheses.

- Hypotheses 1: Educational level of borrowers has positive and significant relationship with loan repayment performance.
- Hypotheses 2: successful loan repayment is positively and significantly related with loan diversion.
- Hypotheses 3: successful loan repayment is positively and significantly related with other source of income.
- Hypotheses 4: successful loan repayment of borrowers was negatively and significantly related with loan possessing time.
- Hypotheses 5: equity to debt ratio was positively and significantly related with successful loan repayment of borrowers.
- Hypotheses 6: successful loan repayment of the clients has negative and significant relationship with project implementation period.
- Hypotheses 7: number of project follow-up has positive and has significant relationship with successful loan repayment of borrowers.
- Hypotheses 8: successful loan repayment was positively and significantly related with interest rate.
- Hypotheses 9: there was a positive and significant relationship between managerial experience of project managers and successful loan repayment of borrowers.
- Hypotheses 10: borrowers successful loan repayment was positive and has significant relationship with availability of raw material
- Hypotheses 11: market accessibility to the output was positive and has significant relationship with successful loan repayment of the borrowers.

1.5 Significance of the study

The study can show to the banks management and other interested parties, the current status of loan repayment performance of the District borrowers, and will help the bank to enhance the efficiency and effectiveness of loan repayment of its borrowers. The research result will help to improve loan repayment of Development Bank of Ethiopia, Addis Ababa District borrowers, and to be enhancing efficiency and effectiveness of the bank on lending loans by complying with credit policy, procedure, applicable laws, and NBE regulations. In addition to this, the study will contribute for other researchers as an input who wants to do further study on this topic.

1.6. Scope and Limitation of the study

The study on factors affecting loan repayment performance of borrowers will be useful in creating a smooth relationship between all borrowers and Development Bank of Ethiopia, Addis Ababa District. However, the study is delimited to the identification of factors affecting loan repayment performance of borrowers in Development Bank Of Ethiopia, Addis Ababa District using the independent variables: educational level, loan diversion, other source of income, loan processing time, equity to debt ratio, project implementation period, number of follow up, interest rate, managerial experience, availability of raw material, and accessibility of output market. Due to time and financial constraints, it does not include borrowers of Development Bank of Ethiopia of other Districts, Branches and Head office. In addition, it was [majorly relied on primary data collected from sample borrowers and also it was difficult to access secondary data from the bank.](#)

1.7. Organization of the paper

Including this introduction, the study has five chapters. The second chapter deals with different theoretical and empirical literatures that reviewed in relation to the topic under consideration. Chapter three deals with the methodology and research design, sample and sampling techniques, and data collection techniques of the undertaking study. The fourth chapter deals with the data presentation, analysis and interpretation of the study. Finally, chapter five contains summary, conclusion and recommendations of the research study.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 THEORETICAL LITERATURE REVIEW

The theoretical reviews on different literatures made on the same areas summarized by the reviewer (researcher).

2.1.1 Definition and Concepts of project

UNIDO Manual (1972) defined projects as an activity that involves the utilization of scarce or at least limited resources in the hope of obtaining return or some benefits over a long period. Accordingly projects have the following unique characteristics.

- Investment of some resources;
- Planning process in investing some scarce resources;
- The invested resources to be capable of analysis and evaluation as an independent unit;
- The achievement of some specific objective(s);
- Costs/benefits or returns on the projects;
- Time dimension in the immediate or future time;
- The size of the project;
- Risk and uncertainty;
- Amount/cost of the investment;
- Impact/outcomes: it must solve problem or meet certain needs of the society.

According to Chandra (2002), projects are financed from two major sources – Equity and Debt. In project financing, the debt-equity-ratio is varying with the magnitude of flexibility, risk, income and tax generation capacity. They can be implemented either by public organization or private.

2.1.2. Theory of project management

A theory consists primarily from concepts and causal relationships that relate these concepts Whetten (1989). It is possible to broadly characterize a target theory of production/operations

management (Koskela 2000). This categorization applies also for project management, being a special type of production/operations management. A theory of project management should be authoritarian: it should disclose how action contributes to the goals set to it. On the most general level, there are three possible actions: design of the systems employed in designing and making, control of those systems in order to realize the production intended and improvement of those systems. In fact Project management and all production, have three kinds of goal. Firstly, the goal of getting intended products produced in general. Secondly, there are internal goals, such as cost minimization and level of utilization. Thirdly, there are external goals related to the needs of the customer, like quality, dependability and flexibility.

2.1.3. Experiential Learning Theory

According to Norel (2001), one of the strategies that lending institutions can use to reduce the rate of default by borrowers is through training. Training to the clients prior to the transaction of each loan and financial incentives for the credit officers can be used to instill a culture of loan repayment. The trainers must be able to take into consideration the nature of the learners and what kind of behavior they want the learners to adopt. Thus being aware of the need to direct the borrowers to practice regular behavior of commitment and repayment of their loans there is need to borrow from Kolb's Experiential Learning theory.

According to Kolb and Kolb (2008), the experiential learning theory can be applied to all aspect of life, all age groups, by different cultures and different kinds of organizations. Kolb and Kolb (2008) describe research on experiential learning to have used ELT (Experiential Learning Theory) to describe the management process as a process of learning for individuals, teams, organizations to solve problems and make decisions, identify entrepreneurship opportunities and seeking a strategy formulation. ELT is based on the proposition that learning is a holistic process of adaptation. It should not only be taken as a result of cognition but includes integrated functioning of the total person –thinking, feeling, perceiving and behaving.

2.1.4. Significance of project financing / (Lending)

Project financing incorporates the use of deposit funds obtained from the surplus sector who place their more savings and investment funds with the Banks, to grant credit and

advances to the accepted borrower by the institution, who need such funds in the meanwhile to accomplish production, commercial activities, property development and other business activities capable of generating additional income to repay the loan and leave a profit for the investor (Alawiye-Adams, 1995).

From the foregoing, it is obvious that lending is the origin of the intermediary function for which Bankers are known to align all other Banking activities worldwide (Osayameh, 1986). Therefore, whatever other business the Bank does, the lending activities of a Bank constitute a dominant part and absorb a larger proportion of the funds available to a Bank for business activities. It is also a fact that a larger proportion of the Bank's income is derived from lending while the credit figure constitutes the largest proportion of the figure of assets in a Bank's balance sheet. It is known universally that while project financing generates the largest portion of Bank income and wealth creation, it is also capable of eroding and wiping off within a short period of time the fortune and wealth acquired by a Bank over a long period of time if the lending function of the Bank is not efficiently and professionally managed (Alawiye-Adams, 2005). The strategies of well-organized and qualified management of the project financing function preserve the Bank's investment and the confidence of the public in the Banking system.

2.1.5. The Nature and Role of Credit Market

Finance is fundamental to begin and operate productive activity. Sufficient funding is a requirement for proper organization of production, attaining of investment assets and/or raw materials and Development of marketing outlets etc. Credit is a device for facilitating transfer of purchasing power from one individual or organization to another.

Oyatoya(1983) credit offers the basis for increased production efficiency through specialization of functions, thus bringing together in a more productive union, the skilled labor force with small financial resources and those who have substantial resources but lack entrepreneurial ability.

The relationship between credit and economic growth has captured the attention of economists since long (Schumpeter, 1933). Through enhanced financial intermediation, the amount of financial savings that is diverted by the financial system into non-productive uses falls, and the rate of capital accumulation increases for a given saving rate (Mensah, 1999). Further elaborates the significance of financial intermediation improves saving mobilization, as long as a variety of

safe financial instruments to savers and ensuring substantial returns on savings. The financial sector contributes to the efficiency of the entire economy through scattering information about expectations and allocation of resources to investors.

Mensah (1999) expressed the importance of credit management as follows: credit management process required special emphasis due to proper credit management greatly influences the success or failure of financial institutions. An understanding of a Bank's credit risk management process provides lending indicator of the quality of a Bank's loan portfolio. The major elements of effective credit management have well developed credit policies and procedures, strong portfolio management; effective credit controls and the most crucial of all a well trained staff that is qualified to implement the system. Those institutions must preserve basic credit standards to function well and make credit available to investors. The standards include in-depth knowledge of the borrowers' project by the officer in charge; reasonable debt equity ratio, marketability, viability of the investment project and other technical capabilities. In general Credit appraisal is fundamental for the officer to decide about the credit worthiness of the borrower as well as the project to which the finance is injected.

2.1.6 Concept of Credit

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

Non-defaulters are credit worthy borrowers who settled the debt amount on the due date signed on the contract. This implies that the clients are committed on the agreements made with the lending institution. Defaulters are non credit worthy borrowers who breach their loan contract and have repayment problem on the due date (Hunte, 1996).

Schumpeter (1933) treated the banking system and entrepreneurship as the two key enabling agents of development. Schumpeter argues that the banking system's capacity to supply initiative

and entrepreneurship in addition to credit creation enabled it to transfer resources from less productive uses to more economically rewarding uses because those who control existing resource or have claims on current wealth are not necessarily those best suited to use these resources. The banking system credit creation equipped entrepreneurs with purchasing power with which they were able to express overriding command over real productive resources. Financial theorists argue that if economic units relied completely on self-finance, investment will be constrained by the ability and willingness of each unit to save, as well as by its capacity and readiness to invest (Mensah, 1999).

Banks in many developing countries hold a truly alarming volume in non-performing assets. Differences between promised and actual repayments on loans are the result of uncertainty concerning the borrowers' ability or willingness to make the repayments when they are due which creates the risk of borrowers default (Kitchen, 1989).

The inapplicability of the standard demand and supply model for credit market give rise to credit rationing phenomena. Credit rationing as defined by Jaffee (1971) is the difference between the quantity of loans demanded and loans supplied at the ruling interest rate. In this case lending institutions make use of their own screening criteria to identify credit worthy borrowers so as to decrease the probability of default.

2.1.7 Credit Policy

In the past decades there have been major advances in theoretical understanding of the workings of credit markets. These advances have evolved from a paradigm that emphasis the problems of imperfect information and imperfect enforcement. They pointed out that borrowers and lenders may have differential access to information concerning a projects risk, they may form different appraisal of the risk. What is clearly observed in credit market is asymmetric information where the borrower knows the expected return and risk of his project, where as the lender knows only the expected return and risk of the average project in the economy (Hoff and Stieglitz, 1990).

Lending institutions are faced with four major problems in the course of undertaking credit activity:

- a) To ascertain what kind of risk the potential borrower is (adverse selection),
- b) To make sure the borrower will utilize the loan properly once made, so that he will be able to repay it (moral hazard).
- c) To learn how the project really did in case the borrower declares his inability to repay and
- d) To find methods to force the borrower to repay the loan if the borrower is reluctant to do so (enforcement) (Ghatak and Guinnane, 1999).

2.1.8. Credit Information

Before extending credit to any of its operators, sufficient information should be collected about the customers. This is done in a bid to minimize losses, reliable and timely information which is critical to managing the credit process. If timely and useful information is available, management is much better equipped to direct and control prudent credit processes (Pandey 1998).

2.1.9. Collateral

Yunus (1996) Collateral is the borrower's asset pledged in exchange for the receipt of a loan. Banks request for collateral before extending loans to customers. The collateral is always higher value than the loan taken to ensure that the loan is paid back. The use of groups as collateral is accepted by some banks. When one member fails to pay, the other group members pay on their behalf. Thus, this system makes it possible for group members to monitor one another.

2.1.10. Credit Policy of Development Bank of Ethiopia

Development Bank of Ethiopia (DBE) has been serving the national economy as development finance institution for a century. During this time, there were four notable credit policy of the current DBE. The first credit policy formulated in 1973 at the time of the merger of the ex-Ethiopian Investment Corporation and the then Agriculture and Development Bank of Ethiopia. The main objective of the credit policy was to facilitate the provision of credit service mainly to the private sector to enhance the socio-economic development of the country. The second, policy

was formulated in 1976, after the establishment of the socialist oriented government. The main objective was to facilitate the provision of supply led and policy directed credit to the socialized sector of the economy. The third policy was issued by the then DBE's Board of Management (BOM) in 1999 following the restructuring and re-organization tasks of the bank. The new credit policy mainly targeted the facilitation of credit service provision for the private sector development on the basis of national development goals and institutional sustainability. The final credit policy was issued in 2015, but there were a number of adjustments at different times in order to provide customer focused credit facility and mitigating risk factors that hinder the sustainability of the bank (DBE website: www.dbe.com.et).

Area of lending: DBE's main area of focus is the provision of medium and long term loans for investment projects in the government priority areas. In line with the Agriculture Development Led Industrialization strategy (ADLI) of the country, the bank provides finance to encourage investment in agriculture and manufacturing industries preferably for export oriented investment. According to the bank's definition of priority area; Commercial agriculture, manufacturing and agro processing sectors are the major focus areas whether focused on export or not.

Credit product and services: the bank has been extending investment credit to creditworthy borrowers and projects which are appraised and found to be financially viable, economically feasible and socially desirable. Depending on the type and nature of the project, the Bank extends different products of credit and services to those who could invest in economic growth of the country. Some of the credit product and services are:

Long term loan: the maximum length of time the bank advances long term loans are fixed at 20 years including any grace period.

Medium term loan: These types of loans are extended for the purpose of building, machinery and the like and repayment period of 5 years.

Working capital loan: the bank extends this type of loan in order to solve short term cash flow problems of existing customer and to increase capacity utilization of customer. The loans repay within one year.

Co-financing: in order to maintain the exposure limit, minimize risks and to overcome occasional liquidity problems the bank is involving in financing projects which need very large investment capital under co-financing arrangements with other national or international financial institution.

Guarantee service: the bank provides financial guarantee service to its reliable clients especially exports guarantee service.

Managed fund: the bank undertakes specific lending operation as a managed fund at the request of governmental and non governmental agencies in support of development programs/projects.

Lease financing: the bank avail loan in the form of lease financing to its clients on the condition of the project must support agriculture and industrialization strategy of the country (DBE website: www.dbe.com.et).

2.1.11. Loan approval

The loan approval process is the first step towards, good portfolio quality. When individual credits are underwriting with sound credit principles, the credit quality of the portfolio is much more likely to be sound although good loans sometimes go bad, alone that starts out bad is likely to stay that way. The foremost means to control loan quality is a solid approval process. The process should be compatible with the bank's credit culture, its risk profile, and the capability of its lenders, further, the system for loan approvals needs to be establishing accountability. (Comptroller's Hand Book, 1998)

2.1.12. Loan Disbursement

Disbursement ensures that money is not availed until all approvals and documentation requirements are met. It also ensures that security and other required documentations are obtained before funds are disbursed. If disbursement control is weak, the whole integrity of the credit process can be weakened and abused (Msi,1994 and Nsereko,1995). Thus, documentations and disbursement are important in the management of credit because they ensure that the bank has proper documentation, collateral and guarantees. These are important in the advent of the clients' inability to pay because the bank would be properly secured and have legal recourse to ensure the settlement of debt. This would ultimately decrease the amount of bad debts the banks may have.

2.1.13 Monitoring and Follow up

After disbursement, the account officer frequently visits the borrowers business to ensure that the credit facility (loan) is being used for the specific purpose(s) for which the loan was granted, and to remind borrowers of their next repayment date. According to Rouse (1989) this is one area many lenders pay little attention but if it is properly followed, the incidence of unsettled loans can be reduced considerably. He identified internal records, visits and interviews, audited and management accounts as some of the things that help in the monitoring and control process. Monitoring can help to minimize the incidence of unsettled loans in the following ways:-

- Ensuring the utilization of the loan for the intended purpose.
- Identifying early warning signals of any problem relating to the operations of the business that are likely to affect the performance of the loan.
- Affording the lender the opportunity to discuss the problems and prospects of the borrowers business. Borrowers who miss repayments are pressured at this stage; if the arrears continue to pile up, legal action is initiated against the borrower and guarantor(s) to recover any amounts owed, but usually after the designated collateral has been seized and offset against the indebtedness.

2.1.14 Repayment

Loan repayment will consist of loan principals and interest .Loan repayment will be effected based on the agreement entered between the bank and the client. Banks encourages timely repayment. To this end, it requires to make the borrower aware of the advantage of paying loan on or before due date. The relationship between the borrower and the lender is important. The more distance the lender is from the borrower, the less control the lender has over the repayment of the credit (Shekhar, K.C. 1993).

The assumption in delivery of credit as a source of finance is that the use of credit would generate enough income to repay the loan with interest. However, generation of adequate additional income has to be accompanied by willingness of borrower to repay the loan with interest. Failure of investment may result in non-generation of income, failure of expected income may lead to inadequate income, perception or pressure of more important and urgent use of income may incapacitate the repayment and finally the borrower's willingness and desire has to be there to fulfill repayment obligation. (K.C.Sharma.etal.2001) According to Vogel (1998) there are various kinds of repayments, 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.

2.1.15. Causes of Loan Default

According to Anioku, (2012) Loan defaults are caused by variety of factors, some controllable and others uncontrollable. Controllable factors are those that reflect overall bank credit policy as well as inadequate credit analyses. Loan strutting and loan documentation, Uncontrollable factors typically reflect adverse economic conditions, adverse changes in regulations, environmental changes surrounding the borrower's and catastrophic events, while there is little that can be done to prevent uncontrollable variables. Effective credit granting procedure can significantly reduce other source of losses.

1. Bank-related factors

- Lack of in-depth knowledge of customer operation
- Excessive dependents on financial statement
- Connected lending
- Inadequate project monitoring
- Inadequate knowledge of project appraisal techniques

2. Customer-related factors

- Most business failures result from management expertise, inadequate planning & accounting systems, outright fraud and general incompetence.
- Inadequate initial capitalization
- High financial & operating leverage
- Misconception of bank loans
- Loan diversion

3. Uncontrollable factors

- Economic downturn
- Change in economic polices
- Change in taste and preference
- Natural hazards

Specific to Bank financed projects, Fabozzi and Nevitt (2000) listed thirteen common causes of projects failure in the book of “Project Financing”. Most of these causes of failure are similar with the causes mentioned above. Causes of Bank financed project failure according to the authors are as follows:

- ✓ Accumulation of interest expense attributed by implementation delay;
- ✓ Technical problems;
- ✓ Losses because of uninsured items damage;
- ✓ Losing of market competitive position;
- ✓ Expropriation;
- ✓ Weak management;
- ✓ Cost overrun because of inflation;
- ✓ Government intervention;
- ✓ Contractor failure;
- ✓ Price increase or insufficient raw materials;
- ✓ Technology obsolescence;
- ✓ Over appraisals of collateral;
- ✓ Financial insolvency of the promoter.

2.2. Empirical studies

There are many researches regarding repayment of loans, locally as well as internationally. The researcher states the following empirical literature reviews from different perspective and titles which will help this studies as an input.

2.2.1 Empirical studies on other countries

Matin (1997) in his study on the loan repayment performance of borrower’s in Bangladesh obtained a significant positive relationship between households income position and its loan default status. In his analysis, he related this situation to a very strong demonstration effect where borrowers having relatively small loan size behave in the same way as those who have

larger loans. The education status of the house-hold was reported to have strong positive effect on non-defaulter status irrespective of the household's income position.

Werema and Opanga (2016) was conducted a research on Factors affecting clients on loan repayment for Microfinance Institutions a case study of Pride Arusha. They employed both qualitative and quantitative techniques to investigate factors affecting loan repayment performances. The findings show that client's characteristics (age, household size, gender and level of education), nature of business (business type, business stability and income level) and loan characteristics (repayment period, repayment mode, and repayment amount) were among the factors that influenced borrowers in repaying their loans. Lack of business knowledge was another factor mentioned by clients which leads to low productivity hence failure to have enough fund to repay their loans. The study further revealed that there was a significant relationship between loan repayment performances with clients' businesses challenges, loan diversification to other non-income activities, and other outside factors such as market imperfections, higher interest charges, drought, among others.

Johansen (2015) was conducted a research on factors determining loan repayment in microfinance institutions in the case of Dare Salam clients. He employed both quantitative and qualitative methods to collect and analysis data. Purposive sample was drawn from business premises where persons operating on business financed by microloans from MFIs were found. Qualitative analysis captured additional contextual determinants of loan repayment problems being corruption among loan officers, failure of loan disclosure within families, unfair business tax estimation, proxy business supervision, diverting loan money to different purpose were significant factors. This study recommends that each MFI is supposed to put control measures which prevent loan officers to abuse their position in asking bribes from borrowers and make client risk or earmark a possible loan defaulter. Borrowers Training on entrepreneurial skills and practice are equally important to increase the possible loan repayment.

Nabil (2014) in his study about the case of Repayment Determinants for Egyptian Microfinance Institutions employed mixed method approach. The results show that the repayment determinants are country-specific. Lack of timely repayment is both a supply-sided and demand-sided problem

i.e. it is attributed to both the MFI policies and the borrowers' characteristics. Lack of timely repayment is due to the MFI lending policies, long repayment period, the time the first installment is due, the borrower's job, income, address and most importantly his/her willingness to pay.

Vigano (1993) in his study about the case of development bank of Burkina Faso employed a credit scoring model. He found out that being women, married, aged, more business experience, value of assets, timeliness of loan release, small periodical repayments, project diversification and being a pre existing depositor are positively related to loan repayment performance. On the other hand loan in kind, smaller loan than required, long waiting period from application to loan release and availability of other sources of credit were found to have negative relation with loan repayment performance.

Wenner (1995) stated that formal lenders find it difficult and costly to accurately ascertain the likely-hood of the defaults and to monitor closely how borrowers use funds and what technologies they choose for project implementation. Thus borrowers may not take actions that make repayment more likely (moral hazard). Weak legal system, lack of secure collateral and pervasive views that government bank loans are patronage, magnify loan enforcement cost for formal lenders.

Mansoori (2009) analyzed socio-economic and institutional factors affecting loan repayment performance of farmers in Khorason- Razavi Province of Iran using a logit model. The result showed that, farmer's experience, income, loan size and collateral value had a positive and significant impact on loan repayment status of farmers. Whereas loan interest rate, total application cost and number of installment were negatively and significantly affected the farmer's repayment performance.

Bekele et al. (2003) has employed a logistic regression model to analyze the factors influencing loan repayment performance of small holders in Ethiopia. The result of the study illustrated that larger loans had better repayment performance than those who took a smaller one. Further the results revealed that late disbursement of inputs purchased by the loan funds was an important

bottleneck in loan repayment while livestock were found to be important in improving the farmers' repayment performance.

2.2.2. Empirical studies in Ethiopia

Firafis (2015) conducted a research on Challenges and constraints of loan repayment performance on Dendi microfinance institutions. He employed simple descriptive statistics to estimate and analyze the results of findings. Results indicated loan diversion, loan size, family size, number of dependent within and out household, availability of training, time laps between loan application, disbursement, business types, supervision and advisory visit were significant. The qualitative result revealed the probability of default increase as the family size increase, lack of borrower's perception on repayment period, lack of availability of training, low business experience, lack of saving objective and one source of income. Internal and external challenges were shortage of loan able funds for further expansion, completion and improper interference of third party.

Mengistu (1997) used binomial model to analyze the repayment performance of the borrowers of micro enterprise in Awasa and Bahirdar towns. And he reported that the number of workers employed has positive relation with full loan repayment for both towns; while loan size and loan diversion were negatively related. Age and weekly repayment period had positive relation with repaying loan in full in Awasa. In case of Bahirdar loan expectation and number of workers employed have positive relationship with full repayment, while loan diversion and availability of other sources of credit have a negative impact.

Berhanu (1999) in his study on the project office for the creation of small-scale business opportunities (POCSSBO) in Addis Ababa, used probit model and found that education, timely loan granting and the proportion of loan funds diverted statistically significant. However loan size, number of dependents within the house hold and consumption expenditure are positively related to loan diversion. He reported that loan diversion and loan size are negatively related to full loan repayment while age is positively related.

Dula (2012) was conducted a research on Socioeconomic Factors Influencing Loan Repayment Performance of Microfinance Clients in the case of Busa Gonofa Microfinance of Ziway branch. He employed descriptive statistics including mean, frequency and percentages to describe the socio-economic characteristics of the borrowers. Moreover, a binary logistic regression model was used to analyze the socio-economic factors that influence loan repayment. Eight variables were found to be significant for the probability of being defaulter. These are family size, income from other activities, livestock holding, membership duration, loan diversion, loan supervision and monitoring, training on loan use and celebration of social ceremonies. While the other five variables sex, age, educational status, experience in loan use, and loan size have significant positive effect.

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 independent variables used on the research includes, age of borrower, sex of borrower, educational level of borrower, loan size, 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 and number of borrowed times.

Abreham (2017) was conducted a research on factors affecting loan repayment performance of borrowers: An empirical study on selected microfinance institutions in Oromia region. He employed descriptive statistics analysis and probit regression model to estimate and analyze the results of findings. The result shows that: sex, income from other sources, monitoring utilization of other members in a group, credit timeliness, repayment time suitability, repayment trend and training adequacy were found significant and positively influence loan repayment performance of borrowers. While loan utilization not for the intended purpose, repayment trend on irregular

basis and follow up on irregular basis were found negatively influence the repayment performance of borrowers.

Muluken (2014) had used a probit regression model to analyze Factors affecting loan repayment performance of floriculture growers: the case of development Bank of Ethiopia. The result shows that among nine explanatory variables, which were hypothesized to influence loan repayment performance among floriculture credit borrowers, four explanatory variables namely education level, number of follow ups/supervisory project visit by credit officers, sustainable floriculture certification status and farming experience were statistically significant while the remaining five were less influential in explaining the variation in the dependent variable.

Mulugeta (2010) conducted a research on determinant of agricultural loan repayment performance, in the case of DBE and Logit model was used to identify variables which determine loan repayment performance. The age of borrowers, monitoring /follow-ups made by the bank/, loan issuing time (time taken to process a loan), marital status of borrowers, managerial experience of the project manager and education level of borrowers were statistically significant factors affecting repayment of agricultural loan of DBE.

Tenishu (2014) was conducted a research on Microfinance Credit Rationing and Loan Repayment Performance: A Case of Omo Microfinance Konso Sub Branch and employed descriptive statistics and probit model to estimate and analyze the results of findings. Accordingly, the result shows that education, income, loan supervision, suitability of repayment period, availability of other credit sources, and livestock were important and significant factors that enhance the loan repayment performance. While loan diversion and loan size significantly increase loan default. In addition female borrowers were found better in terms of loan repayment.

Abrham (2002) in his study of determinants of repayment status of borrowers and criteria of credit rationing with reference to private borrowers around Zeway employed a Tobit model and reported that a borrower who has other source of income, education, work experience in related economic activity before the loan and engaging on economic activities other than agriculture has

more likely better loan repayment performance than others. In addition he explained that, being male borrower and giving extended loan repayment period have negative impact on loan recovery performance. The estimation results of the descriptive statistics and 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.

2.2.3 Research Gap

The empirical studies were focusing on factors affecting loan repayment performance of borrowers such as characteristics of borrowers like age, sex, marital status, business experience, income from other sources, gender, and number of families and loan characteristics, such as delay of implementation period and length of repayment period. When we come to the empirical evidences of our country diversification of loans, lack of managerial skills, inadequate follow up coverage, market access & unsuitable loan repayment periods played major role in affecting the loan repayment performances. However, most of the undertaken studies were conducted at micro finance institution, this in turn that the type of the loans were short term and working capital loan. While DBE in nature has financed medium and long term project and have higher risk than short term financier.

Moreover, the researcher has used new variables from the conducted research work at DBE such as loan diversion, interest rate, availability of raw material, accessibility of output product market, and project implementation period to identify the factors affecting loan repayment performance of borrowers.

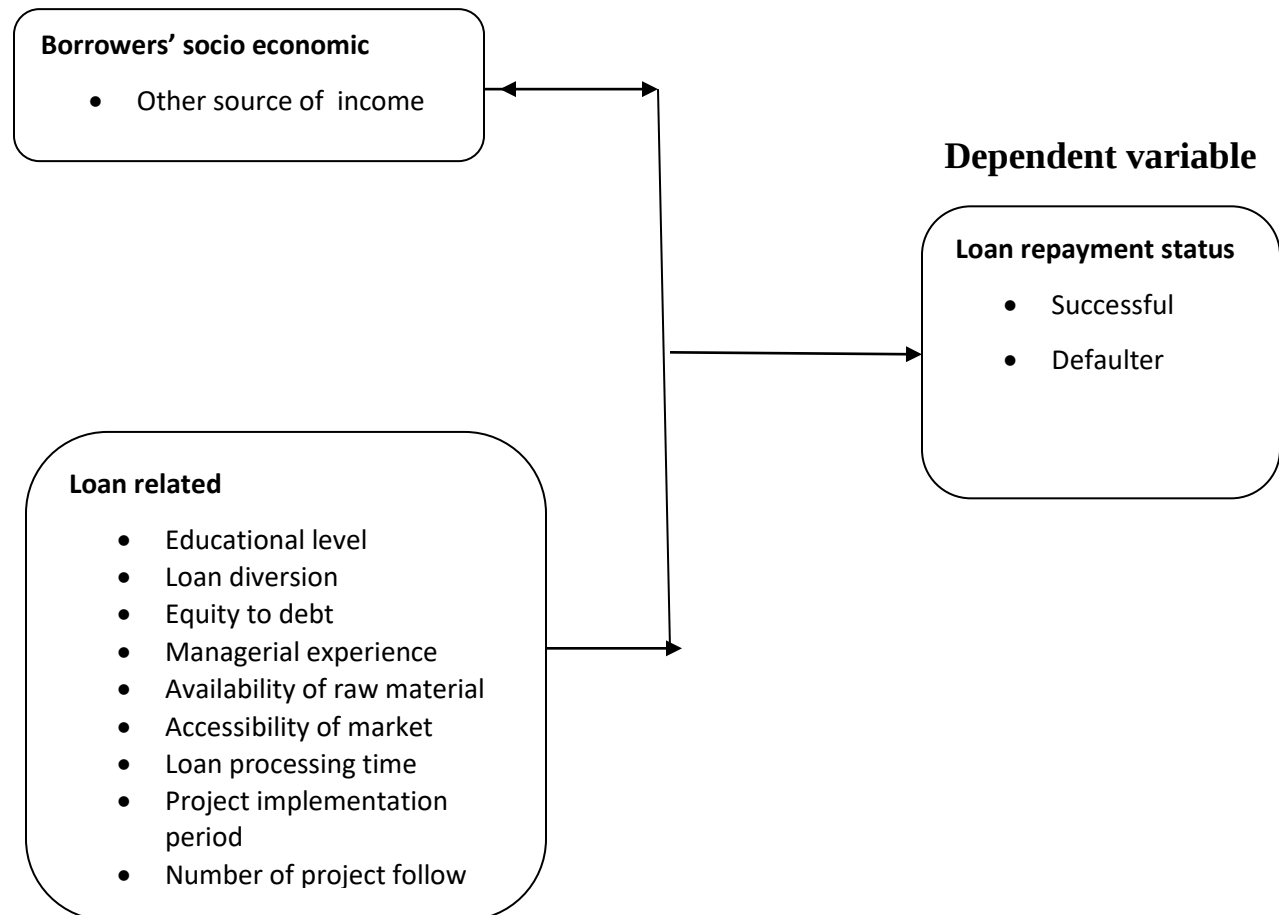
Hence, this research tries to fill the gap by focusing on analyzing the factors affecting loan repayment performance of borrowers in the case of Development bank of Ethiopia, Addis Ababa District.

Conceptualizations

The conceptual model for the study is to identifying and analyzing factors affecting the loan repayment performance of borrowers. In the literatures reviewed, various empirical studies were focused on the probable factors that can affect loan repayment performances. To carry on the empirical studies to investigate the probability of variables that can affect repayment performance of borrowers, the study mainly focused on identifying and analyzing borrowers socio-economic characteristics and institutional factors.

Figure 1: Conceptual frame work

Independent variables



Source: Adopted by Florence & Abreham (2017), modified by researcher

CHAPTER THREE

3. RESEARCH METHODOLOGIES

3.1. Methodology

In the study primary and secondary data were used. The primary data and secondary data were collected from the bank's source. In order to investigate the loan repayment performance of the borrowers in the Development Bank of Ethiopia, Addis Ababa district, closed and open-ended questionnaire was prepared and distributed to the borrowers.

The main reason for selecting this district among the twelve Districts was due to the fact that large amount of loans and different sectors mainly operating in a radius of 30, 50, 110 and 130km East, South, West and North of Addis Ababa respectively as compared to other districts. To comply with the objective of this research, the research is primarily based on quantitative research, which constructed an econometric model to identify and measure the factors that affects loan repayment performance of borrowers.

3.2. Research Design

The study had applied a quantitative research methodology to analyze and interpret the findings. The descriptive analyses approach were employed to explain the overall primary data collected from the respondents using the survey questionnaires. The research also used econometric model to analyze the findings based on the statistical data collected from the respective sources through the questionnaires. The quantitative data method were employed to collect the primary data from the sample respondents in relation to the socio-economic characteristics of borrowers and loan related factors and. The probit model limits the probability value of dependent variables between 0 and 1. The probit model was chosen to be used for the study purpose because it is simple to estimate the probability of each explaining variables to influence the dependent variable using the cumulative distribution function. Moreover, it is more helpful to determine the marginal effects of coefficients on the dependent variables.

3.3. Data Sources

The research has been conducted using both Primary data and secondary data sources to retrieve the findings and analyze the problem at hand. The primary data were for the study was collected from borrowers who are defaulters and non defaulters of the Bank who have directly manages the project (company) using questionnaire. The secondary data used for this research was found from the banks different operational reports.

3.4. Data Gathering Tools

The Questionnaire survey used as primary data collection method because of the reason that it is quick method to collect data, it is less time consuming, it is able to cover entire sample with the proposed time frame work. Before distributing the questionnaire to the borrowers, pre-testing was conducted on 5 borrowers to test the relevancy and accuracy of the questionnaire and to know how the borrower understands the questionnaire. Accordingly it was revised based on the pre-test information. In addition borrowers have been informed that, the collected data is confidential, and used for academic purpose only.

3.5. Sampling and Sampling Techniques

Based on the data base of Development Bank of Ethiopia, Addis Ababa District has a total of 49 projects (35 successful and 14 defaulters). And the research constituted forty nine financed project borrowers of this district and the population was taken for the study.

3.6. Data Analysis Techniques

The collected data has analyzed by Descriptive statistics and Econometric analysis method using software called STATA version 14.

3.6.1 Descriptive Statistics

The descriptive statistics showed that the mean of independent variables with respect to dependent variable. Under this research works the researcher have been reviewed relationship between the dependent variable with independent variables and the correlation coefficient of the variable were used to describe the socio economic characteristics of the borrowers/managers and the institutional factors.

3.6.2. Econometric Data Analysis

The econometric model that is used to empirically identify the factors behind loan repayment performance is Probit Model. The probit model is chosen from other similar models such as linear probability and logit models. The model is selected because successful loan repayment, which is the dependent variable, is binary, taking the value 0 and 1 for defaulter and successful loan repayment respectively. The use of probit regressions considers the simultaneous relationships amongst the multiple numbers of independent and dependant variables found across the regression model. The significance of the impact of the independent variables on dependent variables is, at the same time, highlighted in using the regressions. Probit regressions are further utilized to examine the associative relationships between variables in terms of the relative importance of the independent variables and predicted values of the dependent variables.

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 throughout, 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- $\Pr (SLR_i = 1/X_i)$ if $SLR_i = 1$ successful.

The likelihood equation as presented by Long (1997) is

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

$$SLR = 0 \quad \quad SLR = 1$$

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;

$$SLR = \beta_0 + \beta_1 EDUC + \beta_2 LOD + \beta_3 OSINC + \beta_4 LPT + \beta_5 EDR + \beta_6 PIP + \beta_7 NPF + \beta_8 IR + \beta_9 MEPM + \beta_{10} ARM + \beta_{11} AM + U_i$$

Where

SLR = Successful loan repayment

EDUC = Educational level of the manager

LOD = Loan diversion

OSINC = Other source of income

LPT=Loan processing time

EDR = Equity debt ratio

PIP = Project Implementation period

NPF = Number of Project Follow-up

IR = Interest Rate

MEPM=Managerial experience of Project manager

ARM=Availability of raw material

AM= Accessibility of Market

β_0 = intercept of the model

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10},$ and β_{11} are slope of each independent variable and they measure by what extent affect the dependent variable, i.e loan repayment in this case.

3.7. Operational Definition of Terms

3.7.1. Dependent (Explained) Variable

Successful Loan Repayment (SLR) It is measured as a dummy variable and have been measured for all the financed project borrowers' that have fully repaid their loans according to the contractual agreement takes 1 and 0 for the project financed borrowers which could not paid its debt based on their contract.

3.7.2. Independent (Explanatory Variables)

Education Level (EL) Level of education (measured in educational status of the managers). Higher educational levels enable borrowers to comprehend more complex information, keep business records, conduct basic cash flow analysis and generally speaking, make the right business decisions. Hence managers with higher levels of education may have higher repayment rates. It is a dummy variable taking the value of 1 if the borrowers/managers have BA/BSC degree and above and 0 for otherwise. It is supported by Empirical studies of Matin (1997), Muluken (2014) and Mulugeta (2010). Empirical studies noted that education has a positive impact on the repayment performance through increasing awareness of the customer to utilize the loan efficiently.

Loan Diversion (LD); 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 this variable cannot be predetermined. It is supported by theory of Johansen (2015)

Other source of income (OSI): This is defined as income derived from other business activities outside the project established by the district loan. It is a dummy variable which takes 1 if the borrower has income from other source and 0 otherwise. Abraham (2002) on his empirical study

argued that, borrowers who have other source of income are more likely better repayment performance. Hence, it is expected to have a positive impact on loan repayment performance of borrowers.

Loan processing time (LPT) It is defined as the time taken from the credit project application of borrower to the releasing of disbursement of the loan. If the loan is disbursed on time that is on the possible shortest time, it is unlikely that it would be diverted to non intended purposes. On the other hand the lengthened appraisal and approval process leads to late disbursement of the loan. This in turn has an impact on the delay of implementation of the project. Hence long loan issuing time is expected to have negative effect on repayment performance. This variable hypothesis is supported by the finding of Mulugeta (2010).

Equity to Debt Ratio (EDR) it is a variable defined as the ratio of equity/ initial capital contributed by the borrower to the total loan approved by the Bank. It is assumed that the ratio of equity to debt increases, the borrower becomes more dedicated to the implementation of the project. This in turn has a positive impact on the sustainability of the project. Hence it is predictable that to have a positive impact on loan repayment performance. It is supported by Mulugeta (2010) and Nabil (2014).

Project implementation period (PIP) it is defined as the time frame in which the implementation of its establishment investment activities are undertaken. It is the period from the laying the foundation to the commencement of operation. It is assumed that projects in which lately implemented have lower repayment rate than implemented based on the expected period under the appraised document. It is supported by theory of Jemal (2003)

Number of Project Follow-up (NPF) it is a variable that can be measured in number of supervisory project visits of the project by Bank's credit officers per annum. It is essentially intended to closely monitor the project implementation and/or operation, thus recommends any corrective measure if deemed necessary. Visits by loan officer to borrowers are encouraged the borrowers' to work harder and make sure the loans given to them are effectively utilized for the

planned investment activities. This is also supported by the empirical studies of Mulugeta(2010), Dula (2012) and Muluken(2014).

Interest Rate (IT): it is a dummy variable taking 0 for high interest charged borrowers and 1 otherwise. This is also supported by the empirical study of Fikrte (2011).

Managerial Experience of Project Manager (MEPM) it is a variable assumed that as the projects are managed by highly experienced managers; it could overcome different challenges and this makes the project to be profitable and successfully paid its debt. Managers who have been in business longer are expected to be more successful with their enterprise. They have more sales and cash flows than those who have just started. Thus, those who are more experienced would have high repayment rates. This in turn has a positive impact on repayment performance. Hence, the variable is expected to have positive impact on the dependent variable. The hypothesis is supported by the findings of Dula (2012) and Muluken (2014).

Availability of raw material (ARM); it is a dummy variable taking 0 for borrowers that do not have available input raw material and 1 for borrowers that have available input raw material. As a result of availability of raw material the price of the product might constant or even less and the productivity of the company is enhanced and this might help the borrower to have successful loan repayment performance. The hypothesis is supported by the findings of Mengistu (1999).

Accessibility of output market (AM); it is a dummy variable taking 0 for borrowers that do not have access to output market and 1 for borrowers that do have access to output market. The hypothesis is supported by the findings of Jemal (2003).

CHAPTER FOUR

4. RESULTS AND DISCUSSION

This chapter deals with the result of the study which includes descriptive statistics specifically mean of the variable, relationship between variables, correlation coefficient result between explanatory variables, diagnosis test for regression model, regression result for the regression analysis and discussion of the result. The section have two parts; in the former part, of the result of the explanatory variables have been described based on the findings of the study in the descriptive statistics and in the latter part of the section the variables have been analyzed in the econometrics regression model by using the probit regression model. The results of descriptive analysis are presented in the form of mean and percentages. Econometric analysis was carried out to identify the most important factors affecting loan repayment performance of borrowers` and measure the relative importance of statistical significant explanatory variables on loan repayment.

4.1. Mean of Socio-Economic Characteristics

4.1.1. Educational Level of the Project Manager

Table 1 Mean of Educational level

Over	Mean	Std. Err.	[95% Conf.	Interval]
Educational level				
Defaulter	0.6428571	0.1328944	0.3756551	0.9100592
Successful	0.6857143	0.0796149	0.5256378	0.8457908

Source: own compilation (2018)

The loan repayment performance of the borrowers relative to their educational level as shown on table 1 shows that a mean value of successful borrowers and defaulters is 0.69 and 0.64 for the defaulter borrowers whose educational level is diploma or below. This implies that most of Development Bank of Ethiopia Addis Ababa District's financed projects are managed by those

who have BA/BSc degree or above. This high level of educational qualification has an impact on the successful loan repayment performance of the project. It is supported by the experiential theory of Norel (2001) and Kolb and Kolb (2008).

4.1.2. Non loan diversion

Table 2 Mean of non loan diversion

Over	Mean	Std. Err.	[95% Conf.	Interval]
loan diversion				
Defaulter	0.4285714	0.1372527	0.1526064	0.7045365
Successful	0.8857143	0.0545636	0.7760067	0.9954218

Source: own compilation (2018)

The loan repayment performance of the borrowers relative to their non loan diversion as shown on table 2 shows that successful borrowers have a mean value of 0.89, versus 0.43 for the defaulter borrowers. This shows borrowers who did not divert their loan repay successfully than those who divert their loan due to various reasons.

4.1.3 Other source of income

Table 3 Mean of other source of income

Over	Mean	Std. Err.	[95% Conf.	Interval]
Other source of income				
Defaulter	0.3571429	0.1328944	0.0899408	0.6243449
Successful	0.5428571	0.0854337	0.3710811	0.7146331

Source: own compilation (2018)

The loan repayment performance of the borrowers relative to their other source of income as shown on table 3 shows that the successful borrowers have a mean value of 0.54, versus 0.36 for the defaulter borrowers who have no other source of income.

4.1.4 Managerial Experience of Project Manager

Table 4 Mean of Managerial Experience of Project Manager

Over	Mean	Std. Err.	[95% Conf.	Interval]
Experience				
Defaulter	0.2857143	0.125294	0.0337938	0.5376348
Successful	0.3714286	0.0828658	0.2048156	0.5380415

Source: own compilation (2018)

As can be seen from Table 4 experience is the important element to run business project successfully. Similarly Development Bank of Ethiopia, Addis Ababa District has considered the experience when reviewed the borrowers file at the time of appraisal, whether the financed project management is capable or not to manage the project successfully. According to the results of this study, the mean value of defaulter and successful borrowers are 0.28 and 0.37 respectively. This implies that more years of managerial experience has an impact on the successful loan repayment performance of the Bank.

4.1.5 Project Implementation Period

Table 5 Mean of Project implementation Period

Over	Mean	Std. Err.	[95% Conf.	Interval]
Implemented				
Defaulter	0.4285714	0.1372527	0.1526064	0.7045365
Successful	0.6571429	0.0814042	0.4934687	0.8208171

Table 5 shows that the project implementation period of the financed projects for the defaulters and successful borrowers have a mean value of 0.43 and 0.66 respectively. This shows that Development Bank of Ethiopia Addis Ababa District's financed project increase the alliance project implementation period in turn decreased loan repayment performance and vis-à-vis.

4.1.6. Input Raw Material Availability

Table 6 Mean of Input Raw material Availability

Over	Mean	Std. Err.	[95% Conf.	Interval]
Raw Material				
Defaulter	0.5	0.138675	0.2211751	0.7788249
Successful	0.6571429	0.0814042	0.4934687	0.8208171

Source: own compilation (2018)

As can be seen from Table 6 certifies that the raw material availability of the financed project for the defaulter and successful projects have a mean value of 0.5 and 0.66 respectively. This explores that the impact of input raw material availability has low influence on successful loan repayment performance of the Bank.

4.1.7. Accessibility of Output Market

Table 7 Mean of Accessibility of output Market

Over	Mean	Std. Err.	[95% Conf.	Interval]
Market Accessibility				
Defaulter	0.5	0.138675	0.2211751	0.7788249
Successful	0.6	0.0840168	0.4310729	0.7689271

Source: own compilation (2018)

Table 7 declares that the output market/ target consumer/ of the financed project for the defaulter and successful projects have a mean of 0.5 and 0.6 respectively. This indicates that there was problem on accessibility of output product market on Development Bank of Ethiopia, Addis Ababa District's financed project on defaulter projects than successful projects. This investigates that the impact of output product market is highly influence on successful loan repayment performance of the Bank.

4.2 Institutional Factors

4.2.1. Loan Processing Time

Table 8 Mean of Loan processing time

Over	Mean	Std. Err.	[95% Conf.	Interval]
Processing Time				
Defaulter	0.5	0.138675	0.2211751	0.7788249
Successful	0.8285714	0.0646349	0.6986142	0.9585286

Source: own compilation (2018)

The Loan issuing/processing time is an important factor that affects the successful implementation of projects. For that reason it has an impact on production and revenue schedule of the project. This in turn affects the repayment performance of the project and it is the cause for a number of rescheduling of loan repayment period. Similarly, the study result shows that a mean of 0.5 and 0.83 for defaulter and successful borrowers respectively.

4.2.2 Equity to Debt Ratio

Table 9 Mean of Equity to Debt Ratio

Over	Mean	Std. Err.	[95% Conf.	Interval]
Equity to Debt				
Defaulter	0.5142857	0.0857143	0.3419456	0.6866258
Successful	0.7857143	0.1138039	0.5568961	1.014532

Source: own compilation (2018)

The equity to debt ratio shows that how much cover the value of project equity-to-debt. Hence the result of the study revealed that the mean of equity to debt ratio of the financed project for

the defaulter and successful borrowers are 0.51 and 0.79 respectively. This indicates that equity to debts ratios of the financed projects increased for the successfulness of loan repayment.

4.2.3. Number of Project Follow-Up

Table 10 Mean of Number of Project Follow-up

Over	Mean	Std. Err.	[95% Conf.	Interval]
Follow-up				
Defaulter	0.6428571	0.1328944	0.3756551	0.9100592
Successful	0.7428571	0.074955	0.5921501	0.8935642

Source: own compilation (2018)

Repeatedly makes Project supervision/ follow-up is an important factors of loan repayment performance of the financed project. As shown on Table 10 the study result indicated that, the mean of number of project follow up of the financed projects for the defaulter and successful financed project are 0.64 and 0.74 respectively. This indicates that number of project follow up of the financed projects increased for the successfulness of loan repayment.

4.2.4 Interest Rate

Table 11 Mean of Interest rate

Over	Mean	Std. Err.	[95% Conf.	Interval]
Interest rate				
Defaulter	0.6428571	0.1328944	0.3756551	0.9100592
Successful	0.8571429	0.060012	0.7364806	0.9778051

Source: own compilation (2018)

The result of the study revealed that the mean of interest rate charged by the bank for the financed project for the defaulter and successful financed project are 0.64 and 0.86 respectively.

This shows that most of successful borrowers believes that interest rate charged by the District is fair.

4.3. Relationship between Dependent Variable with Explanatory Variable

4.3.1. Educational Qualification of the Project Manager

Table 12 below summarizes the educational qualification of the project owner or employed manager of the borrowers. The result indicated that from the observed population 67% of them have BA/BSc degree or above educational level whereas about 33% of them have less or equals to Diploma.

Table 12. Relationship with Education level

Status	Education		
	Diploma or Below	BA/BSc or Above	Total
Defaulter	5	9	14
	35.71	64.29	100.00
	31.25	27.27	28.57
Successful	11	24	35
	31.43	68.57	100.00
	68.75	72.73	71.43
Total	16	33	49
	32.65	67.35	100.00
	100.00	100.00	100.00

Pearson chi2(1) = 0.0835 P = 0.043

Source: own compilation (2018)

The P Value of the result is 0.043 which is less than the minimum standard for P value=0.05. Thus the relationship between the status of the project and educational level of the project managers has strong. Further the percentage of successful and defaulter borrowers are 69% and 31% attended or graduated less than or equal to Diploma respectively. On the other hand, about 73% of successful borrowers and 27% of defaulters have BA/ BSc degree or above. This implies

that the financed project managers/owners, with higher education have more probability of being successful to effect the loan repayment

4.3.2 Loan Diversion

Table 13 below summarizes loan diversion of the project owner or employed manager of the borrowers. The result indicated that from the observed population 76% of the population invest their loan for the intended purpose whereas about 24% of the population divert their loan from the intended purpose.

Table 13 Relationship with Loan Division

Loan Diversion			
Status	yes	No	Total
Defaulter	8	6	14
	57.14	42.86	100.00
	66.67	16.22	28.57
Successful	4	31	35
	11.43	88.57	100.00
	33.33	83.78	71.43
Total	12	37	49
	24.49	75.51	100.00
	100.00	100.00	100.00

Pearson chi2(1) = 11.3009 P = 0.001
Source: own compilation (2018)

The P Value of the result is 0.001 which is less than the minimum standard for Pvalue=0.05. Thus the relationship between the status of the project and loan diversion from the intended purpose of the project has strong relationship. Further the percentage of successful and defaulter borrowers are 33% and 67% respectively those who diverted their loan. On the other hand, about 84% of successful projects and 16% of defaulters invest their loan as per the appraised project.

4.3.3 Other Source of Income

Table 14 below summarizes Other source of income out of the project. The result indicated that from the observed population 49% of the population have other source of income out of the project, whereas about 51% of the population have no other source of income.

Table 14 Relationship with other source of Income

Status	Other source of income		
	No	Yes	Total
Defaulter	9	5	14
	64.29	35.71	100.00
	36.00	20.83	28.57
Successful	16	19	35
	45.71	54.29	100.00
	64.00	79.17	71.43
Total	25	24	49
	51.02	48.98	100.00
	100.00	100.00	100.00

$$\text{Pearson chi}^2(1) = 1.3802 \quad P = 0.240$$

Source: own compilation (2018)

The P Value of the result is 0.240 which is greater than the minimum standard for P Value =0.05. Thus there is no relationship between the status of the project and other source of income. Further the percentage of successful and defaulter borrowers are 64% and 36% respectively those who have no other source of income. On the other hand, about 79% of successful projects and 21% of defaulters have other source of income out of the project.

4.3.4. Managerial Experience of Project Management

Table 15 below shows the relationship between the project status with managerial experience. The result indicated that from the observed population 65% of the population have less than or equal to 10 years of managerial experience, whereas about 35% of the population have 10 and above years of experience.

In addition the result indicated that from the observed population, less than or equal to 10 years of managerial experience who run the project are 31% and 69% for defaulters and successful respectively. Similarly, those project managers who have 10 and above years of experience of defaulters and successful projects are 24% and 76% respectively. This implies that the number of years of experience increases the probability of loan repayment performance of the financed project have increase

Table 15 Relationship with Project Management Experience

Managerial Experience			
Status	Less or equal to 10 years	Above 10 years	Total
Defaulter	10	4	14
	71.43	28.57	100.00
	31.25	23.53	28.57
Successful	22	13	35
	62.86	37.14	100.00
	68.75	76.47	71.43
Total	32	17	49
	65.31	34.69	100.00
	100.00	100.00	100.00

Pearson chi2(1) = 0.3243 P = 0.069

Source: own compilation (2018)

4.3.5. Project Implementation Period

Table 16 below shows the relationship between the project statuses with implementation Period of the project. The result demonstrates that from the observed population, project Implemented lately from the schedule were 41% and whereas 59 % of the projects were implemented as per the schedule.

Table 16 Relationship with Project Implementation Period

Project Implementation Period			
Status	Not Enough	Enough	Total
Defaulter	8	6	14
	57.14	42.86	100.00
	40.00	20.69	28.57
Successful	12	23	35
	34.29	65.71	100.00
	60.00	79.31	71.43
Total	20	29	49
	40.82	59.18	100.00
	100.00	100.00	100.00

Pearson chi2(1) = 2.1628 P = 0.141

Source: own compilation (2018)

The result shows that those projects which were implemented their operation based on the expected period of time were 21% and 79% for defaulter and for the successful projects respectively. Whereas projects which were lately implemented their operation from the expected period of time were 40% and 60% for defaulter and for the successful projects respectively. This authenticate that the financed projects are started its operation based on the appraisal document and the probability of loan repayment performance have increased compared to lately implemented projects.

4.3.6. Raw Material Availability

Table 17 below reviews the relationship between status of the project and input raw material availability of the project. The result points toward that from the observed population 39% of the project have no input raw materials whereas about 61% of them have input raw material accessibility.

Table 17 Relationship with Raw Material Availability

Raw Material Availability			
Status	Not Available	Available	Total
Defaulter	7	7	14
	50.00	50.00	100.00
	36.84	23.33	28.57
Successful	12	23	35
	34.29	65.71	100.00
	63.16	76.67	71.43
Total	19	30	49
	38.78	61.22	100.00
	100.00	100.00	100.00

Pearson chi2(1) = 1.0402 P = 0.308

Source: own compilation (2018)

The P Value of the result is 0.308 which is greater than the minimum standard for P value=0.05 thus have no relationship between the status of the project and availability of the project. In addition to that percentage of successful and defaulter borrowers are 37% and 63% respectively for the projects not available input raw material. Alternatively, about 77 % of successful projects and 23 % of defaulters' project were available raw material.

4.3.7. Output Market Accessibility

Table 18 below reviews the relationship between status of the project and output market accessibility of the project. The result shows that from the observed population 43% of the project have no market accessibility whereas about 57% of them have market accessibility.

Table 18 relationship with Product Market Availability

Accessibility of Market			
Status	Not Market Accessible	Market Accessible	Total
Defaulter	7	7	14
	50.00	50.00	100.00
	33.33	25.00	28.57
Successful	14	21	35
	40.00	60.00	100.00
	66.67	75.00	71.43
-			
Total	21	28	49
	42.86	57.14	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 0.4083 P= 0.523			

Source: own compilation (2018)

The P Value of the result is 0.523 which is greater than the minimum standard for P value=0.05. Thus it has no strong relationship between the status of the project and accessibility of product market. In addition to that projects which have no market access for their output and successful and defaulter borrowers are 67% and 33% respectively. While projects which have market access for their output and successful and defaulter projects are of 75% and 25% respectively.

4.3.8. Loan Processing Time

Table 19 indicates the relationship between the status of the project and loan processing time. The result shows that from the observed population 73% of the population have taken loan processing time less or equal to 32 working days whereas about 27% of the population have taken loan processing time greater than 32 working days.

Table 19 Relationship with Loan Processing Time

Loan Processing Time			
Status	Greater than 32 days	Less or equal to 32 days	Total
Defaulter	7	7	14
	50.00	50.00	100.00
	53.85	19.44	28.57
Successful	6	29	35
	17.14	82.86	100.00
	46.15	80.56	71.43
Total	13	36	49
	26.53	73.47	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 5.5387 P = 0.069			

Source: own compilation (2018)

The P Value of the result is 0.069 which is greater than the minimum P value=0.05 thus have no strong relationship between the status of the project and loan processing time. It is found that about 81% of successful project and 19% of defaulter's project have taken loan processing time less or equal to 32 working days. While 46% of successful and 54% of defaulters have taken loan processing time of greater than 32 working days. This implies that the number of days taken from loan application to the first disbursement increases the probability of default rate also increases and vis-à-vis.

4.3.9. Equity-to-Debt Ratio

Table 20 shows the relationship between the status of the project and Equity to debt ratio. The result shows that from the observed population 41% of the population has equity to debt ratio of less than 25% whereas about 59% of the population have equity to debt ratio of greater or equal to 25%.

Table 20 Relationship with Equity-to-Debt Ratio

Equity to Debt Ratio			
Status	less than 25%	greater or equal to 25%	Total
Defaulter	6	8	14
	42.85	57.14	100.00
	30.00	27.58	28.57
Successful	14	21	35
	40.00	60.00	100.00
	70.00	72.41	71.43
Total	20	29	49
	40.82	59.18	100.00
	100.00	100.00	100.00

Pearson chi2(1) = 3.0498 P = 0.081

Source: own compilation (2018)

The P Value of the result is 0.081 which is greater than the minimum P value=0.05 thus have no strong relationship between the status of the project and equity to debt ratio. Likewise the result shows that about 70% of successful project and 30% of defaulter's project have equity to debt ratio of less than 25%. While 72% of successful and 28% of defaulters have equity to debt ratio of greater than or equal to 25%.

4.3.10. Number of Project Follow-Up

Table 21 shows the relationship between the status of the project and number of project Follow up. The result shows that from the observed population 29% of the population had conducted project follow up less than 2 times whereas about 71% of the population had conducted project follow up greater or equal to 2 times per annum.

Table 21 Relationship with number of Project Follow-up

Project Follow Up			
Status	Less than 2 times	greater than or equal to 2 times	Total
Defaulter	5	9	14
	35.71	64.29	100.00
	35.71	25.71	28.57
Successful	9	26	35
	25.71	74.29	100.00
	64.29	74.29	71.43
Total	14	35	49
	28.57	71.43	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 0.4900 P= 0.044			

Source: own compilation (2018)

The P Value of the result is 0.044 which is less than the minimum P value=0.05 thus have strong relationship between the status of the project and number of project follow up. Likewise the result shows that 64% of successful project and 36% of defaulter's project were conducted project follow up less than 2 times. Whereas 74% of successful project and 26% of defaulter's project were conducted project follow up greater or equal to 2 times per annum. This implies that the number of follow-up increases the probability of loan repayment performance.

4.3.11 Interest Rate

Table 22 shows the relationship between the status of the project and interest rate charged by the bank. The result shows that from the observed population 20% of the population believes the interest charged is not fair whereas about 80% of the population responded the bank charged fair interest rate.

Table 22 Relationship with Interest Rate

Interest rate			
Status	Not Fair	Fair	Total
Defaulter	5	9	14
	35.71	64.29	100.00
	50.00	23.08	28.57
Successful	5	30	35
	14.29	85.71	100.00
	50.00	76.92	71.43
Total	10	39	49
	20.41	79.59	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 2.8269 P= 0.093			

Source: own compilation (2018)

The P Value of the result is 0.093 which is greater than the minimum P value=0.05 thus have no strong relationship between the status of the project and interest rate charged by the bank. Likewise the result shows that 50% of successful project and 50% of defaulter project managers said the interest rate charged by the bank is not fair. Whereas 77% of successful project and 23% of defaulters project managers believes that interest rate charged by the bank is fair. This implies that as the interest rate charged by the bank was increased the probability of being defaulter increased.

4.4. Multicollinearity

The result revealed that there is multicollinearity problem in an equation when there is correlation between variables employed in the regression model (when the assumption that $\text{cov}(x_1, x_2) = 0$ 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-B) implying that the explanatory variables can separately contribute to the variation in the dependent variable.

4.5 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.

4.6. Factors affecting loan repayment performance of borrowers

The probit econometric model was selected for analyzing the factors of successful loan repayment performance in project financing. Prior to running the probit regression model explanatory variables were checked for the existence of collinearity and the degree of association using correlation coefficient. Thus, the test result shows that the correlation coefficient between all variables under consideration is less than 0.8 (i.e there is no multi collinearity). To determine the independent variables that are good predictors of the loan repayment performance among

financed project, the probit regression model was estimated using the Maximum Likelihood Estimation Method. The results of the analysis are presented in Table 23.

Table 23 Probit Regression

						Number of obs = 49
						LR chi2(11) = 74.76
						Prob > chi2 = 0.0003
Log likelihood = -11.932967						Pseudo R2 = 0.7329
Status	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Education	4.02223	1.538675	2.61	0.009*	1.006483	7.037977
loan diversion	1.905303	1.314178	1.45	0.147	-0.6704387	4.481045
Other source of inc.	0.2203696	0.8451504	-0.26	0.794	-1.876834	1.436095
Loan processing	-0.3061427	0.8477402	0.36	0.718	-1.355398	1.967683
Equity debt	2.317404	1.168274	1.98	0.047*	0.0276295	4.607178
Implementation	-2.791255	1.180848	-2.36	0.018*	-5.105675	-0.4768346
Follow up	2.926925	1.503494	1.95	0.052**	-0.0198685	5.873719
Interest rate	-1.617133	1.056196	-1.53	0.126	-3.68724	0.452973
Experience	1.952875	1.130186	1.73	0.084**	-0.2622498	4.167999
Raw material	0.6147053	0.8844645	0.70	0.487	-1.118813	2.348224
Market	0.1447152	1.058095	0.14	0.891	-1.929112	2.218543
_cons	-4.86889	2.292353	-2.12	0.034	-9.36182	-0.3759596

*, and ** are at 5% and 10% level of significance respectively
Source: own compilation (2018)

From the results in Table 23 above, a likelihood ratio (LR) statistic of 74.76 with a chi squared (χ^2) distribution at eleven degree of freedom is significant at 5% predictive probability level. This means that at least one of the independent variables in the model has a significant effect on

loan repayment performance in the observed population financed project in which the explanatory variables together influence the financed project borrowers have able to pay its debt based on their contract agreement. Moreover, the $P=0.0003$ means that the model is significant and Pseudo R^2 is 0.7329 means that the explanatory variables explain the dependent variable about 73%.

4.6.1. Discussion of the Significant Explanatory Variables

Out of the eleven variables hypothesized the determinant of loan repayment performance of the project financing, five of them were found to be statistically significant. The maximum likelihood estimates of the probit regression model shows that education level, equity-debt ratio, Project implementation period (PIP), number of project supervisions/ follow-ups by the Bank, and managerial experience of project manager for the financed projects borrowers were significant factors determining the loan repayment performance of financed projects. Specifically, the coefficients of educational level, Equity to debt ratio, and Project implementation period (PIP) for the financed project were statistically significant at 5% predictive probability level. The variables number of project follow ups/supervisions by the Bank and managerial experience of project manager experience of the financed project were statistically significant at 10% predictive probability level. On the other hand, the coefficients of six independent variables, namely loan diversion, other source of income, loan processing time, interest rate, availability of input raw material, and accessibility of output product market were less influential in explaining loan repayment performance of financed projects.

The result of the probit model shows that education level of project manager has significant at 5% and positive effect on successfulness of the project. It might be because of the fact that project manager, who has higher education level, could find better market for their products, they could be cost conscious that is cost-effective usage of resources and they may have future investment plan working with the Bank. These and other reasons make the project manager who has a higher education status to have a good repayment performance. Having BA/BSs or above education level of the financed project manager, the predictive probability of the financed project has been able to repay the loan increases by 402%. This implies that a borrower will likely have greater loan repayment ability when the project manager has a higher educational level and vis-à-

vis. This also confirms the results of Werema and Opanga (2016), Mulugeta (2010), Abraham (2002) and Matin (1997).

The equity to debt ratio is an important factor, which is positively related to borrowers' ability to repay their loans and is significant at 5% predictive probability level. Increasing equity to debt ratio of the financed project, by a unit digit the predictive probability of the financed project borrower has been able to repay the loan increased by 232%. This means that the more equity to debt the company is more willing to repay the debt because of the higher portion of the company asset is its own financial sources than being financed by creditors, the better borrowers' loan repayment abilities and vis-à-vis. In other words, the financed project borrowers will take more responsibility and it brings less predictive probability of diversions on the project and precaution activities has been undertaken at each operation of the project. This is due to the borrower has efforts toward success and timely repayment of the borrowed funds. It is supported by theory of Mensah (1999).

Projects are considered delayed when their stipulated completion durations have not been achieved. According to the result of the probit model, delayed Project implementation period of the financed project has a negative impact on loan repayment performance of the District's borrowers. It is significant at 5% predictive probability level. This means that the decrease the project implementation period for the financed project borrowers, the better ability to pay its debt and vis-à-vis. This is due to various costs are incurred like cost of fund/interest expense; labors expense and administrative expense without the projects are implemented. This in turn implies that the borrowers are discouraged to refund the loan repayment due to the project can not generate cash inflow. It is supported by theory of Vigano (1993).

The Number of project follow-up/supervisory visit is an important institutional factor, which is positively related to borrowers' ability to repay their loans and is significant at 10% predictive probability level. Increasing the number of supervisory visits on the financed projects, the predictive probability borrower has been able to repay the loan increased by 292%. This means that the more credit officers visit the financed project borrowers to control how the project is used, the better borrowers' loan repayment abilities and vis-à-vis. In other words, this means that the financed project borrowers has more accesses to technical assistance and guidance on project activities during the visit has able to repay their loan as promised than those who had less visiting. This is due to borrowers who have regular contact with the Bank's professionals are

superior informed about markets and production technologies as well as clearly know the rule of the Bank and regulation on loan repayment of the project. This in turn encourages the borrowers of the financed project undertake operation in good manner and there will be less predictive probability of diverting the loans to unintended purpose. This is similar results with Abreham (2017) and Mulugeta (2010), have also reported the significant effect of this variable on loan repayment.

Moreover, project management experience has a positive coefficient and it is significant at 10% predictive probability level. Increasing managerial experience of project manger by one more year increases the predictive probability of the financed project borrower been able to repay the loan by 195%. This means that the likelihood of the financed project borrower able to pay the loan will increase when the number of years of managerial experience of project manger increase and vis-à-vis. The implication is that managerial experience of project manger could probably lead properly the financed project and this could have a positive effect on the magnitude of project profit.

Similarly as project manager gets more experience, the quality of decision making has to be enhancing and also has a positive impact on the sustainability of the project. Therefore, loan repayment performance of the project would be improved. This also substantiate the results of Mulugeta (2010), and Muluken (2014).

4.7. Post Estimation

4.7.1. Marginal effect of significant variables

Each and every one significant explanatory variable does not have the same level of impact on loan repayment performance of the financed borrowers. So as to determine the comparative significance of each independent variable on loan repayment performance of the financed project, it requires calculation of marginal effect of each significant independent variable and the marginal effect of the variable have been undertaken after the probit model estimation. The marginal effect of the variable is as follows:

Table 24 Marginal Effect with respect to dependent variable

Status	Delta-method					
	dy/dx	Std. Err.	z	P>z	[95% Conf. Interval]	
Education	0.5447729	0.1336886	4.07	0.000*	0.282748	0.8067978
Loan diversion	0.0980553	0.1643329	1.57	0.116	-0.0640313	0.5801419
Other source of inc.	0.029847	0.1141312	-0.26	0.794	-0.25354	0.193846
Loan processing	-0.0414641	0.1139944	0.36	0.716	-0.1819607	0.264889
Equity debt	0.3138703	0.1258121	2.49	0.013**	0.0672831	0.5604576
Implementation	-0.378049	0.1117513	-3.38	0.001*	-0.5970776	-0.1590204
Follow up	0.3964243	0.1660187	2.39	0.017**	0.0710335	0.721815
Interest rate	-0.2190254	0.1307842	-1.67	0.114	-0.4753577	0.0373069
Experience	0.2644984	0.1304055	2.03	0.043**	0.0089084	0.5200884
Raw material	0.083256	0.1175932	0.71	0.479	-0.1472224	0.3137344
Market	0.0196003	0.1432631	0.14	0.891	-0.2611902	0.3003908

* & ** are at 1% and 5% level of significance respectively.

Source: own compilation (2018)

As can be seen from Table 24 shows that the marginal affect of educational level of the Project manager is 54% which is the highest positive statistical significant variable compared to other significant explanatory variables. Other things remaining constant when the educational level of the Project manager being BA/BSc or above will have a probability of project being successful/non-defaulter is increased by 54%. Subsequent to educational level of project financing borrowers, number of project follow-up has statistically significant and positive effect on repayment performance of borrowers. The marginal effect of being successful increases by 40% for project financed borrowers which have undertaken more number of project follow up. This implies that number of projects follow-up increases by 1 per annum, in turn 40% increase loan repayment performance, if other things are remaining constants. Equity to debt ratio and experience takes the third and fourth significant determinant of loan repayment performance of

the project financed borrowers has a positive marginal effect of 31% and 26% respectively. From the last two positive statistical significant variables, the former variable which is Equity to debt ratio will have a probability of project being successful/non-defaulter is increased by 31%, while the latter variable which is project management experience increases by 1 year, the probability of being successful increases by 26% in which other things are remaining constant. On the other hand, the negative statistically significant variable type is project Implementation and has 37% statistically significant and negative effect on repayment performance of borrowers. When decreasing project implementation period from the planned, the probability of being project successful increases by 37% other things being constant for financed project borrowers' as shown from the marginal effect Table13.

4.7.2. Model Selection criteria after probit regression

As shown in the following Table 25, the null hypothesis for model selection is that the model is good model or all the independent variables have a power of explaining the dependent variable. Hence, the model is well specified to analyze the factors of successful loan repayment performance of the financed projects by Development Bank of Ethiopia Addis Ababa District.

Table 25 Goodness of fit for model selection

Probit model for status, goodness-of-fit test		
Ho: the model is good model vs Ha: not Ho		
number of observations =		49
number of covariate patterns =		49
Pearson chi2(31)	=	14.56
Prob > chi2	=	0.9947

Source: own compilation (2018)

4.7.3. Sensitivity and Specificity Analysis

As shown in Table 26, the overall rate of correct classification is estimated to be 85.71%, with 71.43% of the non defaulter in loan repayment group correctly classier (specificity) and 91.43% of the defaulter in loan repayment group correctly classified (sensitivity). Classification is

sensitive to the relative sizes of each component group, and always favors classification into the larger group.

Table 26 Sensitivity and specification

Sensitivity	$\Pr(+ \text{Successful}(D))$	91.43%
Specificity	$\Pr(- \text{Defaulter}(\sim D))$	71.43%
Positive predictive value	$\Pr(\text{Successful}(D) +)$	88.89%
Negative predictive value	$\Pr(\text{Defaulter}(\sim D) -)$	76.92%
Correctly classified		85.71%

Source: own compilation (2018)

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter the major findings of the study are summarized, conclusions are drawn based on the finding, and recommendations will be forwarded for Development Bank of Ethiopia, Addis Ababa District and other stake holders.

5.1. Summary

The analysis of the study shows that out of the eleven independent/explanatory variables, which were hypothesized to investigate the factors affecting loan repayment performance of borrowers of the District, five were statistically significant. These variables include educational level, equity- to- debt ratio, project implementation period, number of supervisions / follow-ups conducted and managerial experience of project manager, In contrast, the remaining six were less powerful. While comparing and contrasting the effects of the significant explanatory variables incorporated in the study, Educational level of borrowers was the significant variable, which affects loan repayment performance of borrowers. As estimated, the variable was positively related to repayment performance and statistically significant at 5% probability level. This result shows that borrowers who have better educational level are more likely to be successful.

Debt-to-equity ratio is also a statistically significant factor in enhancing loan repayment performance of borrowers. The main reason for this may be that if borrowers (owners) contribute a lot in financing projects as compared with that of credit proportion, they will tend to become more responsible for servicing their debts timely. In other words, the more money borrowers invest in the form of equity versus credit, the higher appetite they develop in repaying their loans, and vis-à-vis. Projects will be delayed when they are not executed in accordance with the initially agreed project implementation plan. In this regard, the result reveals that project implementation period (PIP) of any financed project has a negative impact on loan repayment performance of borrowers and statistically significant at 5% probability level. This means that efficient and effective project implementation leads to improved debt service and vis-à-vis. This could be manifested in the form of minimizing huge pre-production costs such as cost of funds/interest expense, operational and administrative expenses, and the like. Moreover, it can be

expressed in terms of generating adequate cash flows at the right time. Another variable is number of project follow-up/supervision which has a statistically significant and positive influence on the successful loan repayment performance of borrowers. They can well acquainted with the Bank's rule and regulation. In general, project borrowers which have had repeated contacts with the Bank's professionals are more likely to be successful/non-defaulters vis-à-vis those unsuccessful ones/defaulters.

Finally, Managerial experiences of projects are found to be positive and significant positive factor of loan repayment performance of borrowers. This is due to the fact that a manager, who has had long years of experience in managing a project, will be able to run the project properly by devising a pragmatic strategy to effectively carry out the day-to-day operations of the project, overcome operational problems and bottlenecks if encountered.

5.2. Conclusions

Based on the findings it can be concluded that education level, equity to debt ratio, Project implementation period, number of supervisions/ follow-ups conducted, and managerial experience of project manager have significant impact on loan repayment performance; which means any increase (decrease) on the value of these variables leads to an increase (decrease) on repayment performance of Development Bank of Ethiopia, Addis Ababa District. The education level, equity to debt ratio, numbers of supervisions/ follow-ups by the Bank, and managerial experience are significant variables which have positive relationship with loan repayment performance of the District. While delayed project implementation period has negative relationship with loan repayment performance of the Bank.

Education level of project manager has significant at 5% and positive effect on successfulness of the project. It might be because of the fact that project manager, who has higher education level, could find better market for their products, they could be cost conscious that is cost-effective usage of resources and they may have future investment plan working with the Bank.

The equity to debt ratio is an important factor, which is positively related to borrowers' ability to repay their loans and is significant at 5% predictive probability level. This means that the more equity to debt the company is more willing to repay the debt because of the higher portion of the company asset is its own financial sources than being financed by creditors, the better borrowers' loan repayment abilities and vis-à-vis.

Delayed Project implementation period of the financed project has a negative impact on loan repayment performance of the District's borrowers. It is significant at 5% predictive probability level. This means that the decrease the project implementation period for the financed project borrowers, the better ability to pay its debt and vis-à-vis.

The Number of project follow-up/supervisory visit is an important institutional factor, which is positively related to borrowers' ability to repay their loans and is significant at 10% predictive probability level. This means that the more credit officers visit the financed project borrowers to control how the project is used, the better borrowers' loan repayment abilities and vis-à-vis.

Project management experience has a positive coefficient and it is significant at 10% predictive probability level. This means that the likelihood of the financed project borrower able to pay the loan will increase when the number of years of managerial experience of project manger increase and vis-à-vis.

5.3. Recommendation

This study has a potential to support the of Development Bank of Ethiopia, Addis Ababa District to take corrective measures on the most important factors affecting loan repayment performance of borrowers. Based on the research findings the following recommendations can be forwarded.

- Educational level of managers shows strong relationship with loan repayment performance of borrowers. This relationship requires educational level of project managers or borrowers is fair to require BA/BSc or above educational qualification for both non-owner-manager and owner-manager in today's highly competitive world. This requirement should be stipulated in the credit policy of the Bank as a basic requirement for loan provision.
- The other variable is debt-to-equity ratio, which directly and positively affects the loan repayment performance of borrowers. By and large, there should be a need for the Bank to increase the debt-to- equity ratio of project finance in the credit policy of the Bank, For instance 50:50 or more, and thus this requirement should be given high emphasis before any loan is approved.
- Delaying project implementation period has a negative impact on the loan repayment performance of borrowers. Hence, the Bank should, at all times, keep close eye on the

timely implementation of projects in line with the implementation schedule stipulated in the project appraisal study. Simultaneously, there must be an effective monitoring and evaluation system to monitor each and every milestone achieved. By doing so, it is possible to reduce or eliminate unnecessary cost overruns in project management.

- Conducting frequent project follow-up/supervision visits has also a direct bearing on loan repayment performance. In other words, implementing effective and efficient project follow-up/ supervision system and practices should be considered as a major part of credit activity because a borrower who gets robust and continuous information and technical advices from the Bank is more likely to be successful. Thus, the credit manager/policy maker should give more emphasis on supervision or follow-up of projects in order to provide pertinent information and technical support for the success of the projects established by the Bank's finance. To reinforce the quality of project follow up/ supervision visits, the Bank should install effective monitoring and evaluation mechanisms to measure the output of each and every follow-up/supervision visit after having conducted appropriate project follow-up.
- Last but not least, management of the bank has to build strong relationship existing between the managerial experience of project managers and successful loan repayment performance of borrowers. This positive correlation suggests that the Bank should, at all times, require project owners to employ well-experienced and qualified managers in any project throughout its life.

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APPENDIX A

Survey questionnaire

Part I

Background Information

1. Educational level of the manager is?
☐ BA/BSC or above ☐ Diploma or below
2. How many years of experience the manager has in running such project(Enterprise)
☐ Above 10 years ☐ less or equal to 10 years

Part II

1. Bank (Institution) related questions

- 1.1 Does the project implementation period set by Development Bank of Ethiopia Addis Ababa District is?
☐ Enough ☐ Not enough
- 1.2 How many times the loan officer visits the project in a year after commissioning (operational)?
☐ Twice and above ☐ Less than twice
- 1.3 Is the loan processing time taken by Development bank of Ethiopia Addis Ababa District is (number of working days taken from loan application to first disbursement of the loan) ?
☐ 32 days or less ☐ Above 32 days
- 1.4 Interest rate for credit set by Development bank of Ethiopia Addis Ababa District is:
☐ Fair ☐ Not fair

1 LOAN AND LOAN REPAYMENT

- 2.1 Did you spend the entire loan for your project (No loan Diversion)?
☐ Yes ☐ No
- 2.2 What is the percentage of equity to debt ratio of your project?

☐ < 25 %

☐ > 25%

2.3 Were you well understand about the loan contract before you sign it?

☐ Yes

☐ No

2.4 Do you (the borrower) have other source of income?

☐ Yes

☐ No

2.5 Are you repaying your loan according to the loan contract schedule?

☐ Yes

☐ No

2.6 Are the raw materials needed for your project are available easily?

☐ Yes

☐ No

2.7 Is market available for your products?

☐ Yes

☐ No

General questions

1. As these questionnaires cannot be exhaustive to list of all problems related to loan repayment, please state any comment that you think is essential for improvement of loan repayment

performance:_____

2. What is your overall opinion about Development bank of Ethiopia, Addis Ababa District credit scheme?

Thank you for your valuable comment and precious time!!!

APPENDIX B

Correlation coefficient

	EL	LD	OSI	LPT	EDR	PIP	NPF	IR	MEPM	ARM	AM
EL	1.0000										
LD	-0.2953	1.0000									
OSI	0.1599	-0.0116	1.0000								
LPT	0.1730	0.1952	0.2189	1.0000							
EDR	0.1301	0.0099	0.1492	0.0653	1.0000						
PIP	-0.0470	0.2995	-0.1831	0.3474	-0.1828	1.0000					
NPF	0.1376	0.0600	-0.2840	-0.0731	-0.3414	0.1182	1.0000				
IR	0.1873	-0.0529	0.2935	0.1545	-0.0084	-0.0084	0.3523	1.0000			
MEPM	-0.2239	0.1160	-0.0280	-0.0476	-0.0053	-0.2670	-0.1085	-0.2692	1.0000		
ARM	-0.1969	0.3260	-0.2257	-0.0039	-0.1496	0.1913	0.1457	-0.0912	0.2281	1.0000	
AM	0.1005	-0.2055	-0.0589	0.1334	-0.0479	0.0360	0.0913	-0.0292	-0.2352	-0.1814	1.0000